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Final Report for the Environmental Security Technology Certification Program (ESTCP)

Integrated Forensics Approach to Fingerprint PCB Sources in Sediments using Rapid Sediment Characterization (RSC) and Advanced Chemical Fingerprinting (ACF)

Jim Leather
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Greg Durell
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Marc Mills
EPA ORD

SSC Pacific
San Diego, CA 92152-5001

SSC Pacific
San Diego, California 92152-5001

J.J. Beel, CAPT, USN
Commanding Officer

C. A. Keeney
Executive Director

ADMINISTRATIVE INFORMATION

This report was prepared for the Environmental Security Technology Certification Program (ESTCP) by the Environmental Assessment and Sustainability Branch (Code 71751), SPAWAR Systems Center Pacific (SSC Pacific).

Released by
B.B. Chadwick, Head
Environmental Assessment and Sustainability Branch

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M. J. Machniak, Head
Advanced Systems and Applied Sciences Division

Table of Contents

Appendices

Table of Figures

Table of Tables

Acronyms

ACF	Advanced Chemical Fingerprinting
BDO	Battelle Duxbury Operations
BRAC	Base Realignment and Closure Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
CSO	Combined Sewer Overflow
CSS	Contaminant Source Study
DEM	Demonstration
DoD	Department of Defense
ELISA	Enzyme-linked Immunosorbent Assay (IA)
EPA	Environmental Protection Agency
ESTCP	Environmental Security Technology Certification Program
FS	Feasibility Study
GC	Gas Chromatography
GLNPO	Great Lakes National Program Office
HCA	Hierarchical cluster analysis
HPS	Hunters Point Shipyard
Kow	Octanol water partition coefficient
MS	Mass Spectrometry
NIST	National Institute of Standards
NPL	National Priorities List
PAHs	Polycyclic aromatic hydrocarbons
PCA	Principal Component Analysis
PCBs	Polychlorinated biphenyls
PMF	Positive matrix factorization
PPM	Parts per Million
PPB	Parts per Billion
PRP	Potential Responsible Party
PVA	Polytopic Vector Analysis
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAB	Restoration Advisory Board
RI	Remedial Investigation
RPM	Remedial Project Manager
RSC	Rapid Sediment Characterization
SARA	Superfund Amendments and Reauthorization Act
SERDP	Strategic Environmental Research and Development Program
SPAWAR	Space and Naval Warfare Systems Center
SRM	Standard reference material
TMDL	Total maximum daily load
TOC	Total organic carbon
VAL	Validation

Executive Summary

This final report is prepared for ESTCP Project ER0826 “Integrated Forensics Approach to Fingerprint PCB Sources using Rapid Sediment Characterization (RSC) and Advanced Chemical Fingerprinting (ACF)”. We demonstrate an integrated approach to fingerprint sediment polychlorinated biphenyl (PCB) contamination that combines sediment screening technologies on a large number of field samples followed by detailed PCB congener analysis in conjunction with advanced chemical fingerprinting data interpretation on a subset of selected laboratory samples to identify PCB sources to sediments. The technology includes these two technology components: 1) Rapid sediment characterization (RSC) technologies that provide for wide spatial and temporal coverage to delineate sediment contaminant gradients and semi-quantitative characterization in a cost effective manner; and 2) advanced chemical fingerprinting (ACF) on a selected subset of samples to delineate sources. Advanced chemical fingerprinting includes both advanced laboratory chemical analysis of samples, and the application of sophisticated data analysis and interpretation methods. The combined use of RSC and ACF, however, are only two steps in the overall Integrated Forensics Approach that is modified from our earlier fingerprinting work (Stout et al., 2003). The overall sequence of steps, or tasks, that will be employed include (1) evaluation of the site’s potential as a demonstration site, (2) development of a conceptual site model (CSM), (3) development and implementation of a defensible study design, (4) demonstration of rapid sediment characterization (RSC) screening, (5) demonstration of advanced chemical fingerprinting (ACF), and, finally, (6) synthesis and presentation of the results in a final report.

This project conducted two demonstrations on previously collected data from two different types of regulatory projects. The first demonstration site was in the South Basin at Hunters Point Shipyard (HPS), located just south of San Francisco CA (Figure 1). This site had an extensive PCB dataset that was available from the regulatory Remedial Investigation/Feasibility Study (RI/FS) recently conducted at the site (Battelle, 2007). It represents a typical DoD sediment cleanup site with a former landfill and nearby creek with combined sewer overflow (CSO) outfalls that represent multiple potential PCB sources. Total PCB concentrations in the sediments are up to 20 ppm in a relatively quiescent estuarine depositional setting. The second demonstration site was at the Ashtabula River Dredge site, located just east of Cleveland OH (Figure 2). This site represents a typical dredge site, where multiple potential upstream sources have left Total PCB concentrations in the downstream sediments up to 200 ppm (Battelle, 2010). It is a more dynamic fresh water site which shows that PCBs in industrial settings can move from distant source areas and be present in dredged sediments where ownership needs to be apportioned. Due to the large amount of pre-existing data that were available to leverage into this project, no additional fieldwork was conducted for this project. This provided a great amount of cost savings for the project and reduced the size and complexity of this ESTCP Demonstration.

The forensic study results from the two demonstration sites provided in Section 5 indicate both sites have multiple PCB sources to the sediments that were successfully discriminated by the demonstrated Integrated Forensics Approach. At HPS, there are three end member congener patterns that appear to originate from two different source areas (Figure 17). In the more recent surface sediment on the east side of the embayment near the former landfill, an Aroclor 1260 pattern is clearly seen which appears to originate from the upland landfill area. In the more recent surface sediments on the west side of the embayment near Yosemite Creek, a mix of Aroclors 1260/1254/1248 is present and appears to be from CSO outfalls. A third pattern appears more common in the deeper sediments (prior to 1970 when the highest PCB concentrations are present) from both sides of the embayment that is approximately a 50%/50% mix of Aroclors 1260/1254. This may represent the same historic source that provided PCBs to both sides of HPS South Basin. At Ashtabula, there are four PCB compositional patterns that appear to originate from two different source areas (Figure 19). Most of the sediments in the dredge area contain an Aroclor 1248 pattern, some of which show varying amounts of a second dechlorination pattern. These two patterns probably represent the same source of PCBs and are reported to be from Fields Brook. A third deeper sediment pattern also believed to be from Fields Brook is seen in most cores (in sediments deposited prior to last dredge event in the early 1960s) with a unique pattern enriched in highly chlorinated PCB congeners (e.g., PCB209). A forth very recent pattern contributing Aroclor 1260 is observed in surface sediments and has been traced back to a drainage creek discharging from the opposite side of the Ashtabula River from Fields Brook. But when PCB mass is considered in addition to just PCB proportions, the Ashtabula dredge area shows greater than 99% of the PCB mass with compositional patterns that can be traced back to sources in Fields Brook. The similarity in the three source patterns from HPS makes the apportionment less certain at that site compared to the four source patterns at Ashtabula which show more unique characteristics that allow more precise apportionment.

The performance assessment provided in Sections 3 and 6 shows the PCB analytical measurements meet the required Data Quality Objectives (DQOs) and the investigation techniques show reproducible results with fairly simple artificial datasets. DQO samples were measured to assess the PARCC parameters (precision, accuracy, representativeness, comparability, completeness), and all data (with minor noted exceptions) passed this evaluation. Investigation techniques (including receptor models) were successful in reproducing original source signatures from artificial datasets that were constructed by mixing these original sources in varying proportions. Additionally, a real dataset from HPS was used to show different investigation techniques produce comparable source results. The most important aspects to conducting a successful forensics study are to have high quality PCB data and experienced analysts interpreting the results. It does not appear to matter which particular investigation technique (specific receptor model) is used, and in fact a weight of evidence approach which looks at a number of independent lines of evidence is probably best. Also important is to present the information in a number of ways to ensure it is communicated to an audience with varying levels of forensic expertise (such as receptor model details presented to forensic experts, and spatial displays such as contour maps of PCB concentrations or source proportions presented to the general public).

The cost assessment provided in Section 7 shows the costs for a forensics study will be proportional to the number of samples selected for the project. Since the largest costs are associated with field work to collect samples and analytical work to measure PCBs in samples, the number of samples will have a direct bearing on the cost. Per sample analytical costs are provided for the various types of analytical measurements, but there is too much variation in site specific field costs to estimate accurate “typical” field costs. Estimates for the total cost of a 100

RSC and 25 ACF sample project could vary between $100,000 and $300,000 depending on many site specific factors. One major way to reduce costs is to leverage any forensics project with other regulatory work at a site (i.e., share data obtained through field and laboratory work that needs to be conducted anyway, or coordinate the field and laboratory efforts to reduce costs); similar to what was done on this ESTCP project. If a regulatory project is already collecting samples and measuring chemistry, it may be possible to merely add samples and/or specific PCB congeners to the existing work plan. This type of cost sharing presents the best method to conduct a cost effective forensics study.

Some implementation issues are discussed in Section 8 of the report. As discussed in several sections of this report, a forensics study requires high quality data and an experienced team. To avoid litigation among the various potential responsible parties (PRPs), some type of arbitration is often employed. It is therefore important to have a technically defensible approach (such as the one described in this report) that can be presented to an impartial arbitrator so that the DoD's case is fairly represented. But the fingerprinting techniques described here may prove even more useful to the RPM for identifying unsuspected PCB sources so they can be controlled prior to any sediment remedial efforts. These sediment remedial efforts are often costly, and the last thing a RPM needs is for an unidentified PCB source to re-contaminate the sediments because everyone thought they "knew there was only one source". A tiered analytical approach is recommended for a PCB forensic investigation, as was shown in this report. By combining large numbers of less expensive RSC immunoassay analyses with more expensive ACF congener analyses, a high quality yet cost effective study design can be developed. The larger number of RSC samples allow for sufficient spatial coverage to map out contaminant plumes and gain a general understanding of the contaminant concentrations, including the possibility of seeing the location of potential source areas. The PCB information from the RSC can then be used to select a subset of samples for ACF analysis to provide the unique PCB congener fingerprints and diagnostic data needed to match the site samples to potential sources.

All of the techniques discussed in this report are commercially available from multiple sources. The analytical techniques are available from contractors that can provide high quality data. The number of individual PCB congeners that can be expected to be above detection limits will be related to the total concentration of the samples, and samples with total PCB concentrations below about 100 ppb will typically not have enough congeners above detection limits to be useful for forensic study. The data analysis and interpretation techniques are also widely available from commercial vendors. And just as we would recommend spending a little more money to obtain a contract laboratory that can provide higher quality data with lower PCB congener detection limits, we would also recommend paying extra to find a contractor with data analysis experience in the type of forensic study that you wish to conduct rather than downloading fingerprinting techniques yourself from the internet. These contractors should also have experience with many types of visual displays that can be used to present the data in the best, most comprehensible fashion.

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1 INTRODUCTION

This final report was prepared for Project ER0826 "Integrated Forensics Approach to Fingerprint PCB Sources using Rapid Sediment Characterization (RSC) and Advanced Chemical Fingerprinting (ACF)". Dr JM Leather, who is the principal investigator of the project, received demonstration/validation (DEM/VAL) funding under the U.S. Department of Defense (DoD) Environmental Security Technology Certification Program (ESTCP). This project demonstrated and validated an innovative and powerful procedure to fingerprint the sources of polychlorinated biphenyls (PCBs) to sediments. The technology includes two primary components: 1) rapid sediment characterization (RSC, such as immunoassays for total PCB analysis) technologies that provide for wide spatial and temporal coverage to delineate sediment contaminant concentration gradients in a cost effective manner; and 2) advanced chemical fingerprinting (ACF such as laboratory congener analysis) on a selected subset of samples to delineate sources. Advanced chemical fingerprinting includes both advanced laboratory chemical analysis of samples, and the application of sophisticated data analysis and interpretation methods.

This project conducted two demonstrations on previously collected data from two different types of regulatory projects. The first demonstration site was in the South Basin at Hunters Point Shipyard (HPS), located just south of San Francisco CA (Figure 1). This site had an extensive PCB dataset that was available from the regulatory Remedial Investigation/Feasibility Study (RI/FS) recently conducted at the site (Battelle, 2007). It represents a typical DoD sediment cleanup site with a former landfill and nearby creek with combined sewer overflow (CSO) outfalls that represent multiple potential PCB sources. Total PCB concentrations in the sediments are up to 20 ppm in a relatively quiescent estuarine depositional setting. The second demonstration site was at the Ashtabula River Dredge site, located just east of Cleveland OH (Figure 2). This site represents a typical dredge site, where multiple potential upstream sources have left Total PCB concentrations in the downstream sediments up to 200 ppm (Battelle, 2010). It is a more dynamic fresh water site which shows that PCBs in industrial settings can move from distant source areas and be present in dredged sediments where ownership needs to be apportioned. This second demonstration site was also selected to highlight some alteration issues that we were not able to show at our first demonstration site. At this second site we have a 100 congener dataset, so this aids in answering the question of how many congeners are required for a forensics study to see alteration and discriminate this alteration from typical source patterns.

Due to the large amount of pre-existing data that were available to leverage into this project, no additional fieldwork was conducted for this project. This provided a great amount of cost savings for the project and reduced the size and complexity of this ESTCP Demonstration. Many of the fieldwork issues that are normally addressed in the ESTCP Demonstration Plan were covered in the original work plans for the regulatory projects at each site that were included as Appendices to the two Demonstration Plans that were submitted for this project. In addition to validating the performance of this forensic approach, this demonstration also provided typical cost information on conducting these forensic studies. This included costs of conducting these types of forensic

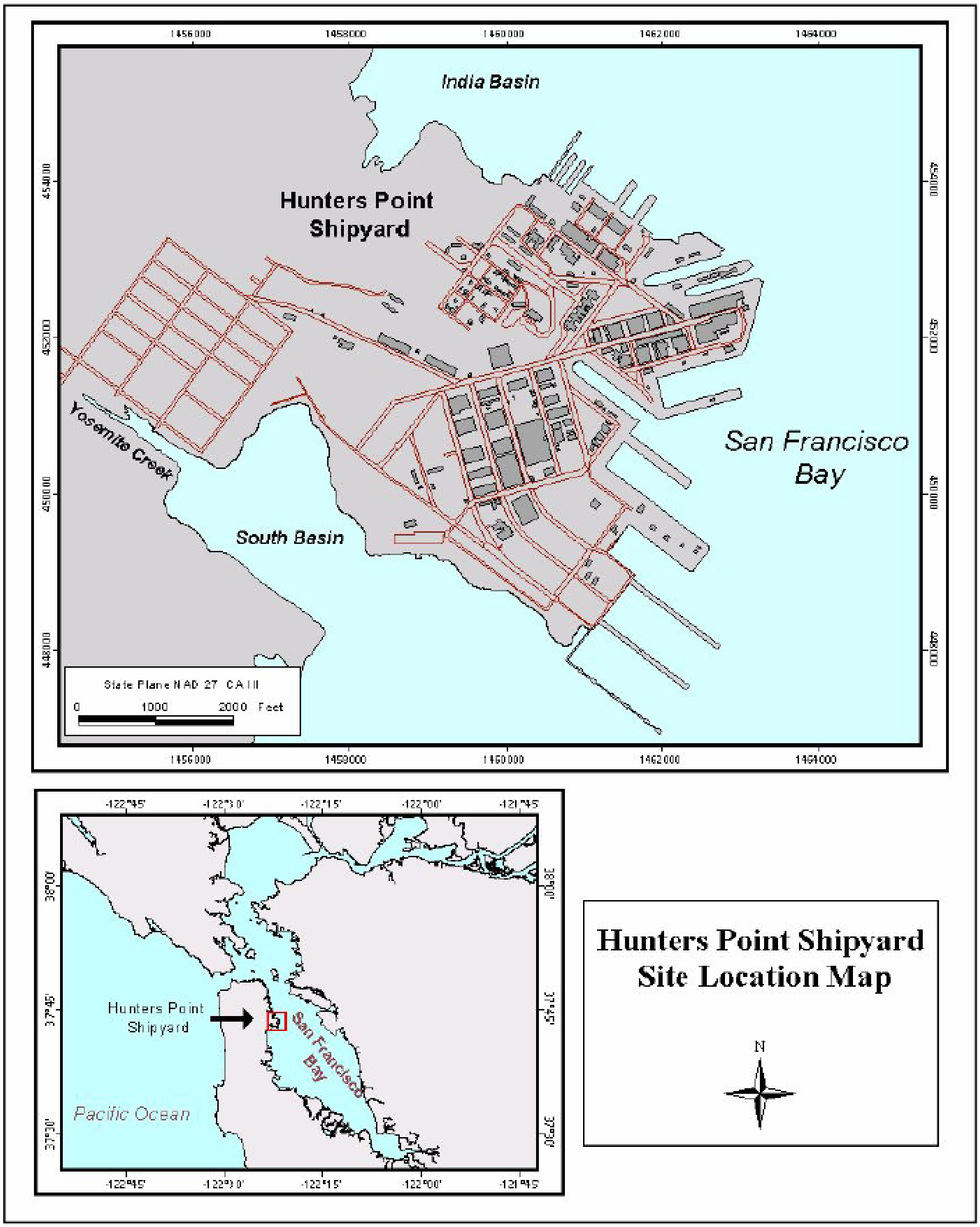


Figure 1 Hunters Point Shipyard (HPS) location map showing South Basin area where cores for this study are located.

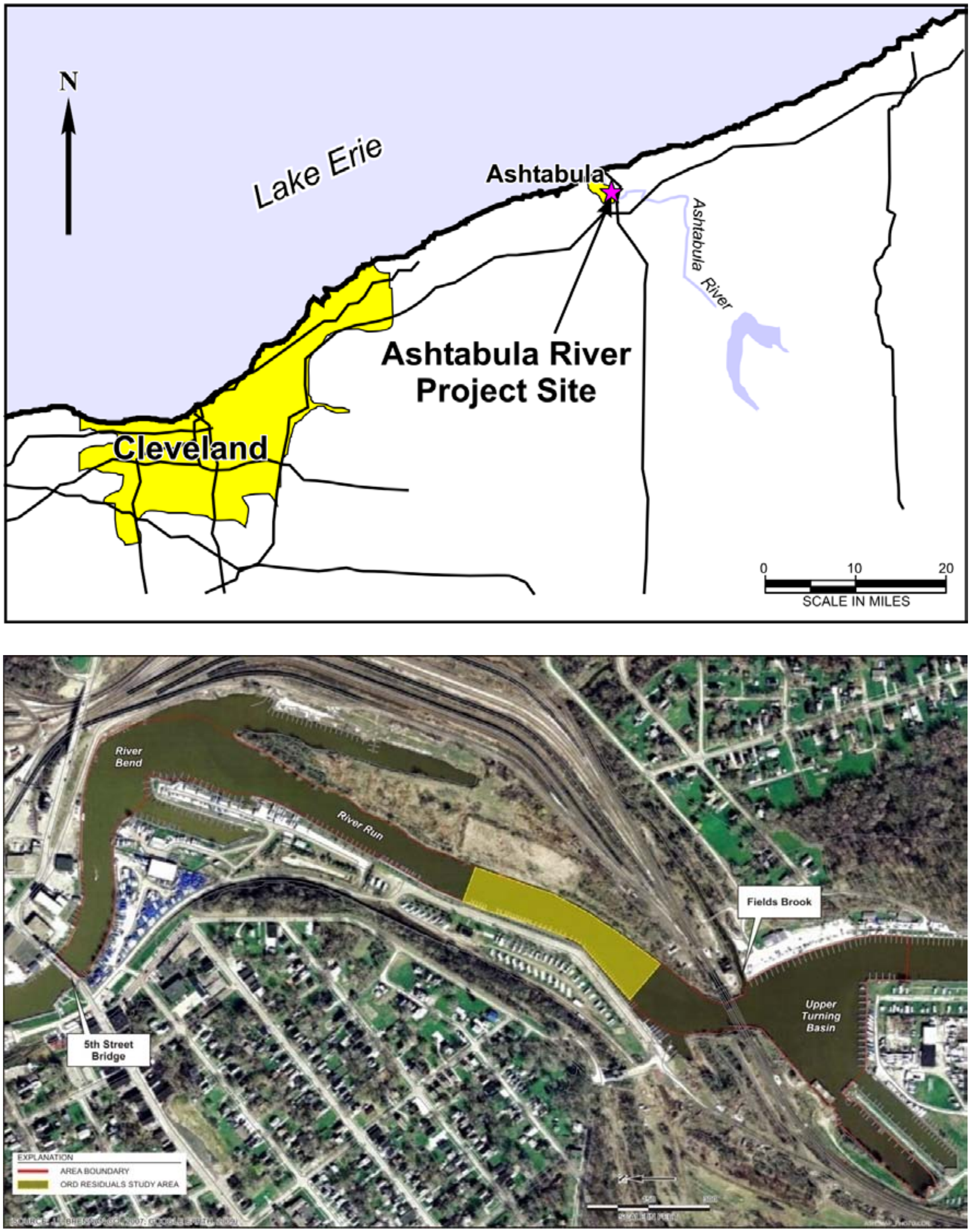


Figure 2 Ashtabula River Dredge site with highlighted EPA ORD study area where cores used in this study originate (note aerial photo is rotated so north is to the left).

approaches as a stand alone project, as well as leveraging them with typical regulatory projects as was done here. The main objective is to demonstrate and validate a PCB forensics approach and provide an acceptable alternative method to apportion remedial costs among potential responsible parties (PRPs).

This report is formatted into nine sections. Section 1 contains an overview of the project and describes the overall objectives. Section 2 provides a description of the technology to be demonstrated in this ESTCP project. Section 3 introduces the performance objectives that are evaluated using specific metrics in Section 6. Section 4 provides a summary of demonstration sites which was taken mostly from existing regulatory documents. Section 5 provides an overview of the six step Integrated Forensics Approach that was applied at the two demonstration sites, with sections for how each step should be applied at forensic study sites. Section 6 contains the details of the performance assessment using the metrics that were introduced in Section 3. Section 7 contains a cost assessment of the technology, both as a stand alone forensics study and as a more cost-effective additional study leveraged with existing regulatory studies as was done for this demonstration. Section 8 discusses some implementation issues (“lessons learned”) and Section 9 contains the report references. There are also several appendices which contain contact information and the PCB data that were used for this study. This includes a full listing of the RSC and ACF data as well as the final solutions for the PCB sources using one type of receptor model at both sites. Additional guidance on actually performing a fingerprinting study at a site can be found in a companion user’s guide on the Navy’s SPAWAR website (http://environ.spawar.navy.mil/Projects/PCB_Fingerprinting).

1.1 BACKGROUND

Sediments are often considered the ultimate sink for contaminants in aquatic settings. Once in the sediments, however, contaminants may be reintroduced into the overlying water column or the biological community by a number of physical, chemical, and/or biological processes. Determining the original source of contamination to a heterogeneous matrix such as sediments is a requirement for both Clean-up and Compliance programs within the military. In recognition of this requirement, the approach more fully described in Section 5 of this ESTCP final report includes the combined use of rapid field analytical technologies to map sediment contaminant plumes and advanced chemical fingerprinting on a subset of samples to identify sources. This provides a cost-effective and technically advanced and defensible approach to characterizing the PCB contamination, and its sources. The current alternative approach without a forensics study merely assumes the most visible landholder (often a DoD facility) closest to the sediment contamination is responsible. Environmental forensic studies that allow this type of fingerprinting in sediments are fairly mature for PAH contaminated sites (Stout et al., 2003; and references therein), but less common for other contaminants. PCB fingerprinting is particularly challenging because PCBs do not “weather” merely in accordance with molecular weight, but also must consider volatility and solubility characteristics of the PCB congeners, and other abiotic and biotic PCB environmental degradation and transformation processes (e.g., microbial dechlorination) that are very complex (Johnson et al., 2006). Bioaccumulating contaminants such as PCBs are becoming a growing concern at DoD sites due to the recognition that past contamination in sediments may represent a continuing source of contamination to aquatic food chains, and PCBs are frequently a driver in contaminated sediment issues such as total maximum daily loads (TMDLs). Human and ecological health risks due to consumption of fish are a major issue at many DoD sites with PCB contamination. Delineating and apportioning the PCB sources in the contaminated sediment is therefore an important concern in these industrial settings where the DoD may represent one of multiple potential PCB sources.

The objective of combining RSC with ACF in an Integrated Forensics Approach is to cost-effectively maximize the benefits of each method and to help offset the limitations of each method. For example, RSC provides a cost-effective technique for spatial (and perhaps temporal with core data) coverage, allowing chemical gradients to be determined for initial indications of potential sources. However, it only provides total Aroclor PCB data and does not allow individual congeners to be determined that are required for actually fingerprinting sources. ACF normally requires specialty analyses beyond the scope of normal regulatory requirements that require the services of high quality commercial laboratories. For example, in the case of PCBs, many regulatory programs only require that the concentrations for total Aroclors or maybe the 18 NOAA Status and Trends congeners be determined and reported. However, ACF for PCBs often requires that up to 100 PCB congeners be determined at a higher analytical cost. Therefore this project will demonstrate a cost effective and technically defensible methodology to fingerprint PCB sources in DoD sediments using both RSC and ACF together. This methodology uses a larger number of relatively low cost RSC analyses to map contaminant gradients followed by a subset of samples for ACF analyses with advance statistical analyses to actually differentiate source compositions and their relative contributions to the impacted sediments.

1.2 OBJECTIVE OF THE DEMONSTRATION

We demonstrate an integrated approach to fingerprint sediment polychlorinated biphenyl (PCB) contamination that combines sediment screening technologies on a large number of field samples followed by detailed PCB congener analysis in conjunction with advanced chemical fingerprinting data interpretation on a subset of selected laboratory samples to identify sources. The technology to be demonstrated includes these two technology components: 1) Rapid sediment characterization (RSC) technologies that provide for wide spatial and temporal coverage to delineate sediment contaminant gradients and semi-quantitative characterization in a cost effective manner; and 2) advanced chemical fingerprinting (ACF) on a selected subset of samples to delineate sources. Advanced chemical fingerprinting includes both advanced laboratory chemical analysis of samples, and the application of sophisticated data analysis and interpretation methods.

The combined use of RSC and ACF, however, are only two steps in the overall Integrated Forensics Approach that is modified from our earlier work for PAH fingerprinting (Stout et al., 2003). The overall sequence of steps, or tasks, that will be employed include (1) evaluation of the site's potential as a demonstration site, (2) development of a conceptual site model (CSM), (3) development and implementation of a defensible study design, (4) demonstration of rapid sediment characterization (RSC) screening, (5) demonstration of advanced chemical fingerprinting (ACF), and, finally, (6) synthesis and presentation of the results in a final report. In summary, the objective for the ESTCP demonstration will be to complete these six steps:

1) Selection of an appropriate site of a PCB forensics study. For this ESTCP project, we have selected two different types of sites to serve as case studies. The Hunters Point Shipyard serves as a typical example of a sediment site that is in the regulatory process with potential remediation requiring knowledge of PCB sources. And the Ashtabula River site which serves as an example of a typical dredge site where multiple upstream sources are investigated.
2) Development of a CSM. Since both sites originally planned to use fingerprinting to help determine PCB sources to their site, much of this step already exists in the regulatory documents. The regulatory project CSM can be modified to develop the forensic questions that will be addressed by the fingerprinting study.
3) As part of the regulatory process at both sites, a sampling plan was developed that included collection of RSC and ACF data. The regulatory projects included fingerprinting efforts as a leveraged part of the study designs, so this allowed for a cost effective forensics study at each site.
4) RSC samples were analyzed at both Hunters Point Shipyard (in 50 cores with 3 to 15 depth horizons) and Ashtabula River (in 30 cores with 7 to 15 depth horizons) to develop 3D maps for contaminant volumes and select a subset of samples for full laboratory analyses for ACF. A complete list of RSC results is presented in tables found in the Appendices.
5) ACF chemical analyses were run on both Hunters Point Shipyard (over 100 samples) and Ashtabula River (over 300 samples), followed by a number of statistical methods to delineate PCB sources. The Appendices contain a full listing of ACF chemical analyses as well as the final PCB source determinations for both sites. At Hunters Point Shipyard we found three PCB source patterns and at Ashtabula River there were four PCB source patterns.
6) Results from both sites are presented in this report using a number of different methodologies as part of this ESTCP demonstration. Experienced users can view the multivariate statistical results from the ACF analyses in Section 5.5, and those with less interest in the actual "mechanics" of the statistical analyses can view the spatial presentations of the results in Sections 5.4 and 5.6.

This six step process is developed more fully in Section 5 where it is applied at both the demonstration sites. That section contains a general overview of the above six steps and how they are applied at each of the demonstration sites. Figure 26 in Section 8 "Implementation Issues" shows the six step process in flowchart form, but cautions that the process may actually be implemented in a more iterative fashion at many sites.

1.3 REGULATORY DRIVERS

Understanding the source(s) of contaminants to sediment in industrial settings is a prerequisite to implementing any proposed sediment remedial options under Clean-up programs (U.S. EPA, 2005). This is due to the fact that the sources must be controlled prior to remedial efforts to ensure that recontamination can be avoided. An additional reason for source identification includes ensuring that costs of any dredging or other remedial efforts can be fairly allocated among multiple principle responsible parties (PRPs). In some instances, elevated levels of polychlorinated biphenyls (PCBs) in sediment have led to impairment designations requiring the development of total maximum daily loads (TMDLs) and subsequent waste load allocations under state and federal Compliance programs. As a result, development of site-specific forensic investigations and TMDLs are closely linked. The need to develop these types of TMDLs also requires the development and use of a forensics approach to fingerprint contaminant sources so that loads can be allocated.

2 TECHNOLOGY

Unraveling the complexity of co-mingled or overlapping sources of PCB contamination in sediments requires good spatial (and perhaps temporal) coverage of the impacted sediments and a precise chemical characterization of the congener composition of the impacted sediments. These two requirements can be cost-effectively achieved through the combination of the following:

1. Rapid sediment characterization (RSC) of a large number of sediment samples to identify contaminant trends, 'hotspots,' and key samples using fast, semi-quantitative, and typically field-deployed methods;

2. Advanced Chemical Fingerprinting (ACF) of a selected subset of sediment samples to recognize and unravel distinct source "fingerprints" using more advanced laboratory and data analysis methods.

The objective of combining RSC with ACF is to cost-effectively maximize the benefits of each method and to help offset the limitations of each method. For example, RSC provides a cost-effective technique for spatial (and perhaps temporal with core data) coverage, allowing chemical gradients to be determined for initial indications of potential sources. However, it only provides total PCB values and does not allow individual congeners to be determined that may be required for actually fingerprinting sources. ACF normally requires specialty analyses beyond the scope of normal regulatory requirements which require the services of high quality commercial laboratories. In the case of PCBs, many regulatory programs only require the concentrations for total PCBs as Aroclors or maybe the 18 major PCB congeners from the NOAA Status and Trend Program be determined and reported. However, ACF of PCBs often requires that approximately 50-100 PCB congeners be determined at a higher analytical cost to be able to reliably interpret the data and differentiate congener compositional patterns that represent original source patterns versus later alteration patterns.

2.1 TECHNOLOGY DESCRIPTION

The technology in the Integrated Forensics Approach includes two parts, sediment screening technology to map PCB contamination and advanced chemical fingerprinting to identify PCB sources. These are combined into a forensics approach to cost effectively differentiate and identify multiple sources in an industrial setting. Both analytical chemistry components are modified from standard EPA methods, but their integration and use together with innovative data analysis methods in a forensics study are novel and need demonstration and validation using case studies to allow for future use.

<u>Rapid Screening Characterization (RSC)</u>. RSC of semi-volatile organics can be conducted using commercially available immunoassay test kits as well as other methods (http://web.ead.anl.gov/ecorisk/issue/pdf/rsc.pdf). The techniques for the RSC of PCB in sediments have been adapted from methods developed for use in soils. The modifications include dewatering of the sediment and extending the calibration range to reach lower detection

limits than standard soil applications. Sample preparation for RSC can be more or less involved depending on the objectives of the project, and may even approach those for standard laboratory methods. For many applications, however, the more basic preparation methods will still meet the project needs and are usually selected so this initial step in the procedure can be conducted in a cost effective and timely manner. The dewatered sediment is extracted using an organic solvent (e.g., methanol) and analysis of the extract is then conducted by immunoassay techniques. In the case of the more quantitative immunoassays, the extract is treated with specific antibodies that promote a color change depending upon PCB concentration, which is measured against PCB standards with a solution-calibrated spectrophotometer. All of these procedures are modifications of the current standard immunoassay methods described under EPA Method 4020 (Screening for PCBs by immunoassay) that have been developed at SPAWAR to work on the wet, organic rich matrix found in many sediments. Although soil detection limits are often quoted to be 500 ppb, these limits can be pushed down to 50-100 ppb when limited site specific matrix interferences are present.

Since every site is different the manner in which RSC is used to select the ACF samples will be site specific and details may change depending on the site objectives. At our first demonstration site at Hunters Point Shipyard, we have a fairly simple case where there are two source areas (one to the west by the creek and one to the east by the former landfill) that appear to contribute PCBs that were distributed into a depositional embayment. Generally samples for ACF should be selected to cover the horizontal and vertical areas of interest, as well as covering the concentration ranges seen in the RSC data. Areas of high concentration are often indicative of potential source areas so they will be likely candidates for selection of ACF samples. And many lower concentration areas will be of interest to show how the potential sources are mixing over a geographic area of interest. At the Ashtabula River dredge site, we have a similar situation where there are two source areas (one to the west by Jacks Marine and one to the east by Fields Brook) that appear to contribute PCBs that mix downstream in the dredge footprint area. If this were a DoD dredge site, the RSC data could have been used to select a subset of ACF samples as described above. However, the EPA ORD researchers chose to measure all samples for ACF since they were interested in fingerprinting residual material left behind following the dredge operation. An objective of the ORD research team was to evaluate the use of RSC to screen sediment areas for further forensic study. The RSC data were also used to map initial PCB concentrations and allow the laboratory to group samples by concentration to run in particular dilution batches. Additional discussion of how RSC can be used to select ACF samples will be found in Section 5.4.

<u>Advanced Chemical Fingerprinting (ACF)</u>. The need for ACF methodology rests with the limitations of standard EPA methods (e.g., SW-846) to meet the objectives of a contaminant source study (Stout et al., 2003). The fundamental shortcoming with virtually every conventional EPA SW-846 method of analysis when used for measuring contaminants, particularly organic contaminants, in sediments and other media is a lack of detailed measurements of those diagnostic chemicals known to comprise these complex mixtures, as well as lack of sensitivity to accurately and consistently measure a large suite of relevant contaminants. Instead, these methods are focused on selected compounds identified as ‘priority pollutants’, which are quite pervasive in contaminant mixtures and generally insufficient to distinguish different sources of otherwise similar contaminants. For PCBs, total Aroclors are

often the only measurements made, or at best a limited number of PCB congeners[1] are also measured (generally no more than 18-20 congeners). Because of these limitations, chemists at some environmental laboratories have modified the standard EPA methods to yield the data necessary (specific diagnostic congeners) to support detailed contaminant source investigations. With respect to these modified methods, it is important to note that the EPA SW-846 guidelines allow flexibility in their deployment of the 'standard' analytical methods. While most commercial laboratories are not interested in modifying the standard methods, some laboratories have the experience and flexibility to modify standard methods in order to meet project goals without violating the standard method guidelines. This means that when properly planned, most data generated by ACF methods can be used to support both contaminant source studies and conventional contaminant concentration based regulatory assessment programs. In other words, the ACF data can generally be considered defensible and accepted by regulatory agencies if the data quality objectives are clearly defined and met by the effort. In addition, it should be emphasized that extending the standard priority pollutant methods to include data for use in fingerprinting typically does not necessarily appreciably affect the standard analysis costs. The ACF techniques available for the assessment of semi-volatile organic contaminants in sediments (e.g., PCBs) are based on sample analysis using high-resolution gas chromatography, usually operated in conjunction with compound-specific detectors (e.g., ECD or MS). Some laboratories have in recent years developed state-of-the-art PCB analytical methods using high-resolution gas chromatography/low-resolution mass spectrometry operating in selected ion monitoring mode (HRGC/LRM-SIM), that are both highly cost effective *and* provide detailed, high-quality data (Durell and Seavey, 2000). The methods employ components of EPA Method 680 (HRGC/LRMS PCB homologue and total PCB method) and Method 1668a (HRGC/HRMS PCB congener method). The base methods have been modified for the analysis of more than 120 PCB congeners; the congeners typically detected in PCB formulations and environmental samples and a large number of non-standard environmentally important and diagnostic PCB congeners that will permit data analysis for differentiating potential sources. Typically detection limits for individual congeners range from 0.1 to 0.5 ppb when no site specific matrix interferences are present.

The data analysis for differentiating contaminant composition, and thus potential sources and source differences, can include, but may not be limited to, the following:

- Chromatographic and bar chart representation (often referred to as bar chart "fingerprints") of the PCB homologue and/or PCB congener concentrations and composition of a sample, and reference standards (e.g., source material)
- Diagnostic PCB congener ratio and double ratio crossplots, to separate out similarity and dissimilarity in the chemical composition of samples and sources.
- Decreases in relative concentrations of PCB congeners that are particularly susceptible to dechlorination, and increases in concentrations of dechlorination product PCB congeners.
- Hierarchical cluster analysis (HCA) and principal component analysis (PCA) for the classification of samples, and source materials, with similar and dissimilar PCB composition.

[1] PCB congeners are the individual compounds that comprise a PCB Aroclor formulation. There are a total of 209 possible PCB congeners. Each of the commercial Aroclors included about 50-100 PCB congeners, although only about 125 congeners were ever included in any of the Aroclor formulations.

- Multivariate receptor models such as polytopic vector analysis (PVA), positive matrix factorization (PMF), extended self-modeling curve resolution (UNMIX) and alternating least squares (ALS) for additional analysis of similarity, dissimilarity, and potential source linkages.

As stated above in discussing the RSC analyses, there are many site specific differences that make it impossible to describe a single method to explore the data to determine PCB sources. No single data interpretation method should be, or will be, by itself used as "the" single forensic determination method. These are examples of several data analysis methods that can be used, and when taken together the "lines of evidence" help classify samples of contaminant similarity and dissimilarity, including association with sources.

PCA and HCA are two types of exploratory data analyses tools that are generally used to investigate the PCB datasets. Exploratory algorithms in each are designed to reduce large and complex data sets to a suite of best views or visual presentations. PCA and HCA are used as a means to explore the variability among the PCB composition in the samples. Specifically, one form of output of PCA are 2- or 3-dimensional factor score plots in which the principal component scores for each sample is cross-plotted. If a significant portion of the variance in the dataset is accommodated in the first few principal components (PCs), then the Euclidean distances between sample points on such plots (e.g., PC1 *v* PC2 or PC2 *v* PC3) provide a clear measure of their chemical similarity. Samples which visually "cluster" are chemically similar and *vice versa*. Another form of PCA output, factor loading plots, can also be used to determine which individual variables (in our case PCB congeners) are responsible for any visual "clustering" observed. As such, PCA is a useful data analysis and exploration tool. In HCA, distances between pairs of samples (or variables) in a data set are calculated and compared using agglomerative clustering algorithms. When distances between samples are relatively small, this implies that the samples are similar, at least with respect to PCB distributions. Additional multivariate approaches use modified least squares procedures to generate mixing proportions based on an assumed source profile matrix (e.g. chemical mass balance methods – Hopke, et al., 2006). Such methods work best with a limited number of relatively well known sources. In contrast, self-training receptor modeling methods are better suited to those situations where one cannot (or wishes not to) assume the contributing fingerprints. These methods include PMF, PVA, UNMIX, and ALS (see Johnson, et al., 2007 for a comparison of these methods). These methods differ in their mathematical detail, but are similar in that they do not require *a priori* source profiles. This is in fact their strength. These methods try to minimize assumptions, and are data-driven to produce proposed source profiles.

Our Integrated Forensics Approach is demonstrated in Section 5, with the discussion of ACF techniques covered in detail in Section 5.5. We start with the simple PCB congener compositional bar charts ("fingerprints"), look at congener cross-plots, and then show the more advanced multivariate techniques, and let the data dictate how to proceed. In addition to the multivariate approaches one can often gain significant understanding of PCB transformation and source contamination by closely analyzing specific diagnostic PCB congeners, including ratios of concentrations of labile dechlorination and more persistent stable congeners. Along with all of this, it is very important to incorporate and apply knowledge of PCB congener chemistry and environmental processes to the behavior of PCBs; statistical data analyses alone cannot replace a thorough understanding of PCB chemistry and the combined "weight of evidence" approach is needed for successful PCB forensic applications.

2.2 ADVANTAGES AND LIMITATIONS OF THE TECHNOLOGY

Although fingerprinting of polycyclic aromatic hydrocarbons (PAH) is more mature (Stout et al, 2003), work on PCB fingerprinting is rapidly developing and the need for reliable PCB fingerprinting is clearly increasing. Some of the diagnostic principles that are used for PAH fingerprinting can be applied to PCB fingerprinting, but PCB mixtures are vastly different from PAH/petroleum mixtures. PCBs also behave quite differently in the environment and many factors need to be considered in addition to the most common weathering factors; interpretation methods need to be modified and new data interpretation and analysis considerations need to be developed (Johnson et al., 2006). Emerging PCB fingerprinting techniques have successfully been applied at a few sites in the US (Johnson et al., 2000; Durell et al., 2001; Emsbo-Mattingly and Durell, 2003; Magar et al., 2005; Johnson et al., 2007), but there is a need to more fully develop, demonstrate, and validate the utility of fingerprinting PCB contamination. Additional discussions and comparisons for some analytical techniques (both RSC and ACF) are presented in Section 8, and comparisons for some statistical interpretation techniques (receptor models) are shown in Section 6.

A difference between many of these other previous PCB forensics sites and our demonstration sites is a matter of scale. Much of the previous work has focused on regional scale problems and not the finer scale issues seen at individual DoD sites. DoD sites are typically on the size of acres, whereas other previous work has concentrated on much larger scales (hundreds of miles in San Francisco Bay (Johnson et al., 2000) or the Delaware River TMDL (Rodenburg et al., 2010)). Our demonstration sites were selected to represent the scale of typical DoD sites and address the types of questions posed at DoD sites. The fingerprinting used in these other previous studies was able to determine what the sources were (Aroclor 1248 or 1260), but not the actual location of the sources. Determining the "where" as well as the "what" is why we have RSC technologies integrated into our approach, and why we chose to deal with smaller scale or local source concerns. Local sources also have higher concentration gradients (measured in ppm versus ppb levels in surrounding sediments) because the impacted sediments are closer to these local sources and we can generate contour maps with concentration gradients that help indicate where sources are located. But if total PCB concentrations fall below 100 ppb, many individual congener values will fall below typical detection levels for laboratory methods (around 1 ppb) so the multivariate interpretation techniques will tend to develop more uncertainty in deriving PCB sources (datasets with too many non-detects are not useful for fingerprinting). Additional site history (other upland/upstream studies that provide contaminant source information, sediment transport information to suggest how sediments and contaminants are transported around the site, etc.) will also usually be required in addition to RSC and ACF data to help pinpoint the location of sources and additional PRPs. But if the DoD has PCB impacted sediments and needs information on the PCB sources that have contributed to their sediments, the Integrated Forensics Approach described here in this report can provide a technically defensible technique to identify these potential sources.

3 PERFORMANCE OBJECTIVES

Performance objectives are a critical component of the ESTCP DEM/VAL project. They provide the basis for evaluating the performance and reliability of the technology. Performance objectives are the primary criteria established by the investigator for evaluating the innovative technology. Meeting these performance objectives is essential for successful demonstration and validation of the technology. Performance objectives are presented in two ways, ***qualitative and quantitative***, and are summarized in Table 1 below.

Table 1 Performance Objectives

Performance Objective	**Data Requirements**	**Success Criteria**
Quantitative		
RSC and ACF EPA PARCC parameters	Standard QA/QC from regulatory project	See individual criteria in text below
Receptor model precision/accuracy	Artificial datasets with varying errors and outliers	Ability to reproduce original mixtures
Qualitative		
Ease of use	Feedback on use/time	User evaluations

3.1 PERFORMANCE OBJECTIVE 1: RSC/ACF PARCC Parameters

Both RSC and ACF measurements are modifications of standard EPA methods, and both can be evaluated by similar standard methods often employed by commercial laboratories. These methods include the evaluation of data quality objectives (DQO) that can be characterized by five indicators of data quality referred to as the PARCC parameters: precision, accuracy, representativeness, completeness, and comparability. A comprehensive Work Plan was developed for both demonstration sites (see references in Battelle 2007; 2010). This included detailed data quality objectives (the PARCC parameters discussed below) that were used for the generation of all of the data that was used in this demonstration and therefore serve as appropriate performance objectives.

3.1.1 Data Requirements

High quality, well-documented measurement results are essential for both the RSC and ACF analyses, and to meet the purpose and objectives of this demonstration. Therefore, the PARCC parameters, which can be used as indicators of data quality, are used to determine the quality of data generated for this demonstration. The specific measures used for determination of the PARCC parameters are discussed more fully and specific quantitative data quality objectives are summarized in Section 6. The specific types of DQO samples that can be used to evaluate precision and accuracy vary, with additional measures being used for the other PARCC parameters. Precision refers to the degree of mutual agreement among individual measurements and provides an estimate of random error. Traditionally, precision of a technology is assessed with the use of field duplicate samples and the analysis of laboratory replicates. Field duplicate samples provide precision data for sample collection, field preparation, handling, and transportation procedures. Replicate sample measurements provide data for the analytical precision of the specific technology. Accuracy refers to the difference between a sample result and the reference or true value for the sample. Standard Reference Materials (SRMs) will be analyzed with each set of demonstration samples to demonstrate accuracy. SRMs from the National Institute of Standards (NIST) or internal laboratory SRMs that have been calibrated against these NIST SRMs are generally selected to match site characteristics (PCB concentrations, Total Organic Carbon content, etc.). Alternatively, or in addition, accuracy may be determined through the analysis of laboratory control and /or field matrix samples spiked with the target analytes of interest, and the determination of the concentration and/or recovery of the target analytes. Representativeness refers to the degree to which the data accurately and precisely represent the conditions or characteristics of the parameter represented by the data. If PCB concentrations are measured at sufficient numbers around the site to allow variograms and contour maps to be generated, this parameter is typically satisfied. Completeness refers to the amount of data collected from a measurement process compared to the amount that was expected to be obtained. Obtaining high quality data with few non-detect measurements allow this parameter to be met. Comparability refers to the confidence with which one dataset can be compared to another. This is judged by looking at all the previous discussed quality assurance data among the different datasets collected at different times and measured by different laboratories.

3.1.2 Success/Failure

Section 6.1.1 contains the results of the performance assessment for the RSC data. Data successfully passed quantitative criteria for the measures of precision and accuracy, and successfully passed the more qualitative criteria for the other PARCC parameters. Section 6.1.2 contains the results of the performance assessment for the ACF congener data. Data successfully passed all DQO requirements with tables in Section 6 listing the success rates for the different types of QC samples.

3.2 PERFORMANCE OBJECTIVE 2: Data Analysis Precision and Accuracy

Multiple levels of advanced statistical analyses are possible to investigate the forensics data. These various techniques use slightly different methods, but basically all generate a solution whereby multivariate sample profiles can be interpreted to generate an estimate of the original source compositions. The simplest approaches use PCB congener compositional profiles, other diagnostic ratio crossplots, or modified least squares procedures to generate mixing proportions based on an assumed source profile matrix (e.g. chemical mass balance methods – Hopke, et al., 2006). Such methods work best with a limited number of relatively well known sources. In contrast, more involved self-training receptor modeling methods are better suited to those situations where one does not assume the contributing source fingerprints. These more involved methods include positive matrix factorization (PMF), polytopic vector analysis (PVA); extended self-modeling curve resolution (UNMIX) and alternating least squares (ALS) (see Johnson, et al., 2007 for more detail on these methods). These methods differ in their mathematical detail, but are similar in that they do not require assumed source profiles.

3.2.1 Data Requirements

Evaluations of the statistical analyses (receptor models) will require artificial datasets that were created by combining data from standard Aroclor formulations (or actual Aroclor mixtures from laboratory analyses) in various combinations. These mixtures have varying amounts of errors added to determine how well the original sources can be resolved. These errors include Gaussian noise to simulate random errors or transcription errors to simulate data entry errors. Many of these statistical analyses are sensitive to outliers, so it is important to include some outliers in these artificial datasets to judge outlier sensitivity. Since these artificial datasets are relatively simple and did not prove a difficult challenge for the tested statistical analyses, we also decided to run a simple intercomparison of several statistical analyses with one of our "real" demonstration datasets (from HPS). The advantage is this represents a real PCB dataset (with typical analytical noise, non-detects, etc.) to more realistically test the performance of multiple receptor models, but the disadvantage is that we have no independent information on the real sources so we can only really judge the comparability of the various models (testing precision rather than accuracy).

3.2.2 Success/Failure

Section 6.2.2 contains the performance assessment done for a group of statistical analyses (receptor models) including ALS, PMF, PVA, and UNMIX. Using two different artificial datasets, all these techniques were successful in returning the original sources that were mixed in the artificial datasets. These techniques also gave comparable results for the real HPS dataset, where all techniques found the same three end-member sources and produced comparable apportionment of these sources across the site. Overall these techniques passed all the performance assessment tests that are presented in Section 6.

3.3 PERFORMANCE OBJECTIVE 3: Qualitative Ease of Use

A survey of three RPMs found multiple contractors who were qualified to perform a PCB forensics study in sediments. The most important aspects were finding a high quality laboratory for PCB analyses and also people experienced with receptor model applications for PCBs in sediments. One interesting suggestion was that we provide a performance evaluation dataset, something RPMs could use to test the contractors abilities. They suggested using one of the included datasets in the Appendix to test if contractors could reproduce these same solutions.

4 SITE DESCRIPTION

All the site description information was provided in the "Site Selection Memo" which was previously submitted to the ESTCP office as part of each Demonstration Plan. Much of that information is provided below and is summarized from a greater depth of information available in the original regulatory documents (Battelle, 2007; Battelle, 2010). The main feature that led to the use of both of these sites in this ESTCP project was the availability of previously obtained PCB data. Both sites had measurements for both RSC and ACF already available as part of their regulatory project. At HPS, over 50 cores with up to 15 horizons resulted in over 400 samples being measured for RSC. Using these RSC data about 100 samples were selected for ACF, with the original intention of completing a forensics study following the overall approach outlined in Section 5 of this report. However, after all samples were collected and analytical measurements completed, the regulatory project decided not to complete the actual forensics study. These samples were therefore available for this ESTCP project and provided a large leveraged effort from the Navy that resulted in large cost savings for the ESTCP project (Battelle, 2007). At Ashtabula, 30 cores with up to 15 horizons provided about 350 samples that were run for both RSC and ACF. The EPA research team decided to run all samples for ACF (rather than the typical 10-25% of the RSC samples) because the objectives of their original study were to understand the origins of the sediment residuals left behind following dredging (Battelle, 2010). Although the use of pre-existing data from both sites results in a very cost-effective forensics study, there are some limitations. We had to accept the regulatory project study designs with the number and location of samples that they had chosen. As discussed at the end of Section 5.6, this resulted in a lack of upland/upstream data that could be used to validate the actual source locations for the sources that were found to contribute PCBs to the site sediments. For future forensic studies, it should be a consideration to collect upland/upstream samples for possible confirmation of source locations. This might be done most efficiently in an iterative fashion after initially determining sources and then selecting potential upland/upstream samples based on initial study results.

4.1 SITE LOCATION AND HISTORY

To provide some background on each Demonstration site, the following site history and figures are taken from the regulatory documents from each site. For the HPS site, Battelle provided some basic introductory information in the Feasibility Study (Battelle, 2007):

HPS is a former Navy installation located on a peninsula in the southeast corner of San Francisco, CA (Figure 1). The peninsula is bounded on the north, east, and south by San Francisco Bay and on the west by the Bayview Hunters Point district. HPS comprises about 955 acres, with approximately 457 acres of offshore sediment (Parcel F). From 1945 to 1974, the Navy maintained and repaired ships at HPS. The facility was deactivated in 1974 and remained relatively unused until 1976, when it was leased to Triple A Machine Shop, a private ship repair company. In 1986, the Navy resumed occupancy of HPS. The facility was closed in 1991 under the Defense Base Realignment and Closure Act of 1990 (BRAC) and is in the process of conversion to nonmilitary use.

Historical activities in adjacent upland Parcel E-2 that may have contributed to contamination of sediments in South Basin include filling and disposal activities, residual onshore contamination, and surface runoff. Groundwater discharge was also evaluated as a potential transport pathway of PCBs to South Basin from Parcel E-2, however, the magnitude of PCB release via this pathway is not likely to be significant given the limited extent of PCBs detected in groundwater and their low solubility. A former landfill at Site IR-01/21 in Parcel E-2 (Figure 3) was used from 1958 to 1974 for the disposal of materials such as construction and industrial debris and waste, domestic refuse, sandblast waste, paint sludge, solvents, waste oils, transformers and electrical equipment and other potentially contaminating materials. No records that document landfill contents or disposal practices are available. In the mid-1970s the Navy placed 2 feet of compacted imported fill on top of the landfill and graded the entire site to facilitate storm water drainage. In the 1990s, a sheet pile wall was installed and riprap was placed along the Parcel E-2 shoreline to control the movement of contaminants into South Basin (Figure 3). In 2001, an interim landfill cap was constructed and placed over most of the landfill. The cap consists of a multilayer system of sub-base soil, HDPE membrane, synthetic drainage layer, and topsoil.

South Basin is a shallow embayment on the south side of HPS, with water depths ranging from 6 ft to less than 2 ft. No streams or rivers enter South Basin except for Yosemite Creek, a shallow, tidally-influenced channel with no permanent flow. Circulation in South Basin is restricted and tidal currents are very weak. The basin is open to the southeast, which is the direction of the maximum winds during winter storms. Although the prevailing winds in the area are westerly, the acute storm waves which are responsible for sediment resuspension are generated by southeast storm winds. Yosemite Creek enters South Basin at the southwest corner of HPS. Yosemite Creek is listed as a Site of Concern under the Bay Protection and Toxic Cleanup Program (BPTCP) in 1997. Prior to 1965, three Combined Sewer Outfalls (CSOs) discharged to this area: one at the head of Yosemite Creek, one on the north side of the creek near Griffith Street, and one on the south side near Fitch Street (Figure 3). All wet weather overflows were directed to the CSO at the head of Yosemite Creek after 1965. Contaminants identified during investigations of Yosemite Creek by the City and County of San Francisco (CCSF) included PCBs, polycyclic aromatic hydrocarbons (PAHs), pesticides and metals.

South Basin was originally a marshy, wetland area. Its current configuration largely reflects filling activities that took place from the 1940s to the 1970s. Figure 4 shows the position of the South Basin shoreline in 1946, 1955, 1961, 1965, 1969, and 1975. The shoreline positions were mapped by digitizing historical aerial photographs. The greatest period of land expansion was between 1946 and 1955, in which the northern, western, and southern portions of the basin were filled, forming the areas now occupied by Parcel E-2, Yosemite Creek, and Candlestick Point, respectively. The second largest period of land expansion occurred between 1965 and 1969, in the northern part of South Basin. This fill event formed a slough, apparent in the 1969 (blue) shoreline contour, through the middle of the waste disposal area now known as the Parcel E-2 landfill. By 1975 (brown), the slough had been filled; today's shoreline is virtually the same as the 1975 contour, and therefore is not shown. Between each recorded shoreline, it is uncertain when exactly each fill event occurred. The sources of material used to fill these areas are not documented. The Navy operated the shipyard during the periods of the major filling events. The property was leased to the Triple A Machine Shop after the current shoreline was established (ca. 1975).

For the Ashtabula River Dredge site, Battelle provided the following introductory material in a regulatory report (Battelle 2010):

A joint partnership project was initiated in 2006 between U.S. Environmental Protection Agency's (U.S. EPA) Chicago-based Great Lakes National Program Office (GLNPO) and the U.S. EPA's Office of Research and Development (ORD), National Risk Management Research Laboratory (NRMRL), and the National Exposure Research Laboratory (NERL), hereafter referred to in this Quality Assurance Project Plan (QAPP) as ORD. GLNPO, via its Great Lakes Legacy Act (GLLA) mandate, and ORD, through its research mission, have mutual interests in evaluating the efficacy of environmental dredging. As such, the two organizations have reached a decision to undertake a comprehensive joint monitoring effort on the Ashtabula River Dredging Project, thus forming a partnership that will result in the cleanup of this contaminated stretch of river and extensive sampling and analysis before (Phase 1), during (Phase 2), and after (Phase 3) dredging operations to measure sediment residuals and the impact of said operations and sediment removal on the river ecosystem. However, Phase 2 and 3 studies are being conducted under ORD only, while GLNPO will be offering coordination during the studies.

The remediation of contamination within rivers and other water bodies often involves the dredging of bed-sediment. Dredging, whether used alone or in conjunction with other treatment technologies such as in situ capping or natural recovery, can result in the loss and release of contaminated sediments. These residual sediments (hereafter referred to as 'residuals') can spread from both within dredged areas (near-field) and downstream or offsite (far-field). There are a number of factors that can influence residual levels including: dredging equipment; operator technique; debris; dredging to bedrock; over-dredging; cut lines, slopes, and depths; sediment characteristics; contaminant characteristics and distribution; and the accuracy and resolution of contaminant characterization. Residuals can be categorized as either undredged or dredge-generated. Undredged residuals are the result of missed areas and incomplete characterization. Dredge-generated residuals are released via resuspension, transport and downstream deposition; dredge mixing and immediate deposition; and sloughing.

The Ashtabula River lies in extreme northeast Ohio, flowing into Lake Erie's central basin at the City of Ashtabula (Figure 2). Its drainage basin covers an area of 137 square miles, with 8.9 square miles in western Pennsylvania. Major tributaries include Fields Brook, Hubbard Run, and Ashtabula Creek. The City of Ashtabula, with an estimated population of approximately 21,000 (2000 census), is the only significant urban center in the watershed, with the rest of the drainage basin being predominantly rural and agricultural. There is concentrated industrial development around Fields Brook (east of the Ashtabula River) and east of the Ashtabula River mouth. Sediments in portions of the Ashtabula River are contaminated with a variety of chemicals, including polychlorinated biphenyls (PCBs), the chemicals of potential concern (COPCs) for this project.

Approximately 600,000 cu yd of contaminated sediments are targeted for removal between the Turning Basin at the mouth of Fields Brook and the Fifth Street Bridge. The COPCs in this stretch of the river include PCBs; polycyclic aromatic hydrocarbons (PAHs); hexachlorobenzene; hexachlorobutadiene; metals; and the radionuclides uranium, radium, and thorium. The radionuclides are above background levels but below regulatory criteria. In Phase 1, GLNPO under its GLLA mandate conducted a baseline characterization of the river that included all of these COPCs, while ORD focused only on the PCBs in selected areas of the river (see cores in Figure 5). In Phases 2 and 3 of this dredge residuals research project, ORD will continue to focus on only the PCB inventory in the test zone and selected areas of the river as further defined in subsequent sections of this QAPP.

The PCBs are thought to have originated primarily from Fields Brook, a stream that drains into the Ashtabula River in the area of the upper Turning Basin. Fields Brook has been eliminated as a source of contamination (or re-contamination) of the Ashtabula River. A Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) cleanup of Fields Brook was completed in 2003. A post-cleanup monitoring program is in place to protect against recontamination of Fields Brook as well as the Ashtabula River.

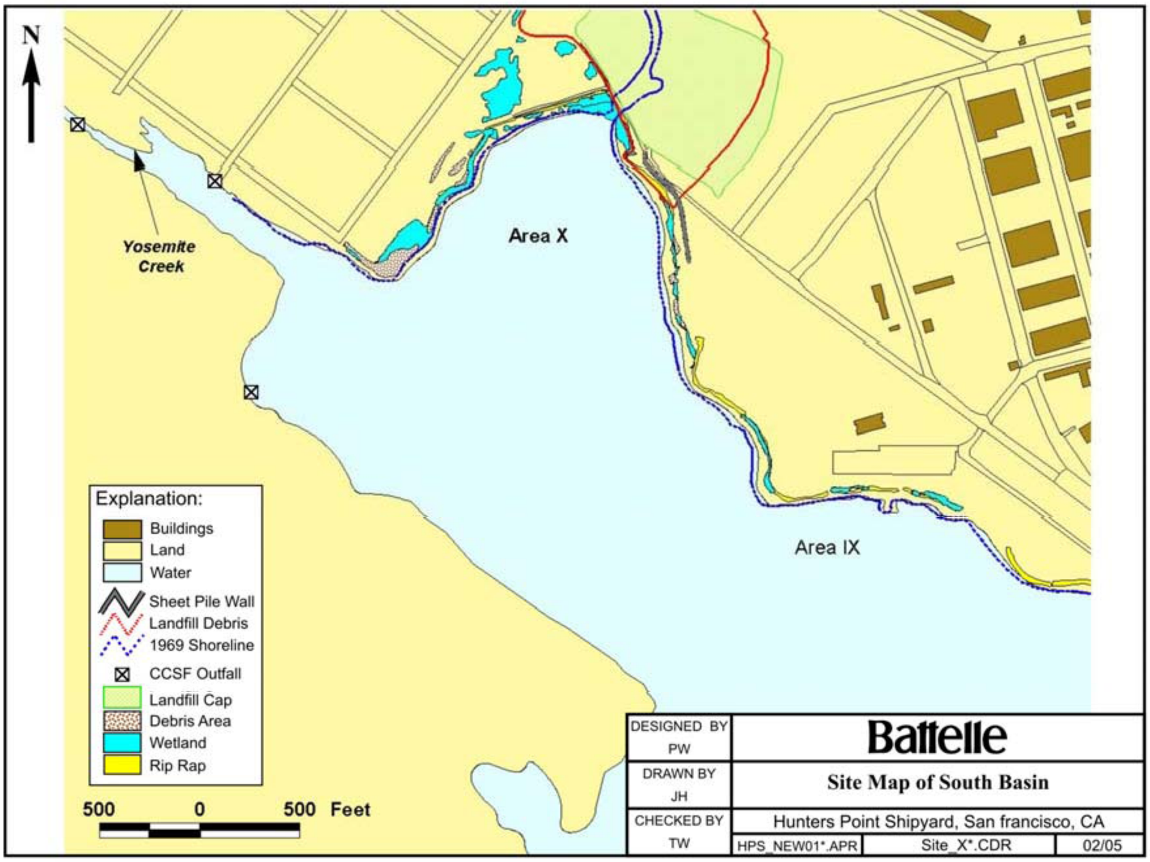


Figure 3. Shoreline Features at Hunters Point South Basin adjacent to Parcel F offshore sediments. Note former landfill in Parcel E-2 to the north and city outfalls to the west.

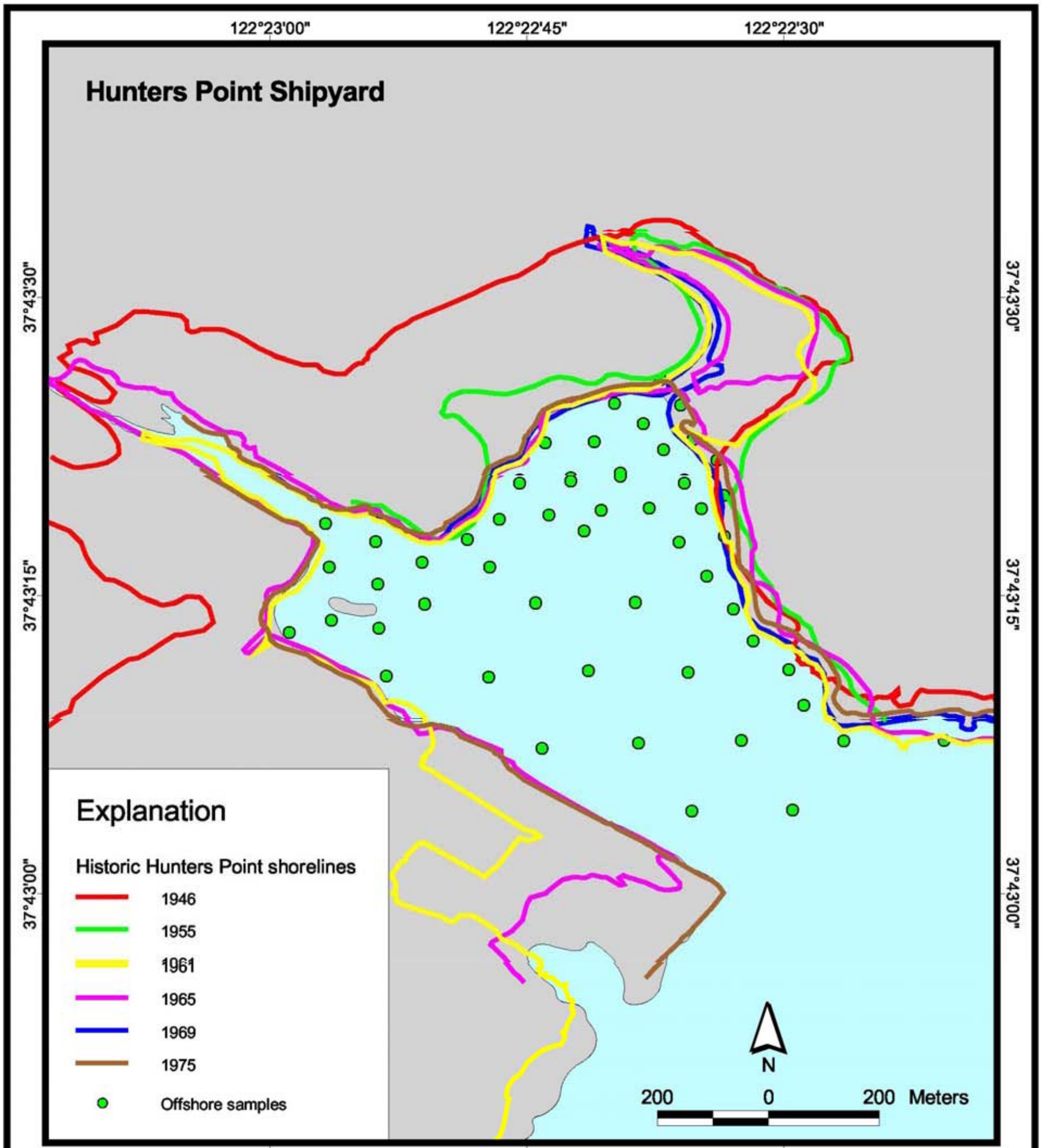


Figure 4. Shoreline Evolution in South Basin and Offshore Core Locations

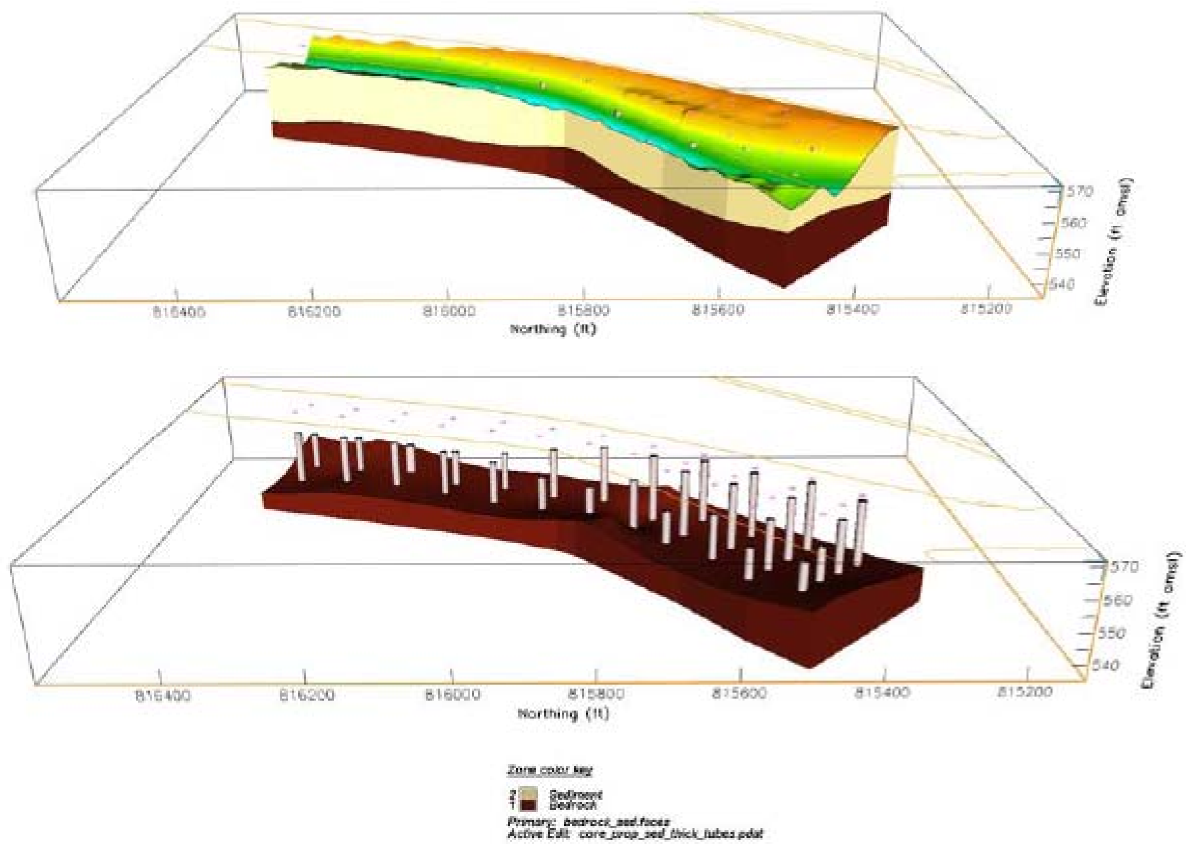


Figure 5. Ashtabula River Dredge map showing bedrock and soft sediments with core locations. See Figure 2 for location of cores in main body of Ashtabula River.

4.2 CONTAMINANT DISTRIBUTION

To show the Total PCB contaminant distribution, surface contour maps from previous data not included in this project are shown for HPS (Figures 6). This is the type of data that might be available to help decide whether the site is a likely candidate for a forensics study (see Step 1 of Integrated Forensics Approach in Section 5.1) At HPS, higher concentrations are present to the northeast by a former landfill and to the west by Yosemite Creek which contains multiple outfalls. These two separate areas of higher concentrations might suggest two different source areas to the South Basin sediments. At Ashtabula (Figure 7), a higher energy river setting provides a less clear picture of source locations from surface concentration gradients. Historical information notes former PCB sources up Fields Brook have been remediated so there does not appear to be any indication of surface gradients (current sources) from that area. There is an indication of increasing surface concentration to the west of Jacks Marine so additional samples taken in those drainage areas (JAM1-3 samples) do show higher concentrations. And since many historic sources were more active, core data showing 3D concentration gradients often show a better visualization of source locations (see 3D concentration maps in Section 5.4).

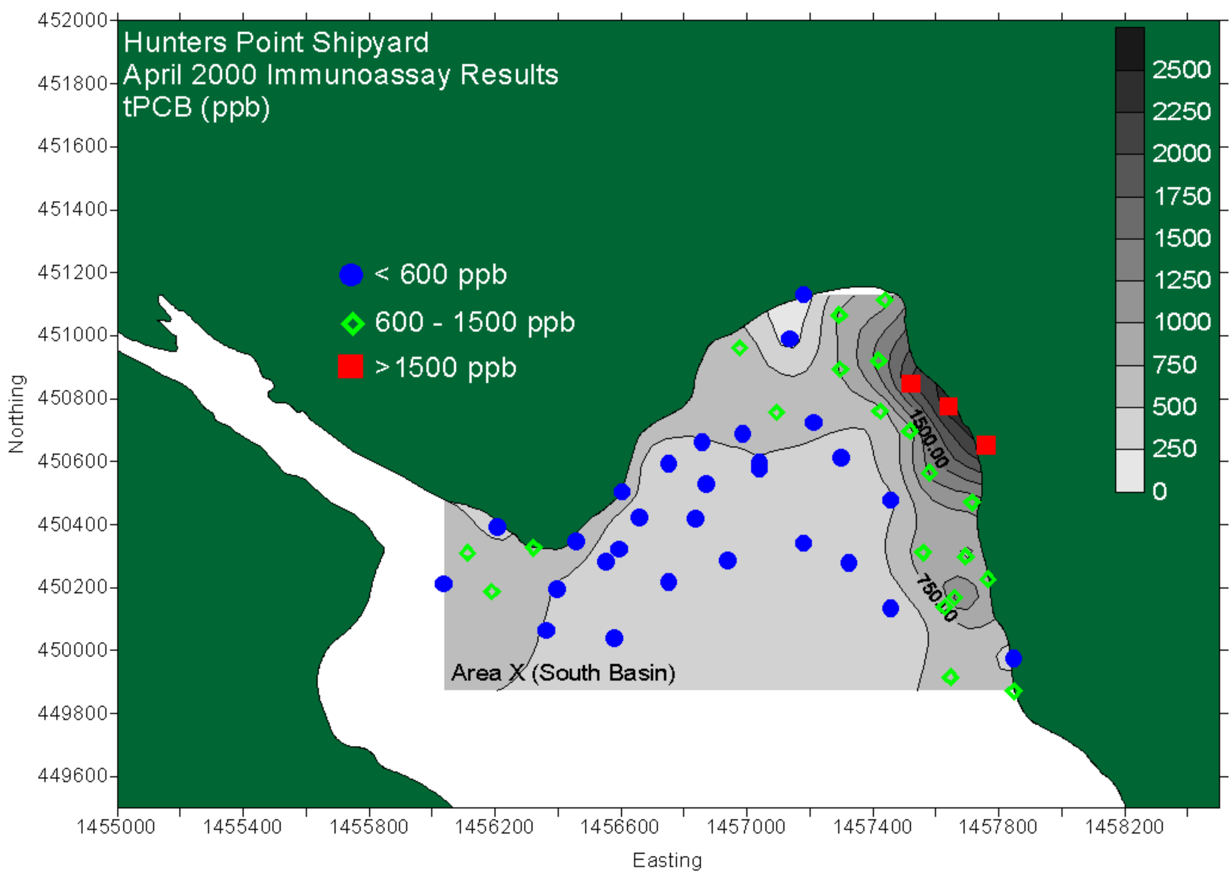


Figure 6. PCB contour map in surface sediments in South Basin at HPS.

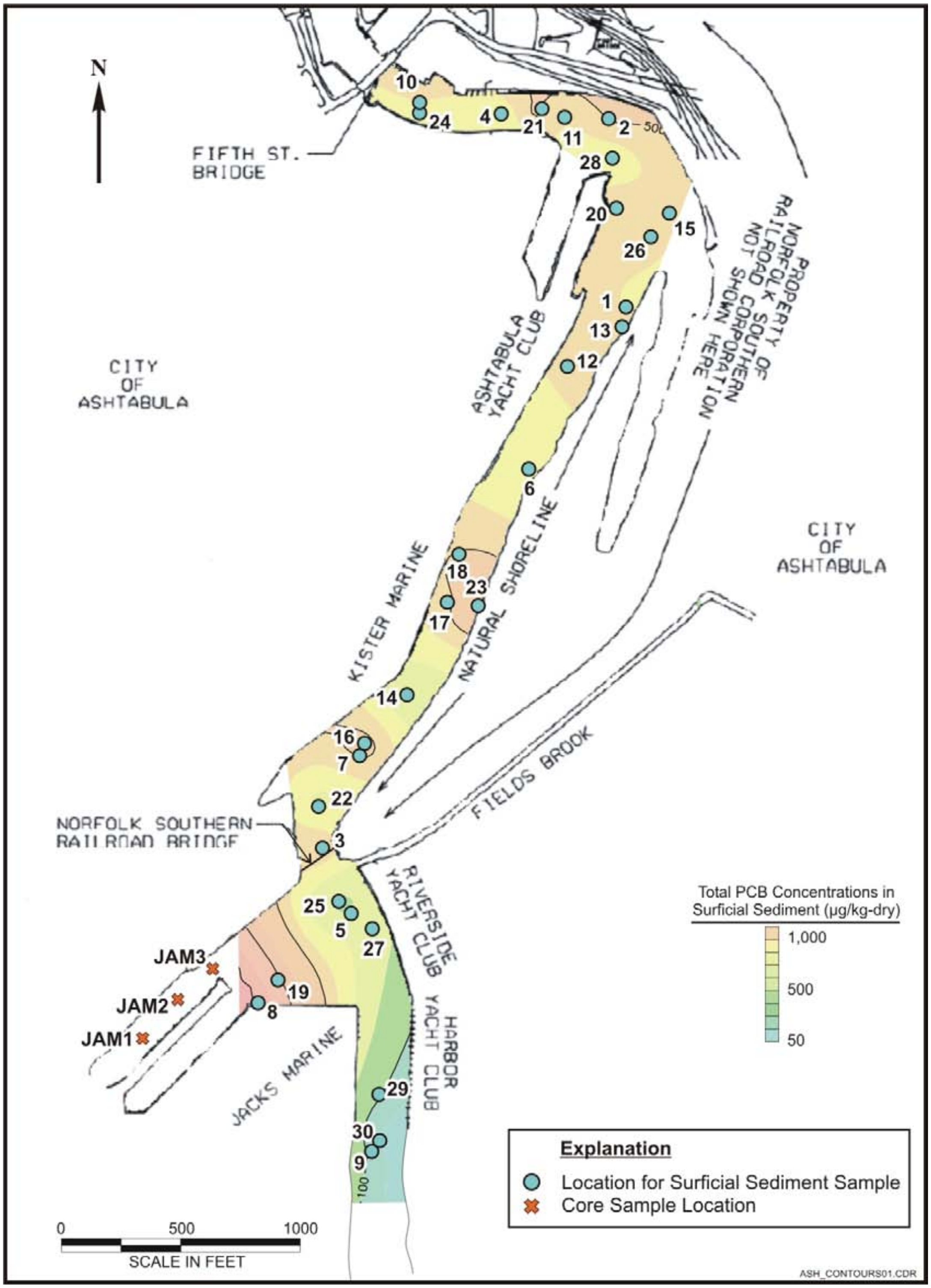


Figure 7. GLNPO PCB contour map in surface sediments at Ashtabula River.

5 TEST DESIGN

This section of the report provides the detailed description of the experimental design and testing recommended to conduct an Integrated Forensics Approach. It also discusses the performance objectives described in Section 3 and evaluated in Section 6. As stated in Section 1.2, since an Integrated Forensics Approach consists of more than just RSC and ACF measurements, this section describes in detail the six steps of the forensics procedure outlined in Section 1.2. Some of these steps were completed under the individual site projects but the forensics study was never completed. By stepping through the entire six step process, this report documents how another site could enter the process at any step depending on where the site is in the regulatory process and how much pre-existing data are available for that particular site. At the two demonstration sites used in this project the quantity and quality of data are sufficient to enter the process in the middle of Step 5, which provided a significant cost and time savings to this ESTCP project. However, this section will still progress through each of the six steps to demonstrate how the complete approach could be set up at any site. Each step starts with a generic description of what needs to be done, followed by more specific information for the two demonstration sites. Additional guidance on actually performing a fingerprinting study at a site can be found in a companion user's guide on the Navy's SPAWAR website (http://environ.spawar.navy.mil/Projects/PCB_Fingerprinting).

This section will lay out the overall conceptual design for a forensics study. The overall sequence of steps, or tasks, that will be employed include (1) evaluation of the site's potential as a demonstration site, (2) development of a conceptual site model (CSM), (3) development and implementation of a defensible study design, (4) demonstration of rapid sediment characterization (RSC) screening, (5) demonstration of advanced chemical fingerprinting (ACF), and, finally, (6) synthesis and presentation of the results in a final report, including summarizing the protocols with user-friendly instructions. This six step procedure was originally developed for PAHs (Stout et al., 2003) and is adapted for PCBs in the remainder of this section. Figure 26 in Section 8 "Implementation Issues" shows the six step process in flowchart form, but cautions that the process may actually be implemented in a more iterative fashion at many sites.

As discussed in the last paragraph of Section 1.1, the objective of combining RSC with ACF is to cost-effectively maximize the benefits of each method while reducing the limitations of each method. RSC can suggest "where" potential sources are located by following concentration gradients while ACF can confirm "what" potential source fingerprints are present. As described in previous PCB forensic studies (Johnson et al., 2000; Magar et al.,2005), both source fingerprints as well as weathering patterns (due to differences in solubility, dechlorination, etc.) can often be discerned using these statistical analyses. For example, high concentration areas from RSC will likely contain some original Aroclor source signatures while lower concentration areas away from source areas will likely contain some weathered signatures. Although it may be difficult to isolate all these different signatures, measuring a sufficient number of congeners (from 40-80 congeners at our demonstration sites rather than the standard 18 congeners from regulatory projects) makes it possible. The selection of a wide range of samples covering the spatial and concentration gradients at each demonstration site also helps in deciphering these congener patterns. The higher total PCB concentrations at Ashtabula (up to 200 ppm) relative to HPS (up to 20 ppm) provides the potential for more bacterial dechlorination activity to differentiate this type of alteration from original source patterns, assuming appropriate dechlorination conditions exist. At the HPS site, we show the typical selection of around 25% of the RSC samples for full ACF analysis. At Ashtabula, we actually have 100% of the core samples measured for full congener analysis so we have a large surplus of ACF samples to evaluate congener patterns. This allows us to test if selecting larger numbers of ACF samples (versus the more typical example where only 10% to 25% of RSC samples are selected for ACF analysis) provides better end-member source solutions. This should also provide a type of “sensitivity analysis” and help suggest how many samples are actually needed for a forensics study, although the final answer to this question is often site specific and results may not be directly transferrable across all sites.

5.1 STEP 1: Site Selection for Forensic Study

The specific reason for whether and why a contaminant source (“fingerprinting”) study should be considered at a particular site will undoubtedly vary for each site. At some sites, the need will be obvious (e.g., the site owner is being held responsible for contamination for which they may not be liable), whereas at others, the need will be less obvious (e.g., the site has agreed to clean up to ‘background’ levels which are poorly established; or the site is one of several potential sources in a complex industrial setting). Some considerations to help determine the need for a contaminant source study and whether the site can serve as a good demonstration site are discussed below.

The most obvious and common consideration when deciding if a forensic study should be conducted is whether or not it is possible that non-site sources may have contributed to the known or suspected contamination in the vicinity of the site. This potential situation will be obvious in some locations where the site is surrounded by other industrial and commercial properties with long operational histories. This situation certainly favors that a contaminant source study be conducted to determine the potential contribution of the site to the ‘total’ contamination. Even at more isolated facilities, the potential exists for ‘background’ levels of contamination to rival or even exceed any reasonable site contribution to the sediments. In this situation, the site owner may be prudent to defensibly define the background (ambient) conditions (e.g., due to direct atmospheric fallout to a water body, non-point sources, remote point sources, or natural ‘background’) and thereby limit their potential liability to only those areas where a site activity has impacted the water body above the background conditions.

Other considerations may include (1) what known or suspected contaminant PCB sources existed on the site property (now or in the past) that may benefit from being differentiated, (2) what known or suspected industries are (or were) located on nearby properties, (3) what are (or were) the known typical contaminants associated with those industries, (4) what are the general sediment transport dynamics of the area (i.e., could contamination get from “*here to there*”), and (5) how amenable will regulators and other stakeholders be to the use of such source identification methods? Each question must be considered and weighed in determining if the site will serve as a good candidate for forensic techniques. This step was completed for our sites and a Site Selection Memorandum was sent to ESTCP for each site.

5.2 STEP 2: Development of a Conceptual Site Model

Once a site's candidacy has been established, a conceptual site model (CSM) for the ensuing contaminant source study must be developed, or an existing CSM must be modified. For example, a CSM developed for the proposed demonstration site may already exist that can be augmented to include a preliminary synthesis of the contaminants, their candidate sources for the study area, and the potential for transport of sediments/contaminants. In the case of both our demonstration sites, the existing projects already developed a CSM as part of the QAPP that served as a good starting point. At the completion of a CSM, it should be possible to accomplish the following: 1) Identify (or confirm the identity of) the known or suspected contaminants of potential concern (COPCs) for the site, 2) Identify all of the known or suspected sources (or PRPs) of the COPCs within the study area, and 3) Develop specific objectives (hypotheses or forensic questions) to be evaluated by the contaminant source study that address the greatest environmental risks, and provide the greatest potential benefit, for the proposed demonstration site.

An important step in the identification or confirmation of contaminants of concern is a review of the pre-existing data for the study area (and nearby areas, which might provide additional insight to regional background issues). Pre-existing data may reside in published and unpublished sources. Published sources of data may reside primarily within the scientific (journal) literature, or as unpublished study reports by agencies and contractors. A library literature search of the study area could reveal published datasets related to earlier investigations. In addition, inquiries to local universities may reveal that environmental studies have been conducted in the study area and unpublished data from M.Sc. and Ph.D. theses may already exist. Other sources of unpublished data will include the data submitted to Regional, State, or Federal regulatory agencies by other groups (e.g., consultants to nearby industries) working within the study area. It is also very important to understand the history of the site and the surrounding area, including history of the industries, their use of chemicals, and changes that have occurred that could influence contaminant transport and distribution. Historical records research is therefore also an important component of preparing for a forensic study.

The primary problem with using pre-existing data for forensic study is that they normally represent different 'vintages' of data, collected at different points in time, and using different analytical methods and different laboratories. The comparability of the data may limit the comprehensive interpretation of such data. Furthermore, the pre-existing data need to be carefully reviewed with respect to the data quality. For example, pre-existing data may suffer from inadequate analytical methods or, as is commonly the case, contain significantly elevated detection limits. They may also contain analytical parameters that are not useful for source identification (e.g., Aroclor or limited PCB congener data, as opposed to detailed PCB congener data). As a result of these limitations, pre-existing data typically only represent a start in understanding the source(s) of contamination within the study area. Assembled pre-existing data should be reviewed to help confirm the COPCs, potentially identify trends and hotspots, potentially identify candidate sources, and generally guide the study design of the contaminant source study. These existing data may be leveraged into Step 3, and provide cost savings when developing a defensible study design for a PCB forensics study.

For the HPS demonstration site, some earlier RSC screening data from the regulatory project in 2000 have been mapped in Figure 6 to show two distinct areas of higher PCB concentrations. This map was used by the regulatory project to develop their CSM and sampling plan for the collection of RSC and ACF data in 2001 that are used in this ESTCP project. Much of the earlier pre-existing data (such as that in Figure 6) suffers from many of the deficiencies outlined in the previous paragraph, so it was only used to help develop the CSM. In Figure 6, a high concentration area to the northeast and a lower one at the creek to the west are suggested by the PCB gradients in the data. The general design for the regulatory sampling plan addressed the three basic questions outlined in the first paragraph of this section: 1) The COPC at the site is mainly PCBs so the 3D extent of contamination needs to be delineated to compare potential remedial options. The use of RSC to provide a cost-effective delineation also fits into the described forensics study procedure and can be used to help select the ACF samples; 2) Concentration gradients suggest two main source areas, but additional samples should be placed throughout the South Basin embayment to assess the potential for additional source areas; and 3) The specific objectives (hypotheses) to be evaluated by the forensics study are to confirm the two main sources, check for other potential source areas, and apportion these sources among the rest of the samples in the South Basin embayment. The RSC data will provide the spatial coverage to delineate the full 3D extent of the PCB contamination. The ACF techniques are then employed to validate that there are two (or more) distinct sources and also apportion these two sources in the surrounding sediments. The benefit of using a tiered approach (using RSC to select ACF samples) is a cost effective study design in a heterogeneous matrix such as sediments. If only higher cost forensic samples are measured, fewer locations would likely be sampled and one might miss potential sources due to heterogeneity. Additionally, blind analysis of all samples for ACF often leads to many of the low concentration samples returning many non-detect measurements which waste project funds.

For the second demonstration site, some previous GLNPO data from earlier studies have been mapped in Figure 7 to show surface concentration gradients. It has been reported (see Section 4 for site history) that Fields Brook was a source of PCBs to the river, but only very recently has surface sediment analyses suggested a second source area near Jacks Marine (Battelle, 2010). In Figure 7, the surface sediment data show higher PCB concentrations near Jacks Marine, but not near Fields Brook (suggesting source control has indeed been effective for this source). This site therefore represents a dredge site where there is a need to apportion upstream historic and more recent sources in the downstream dredge material. The general design for the EPA dredge plan addressed the three basic questions outlined in the first paragraph of this section: 1) The COPC at the site is PCBs so the 3D extent of contamination needs to be delineated by the transect cores in the dredge footprint; 2) Historic information and surface concentration gradients suggest two main PCB sources that need to be apportioned inside the dredge footprint so costs could be divided among responsible parties; and 3) The specific questions (hypotheses) to be evaluated by the forensics study are to confirm the two main sources, check for other potential sources, and apportion these sources throughout the volume of sediment in the dredge footprint.

5.3 STEP 3: Develop and Implement a Sampling Plan

The development of a technically defensible sampling strategy requires a balance between meeting project and data quality objectives within the budget of the project. The design is typically based upon either some sort of a statistical based sampling (e.g., random, systematic, stratified, cluster, etc.) and professional judgment based upon the information assembled in the CSM during Step 2 above. Sampling designs are often site specific and require consideration of many aspects of the study design. These types of considerations are addressed in many outside references (e.g., Gilbert, 1987, and references herein).

Professional judgment is important in the study sampling design because it allows for site-specific knowledge to be incorporated into the design. For example, larger numbers of samples can be placed in the vicinity of known or suspected contaminant sources (e.g., NPDES, stormwater, marinas, or combined sewer overflow (CSO) outfalls), or in locations where historic releases are documented to have occurred, and fewer (or no) samples can be placed in areas where little sediment deposition is occurring or where dredging was recently completed. Additional site specific considerations such as climatic conditions may be important to consider. For example, particulate loading to surface sediments near outfalls may be highest in the time following heavy rains or snow melt.

As part of developing this strategy, it should be noted how well-represented the potential contaminant sources are around the site. In many instances upland sampling of non-DoD properties will not be permitted. In the case of stormwater runoff, access to sediments within a catchment basin may simply require a permit from the entity responsible for the stormwater discharge. However, in the case of a ‘hostile’ neighbor, access may be impossible and the sampling design strategy will require sampling in sediments proximal to the inaccessible properties, usually at some point below the mean high water line. Thus, the sampling strategy needs to include consideration of how the legal issues balance with the best means of representing potential contamination from an inaccessible area.

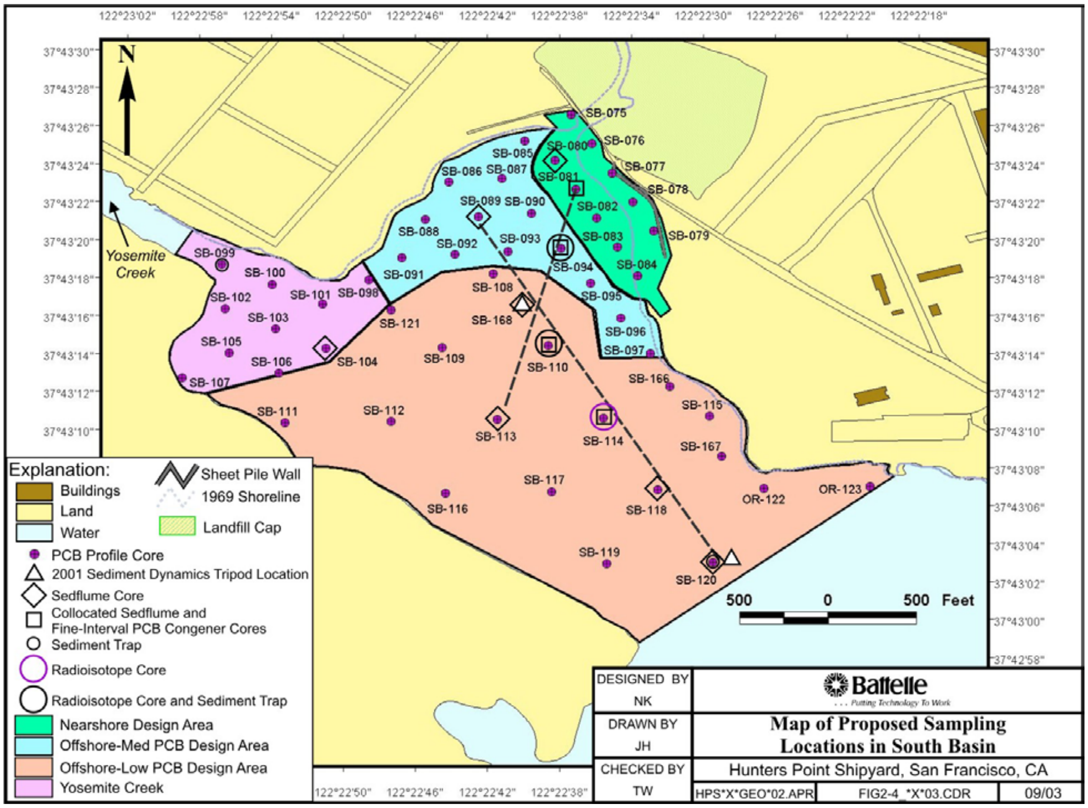
The extent and density of sampling (i.e., spatial coverage) is usually the issue that requires the greatest consideration in developing a sampling design strategy. It is the number of samples that will largely determine the cost of the project. By using a tiered study design that allows RSC data to first contour concentrations, it can be designed to more cost-effectively use the ACF data. If it had been determined that an objective of the study was to access historical inputs to the sediments, then it is necessary for the sampling design to include collection of at least some sediment cores that are intended to capture historical contributions to the sediments. Such cores need to be placed in areas that have been shown (or are believed to be) areas of sedimentary deposition and that have not been dredged (eroded or dredged areas will show time gaps). Dating of core segments using radiogenic dating techniques (e.g., ^{210}Pb or ^{137}Cs) can yield sediments from particular ‘time intervals’ whose chemistry reflects conditions from those periods. This depositional dating can be particularly important in areas where historic (and now defunct) operations are considered to have been a significant source of the contamination to the study area.

Some RSC samples need to be reserved as “samples of opportunity” to be determined in the course of field work. Such samples could include any samples related to interesting or peculiar observations made in the course of the field work. In addition, most contaminant source study objectives should include some assessment of the ambient (background) conditions within the study area. Thus, careful consideration must be given to where representative background samples can be obtained, including areas beyond the immediate study area. Given the importance of background samples in demonstrating the concentrations and compositions of contaminants beyond the control of the site, the number of background samples needed to meet the objectives of the study should be carefully considered. Population statistics are vital to the defensibility of the conclusions and should be qualitatively and quantitatively considered.

For the HPS demonstration, the regulatory project sampling design map shown in Figure 8 (from Battelle, 2007) was reviewed and the data shown on this map meet the needs of the ESTCP forensics demonstration. Notice the grid of core locations on this figure address the specific objectives (hypotheses) to be evaluated from the discussion of the CSM in the last paragraph of Step 2 above. Specifically it has higher density sampling at, and directly between, the two suspected source areas with lower density sampling farther offshore. The RSC data will be used to map the PCB gradients (in Step 4 below) and ACF data from a subset of these locations will be used to determine sources (in Step 5 below).

For the Ashtabula demonstration, the core locations within the dredge footprint are shown in Figure 9. We also included congener analyses (also done by Battelle) from a subset of around ten surface grab samples from locations shown in Figure 7 to provide some additional spatial coverage outside the limited coring area. Additional discussion of sampling design and these maps can be found in the project documents (Battelle, 2010). The original EPA research study had a number of objectives for their study of the characteristics and sources of the residuals left behind following dredging. For this ESTCP project, however, we are only using their pre-dredge cores (Phase 1) plus a few surface grabs as an example of the type of data that might be available at a typical DoD dredge site to determine potential upstream sources. Therefore the grid of core locations plus a few surface grabs address the specific objectives (hypotheses) to be evaluated for the ESTCP project from the discussion of the CSM in the last paragraph of Step 2 above. Specifically it has core locations within the dredge footprint to allow apportionment of the upstream PCB sources into these downstream sediments that are being dredged. At the Ashtabula dredge site, the EPA decided to measure all samples for both RSC and ACF. In this case the RSC data informed the laboratory how to more efficiently process samples for their dilutions, but the RSC data were not used to reduce the number of ACF laboratory analyses by not analyzing low concentration samples that could result in many non-detect congeners. This resulted in dropping some of these lower concentration samples from the ACF statistical analyses in Section 5.5 since samples with more than about 10% non-detect congeners often result in interpretation artifacts when using the ACF statistical analysis.

By using the existing study designs and sample data from both these demonstration sites it was possible to conduct a very cost-effective forensic study, but we also had to accept some limitations. The regulatory programs only collected samples from their own sites, but to fingerprint any upstream or upland sources would generally require samples from those areas. So as described in Section 5.6, the lack of any upstream samples to confirm actual source identity is a potential limitation with using the existing study design and samples. Although outside the scope of this ESTCP project, it might be beneficial to conduct another iteration of sampling to analyze some upstream samples to confirm actual source compositions. It might also be advisable at future forensics sites to actually collect some potential upstream samples and hold these in reserve to analyze later if there is a need to confirm upland/upstream source compositions.



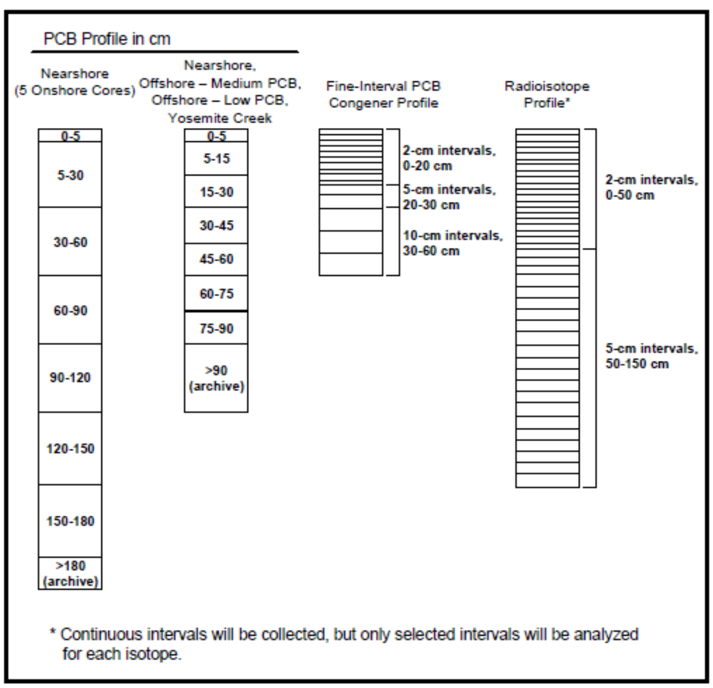


Figure 8 Sampling Design Map for the HPS Feasibility Study (Battelle 2007). This includes the cores that provided the pre-existing data that was used in the forensics demonstration at HPS.

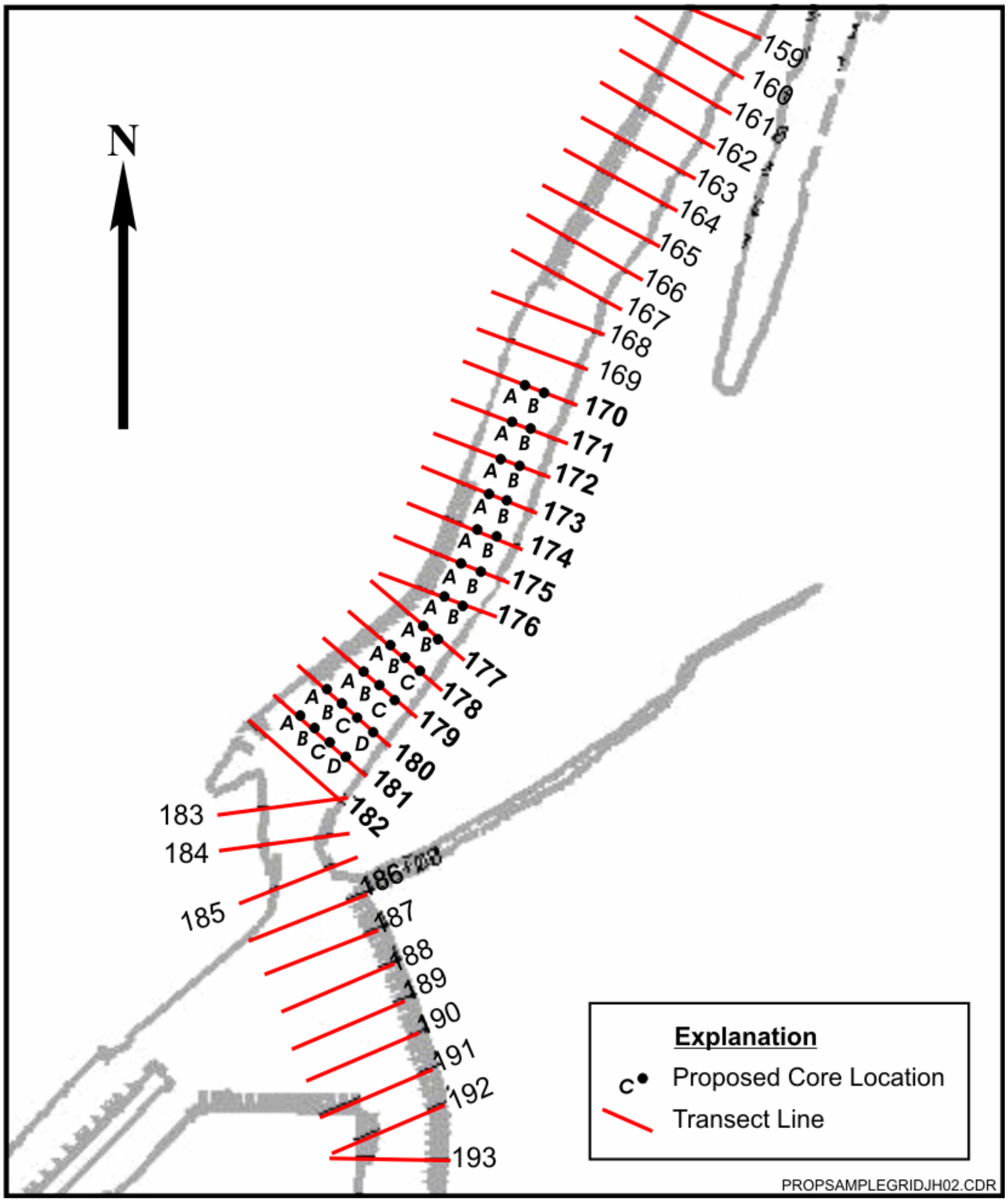


Figure 9. Sampling Design Map for Ashtabula River transect cores (Battelle, 2010). These cores provided the pre-existing data used in this forensics demonstration.

Ashtabula River
FINAL ORD Quality Assurance Project Plan

July, 2006
Version 1.0
Page 68 of 94

Table 3. Sediment Core Field Locations and Approximate Depth for Phase 1

Sediment Core ID	Easting	Northing	Core Depth (ft)	PCBs (homologues, congeners and RSC)[1]	% moisture, TOC, PSD, Bulk Density[1]
T170-A	2463786.1	816361.0	19.19	X	X
T170-B	2463838.5	816342.2	13.03	X	X
T171-A	2463752.5	816267.1	16.84	X	X
T171-B	2463802.9	816249.3	12.54	X	X
T172-A	2463721.8	816167.3	15.83	X	X
T172-B	2463772.2	816148.5	10.16	X	X
T173-A	2463691.2	816076.4	15.64	X	X
T173-B	2463737.7	816060.6	12.26	X	X
T174-A	2463658.6	815983.5	14.90	X	X
T174-B	2463712.0	815965.7	13.48	X	X
T175-A	2463617.1	815893.5	12.13	X	X
T175-B	2463669.5	815872.8	17.60	X	X
T176-A	2463573.6	815807.6	9.23	X	X
T176-B	2463623.0	815781.9	19.69	X	X
T177-A	2463515.3	815732.4	17.44	X	X
T177-B	2463555.8	815695.9	23.16	X	X
T178-A	2463428.3	815681.1	11.27	X	X
T178-B	2463466.9	815649.4	22.46	X	X
T178-C	2463508.4	815612.9	21.23	X	X
T179-A	2463357.2	815610.9	15.02	X	X
T179-B	2463399.7	815576.3	22.09	X	X
T179-C	2463439.2	815537.8	22.22	X	X
T180-A	2463259.4	815565.2	10.46	X	X
T180-B	2463300.1	815529.7	16.77	X	X
T180-C	2463339.8	815492.1	21.06	X	X
T180-D	2463383.7	815453.4	22.61	X	X
T181-A	2463187.9	815495.1	9.23	X	X
T181-B	2463228.4	815462.5	11.26	X	X
T181-C	2463267.5	815426.0	17.65	X	X
T181-D	2463309.2	815388.1	21.50	X	X

[1] Cores will be split into 1-foot intervals. Not all intervals will be analyzed. Intervals to be analyzed (including some compositing) will be determined at the laboratory in coordination with ORD. A total of 300 samples is anticipated for analysis.

Table 2. Summary Table of Core locations taken from original Table 3 in the EPA QAPP (original QAPP referenced in Battelle, 2010).

5.4 STEP 4: Rapid Sediment Characterization (RSC)

RSC methods have been described in Section 2. Regardless of the approach used in the evaluation of RSC data, it is important to remember that the goal of the RSC data analysis is to develop a sufficient set of site characterization information, including visualizations to aid in the selection of samples for ACF and not to achieve the objectives of the study alone. The analytical strategy and budget will largely determine the number (or percentage) of the RSC samples that will be selected for ACF. Of course, it is not necessary that the entire analytical budget be used if there is no technical basis to do so. For example, if the RSC data have demonstrated uniformity and a predominance of 'background' ambient conditions in the study area, the ACF may simply include a few selected confirmation samples. Therefore, the task of selecting samples for ACF is largely a matter of selecting a reasonable and justified subset from the complete set of RSC samples. Some guiding principles to remember and keep in mind in the selection of samples for ACF are as follows:

1. Select samples that provide ample spatial coverage of the entire study area (try to represent all areas of the study and do not completely ignore any area on the basis of RSC alone),

2. Select a sufficient number of samples from specific location(s) within the study area that address a specific project objective(s) (i.e., select sufficient samples in areas of specific concern or interest, potentially including accessible upland sites of interest and possible source areas and major transport routes), and

3. Select samples that represent the range of RSC concentrations observed, including those that are (apparently) representative of different sources as well as the ambient/background conditions (i.e., do not exclude all the low concentration samples as they may provide important information on "background" conditions).

Of course, an underlying basis for the selection of samples for ACF to meet these guidelines is cost. Thus, a degree of professional judgment is needed in the selection of samples for ACF. An iterative approach is always possible, where additional samples may be analyzed if the initial data do not provide sufficiently defensible information. We typically select only 10 to 25% of the RSC samples for full congener analysis under ACF, but sites may have lower or higher percentages depending on overall sample numbers, site considerations such as extent of impacted sediments, and available funding for the more expensive ACF samples.

Figure 10 shows examples of the contour maps that can be generated with the HPS RSC data to aid in selection of ACF samples. A number of these contour maps can be shown using various PCB concentration levels (e.g., 2000, 1000, 700, 200 ppb) to visualize the volumes of sediments that have specific concentrations. The first figure (Figure 10a) shows a three dimensional (3D) block diagram of the site which has been tilted up at about 45 degrees to show core locations with color coded sampled horizons which indicate total PCB concentration. This 3D block shows a plan view map surface very similar to Figure 8, with the shoreline shown as wavy white lines. The top front edge of this 3D block is a straight white line that passes east-west through the surface horizon of sample locations SB119 and SB120 (note core designation from Figure 8), which are the two cores closest to the front (farthest south) in the 3D block. SB119 has 7 blue horizons indicating all depths are below 200 ppb total PCB levels, while SB120 shows 4 green mid-depth horizons indicating some middle sections of this core have higher concentration between 200 and 700 ppb. The blue (<200 ppb), green (200-700 ppb), yellow (700-1000 ppb), orange (1000-2000 ppb), and red (>2000 ppb) colored horizons can be seen in the rest of the cores, with more red to the north and west indicating higher PCB concentrations in these areas.

This becomes easier to see in Figure 10b where the volume of sediment with PCB concentrations above 2000 ppb is contoured in red. This visualization makes it easy to see a large mass of PCB contaminated sediment at the mouth of Yosemite Creek (on the west side of the 3D block) and another mass of contaminated sediment along the northeast shoreline of the embayment (near the former landfill). The contouring procedure joined these two masses of contaminated sediment with a very thin connection, but this may be an artifact of the contouring procedure depending on the concentrations we choose to plot. If we had chosen to contour a higher concentration level, these areas would appear as two completely separate volumes of sediment. A question therefore remains whether these contaminated sediments are from a single source, or two distinct sources. By contouring different PCB levels the gradients in the data can be visualized and hypotheses about number and location of source areas can be made. In Figures 10c and 10d the connection between these two high concentration areas grows, but they still appear to represent distinct sediment volumes. The selection of a subset of samples for ACF was made to test the various hypotheses that were developed as part of the CSM. In this case, multiple samples were selected from each high concentration area contoured here in red to search for the source compositions (and see if they are the same or different on each side of the embayment).

Additionally, samples were selected in each of the subsequent concentration ranges to ensure that all spatial areas and concentration ranges were covered to investigate how proportions of the different sources may be mixing across the embayment. Some additional interesting features can be seen in the contour maps as different concentration volumes are plotted. Sediments from Figures 10c and d show more mixing and some filling of the embayment toward the southeast where deeper water depths are present. The contour maps in Figure 10e and 10f show the sediments between 200 and 700 ppb tend to fill most of the outlying areas in the embayment. Note there do not appear to be any other high concentration areas which might signal another source area. The high concentration area around Yosemite Creek appears to be buried at depth whereas high concentrations are still at the surface on the northeast side of the embayment. This indicates the main source from the west has been controlled and high concentrations have been buried whereas it appears the source in the northeast is still contributing to the surface sediments (although some differences may be related to higher sedimentation rates in the west area).

Figure 11 shows examples of the 3D contour maps that were generated with the core data at the Ashtabula River Dredge site. The first contour map (Figure 11a) shows the core locations with the one foot sampled horizons color coded by total PCB concentration levels (red >100,000 ppb, yellow 10,000-100,000 ppb, green 1,000-10,000 ppb, blue 100-1000 ppb, purple <100 ppb). This figure shows the contoured red outline of the >100,000 ppb sediment volume, with the greater volume of the highest concentrations on the right (south) closer to the upstream sources. The second contour map (11b) shows all the concentrations contoured to show the 3D aspect of the PCB plume moving downstream to the left (north). Using this contouring procedure, one can map whatever concentration ranges are desired to provide a 3D view of the data. The question to be addressed in this demonstration is whether these contaminated sediments originate from one, two, or more distinct sources. By contouring different PCB levels, the gradients in the concentration data can be visualized and the number and location of samples that will be measured for PCB congener composition can be selected for the next step in the procedure. The selection of which samples to choose for ACF should cover the concentration and spatial (top versus bottom of core, upstream versus downstream) ranges seen in the data, with an emphasis on samples expected to yield the most information for forensic purposes (e.g., higher concentration samples, and samples from locations expected to be related to sources, with some intermixing). In the Ashtabula case however, all samples were measured for ACF so we can compare this to the typical procedure of measuring only 10% to 25% of the samples for ACF that was done at our first demonstration site at HPS. Since the RSC data were not used at Ashtabula to select ACF samples, they were not investigated as completely as at HPS and have undergone less scrutiny. For this reason we did not spend the effort to recover all the DQO data for this site, so the Ashtabula RSC data are included in the Appendix but they are not analyzed further for data quality in Section 6.

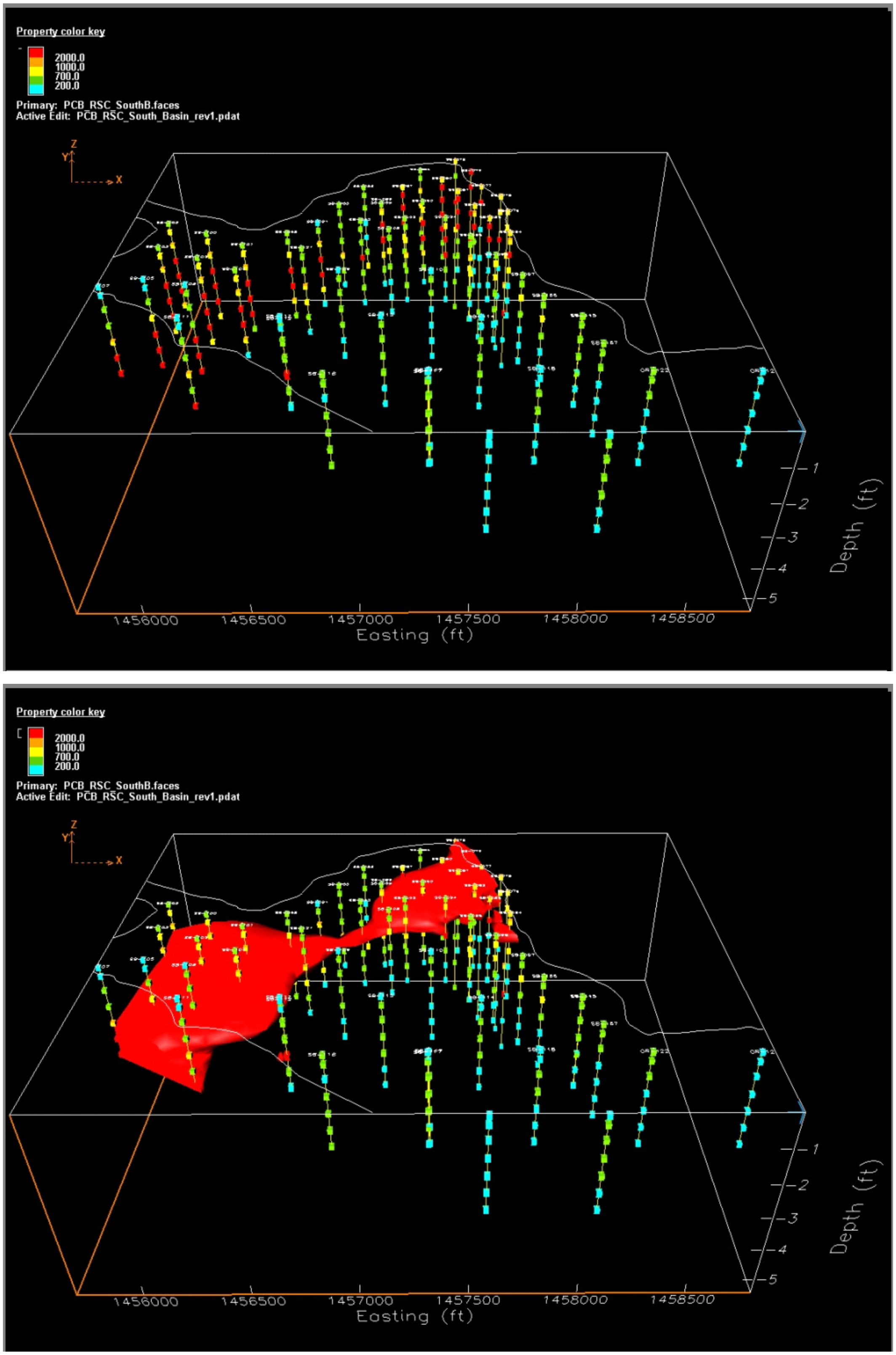


Figure 10. Example RSC 3D contour maps from HPS (ug/kg or ppb total PCB). (a) color coded core horizons. (b) >2000 ppb volume showing two high PCB concentrations areas (from Battelle, 2007).

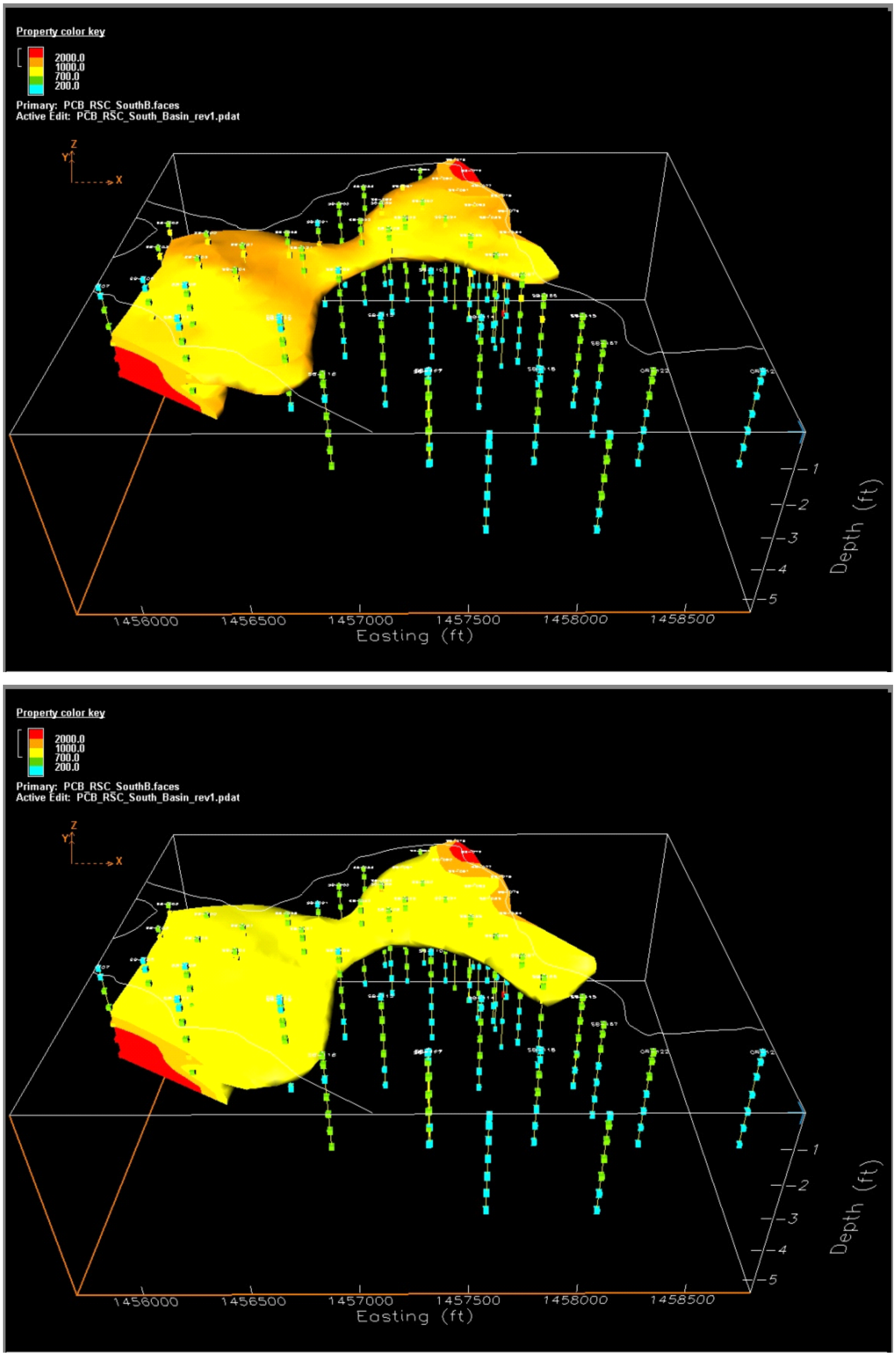
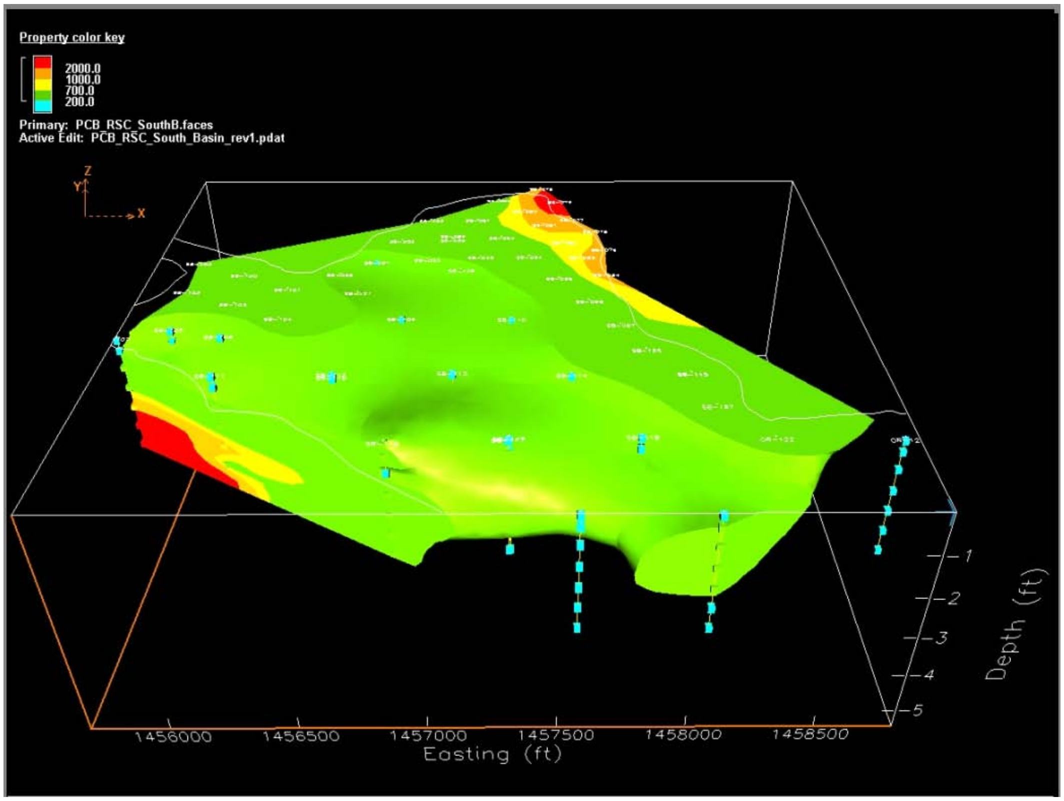


Figure 10. Example HPS 3D contour maps from cores (ug/kg or ppb total PCB). (c) >1000 ppb contoured volume. (d) >700 ppb contoured volume shows more mixing between source areas (from Battelle, 2007).



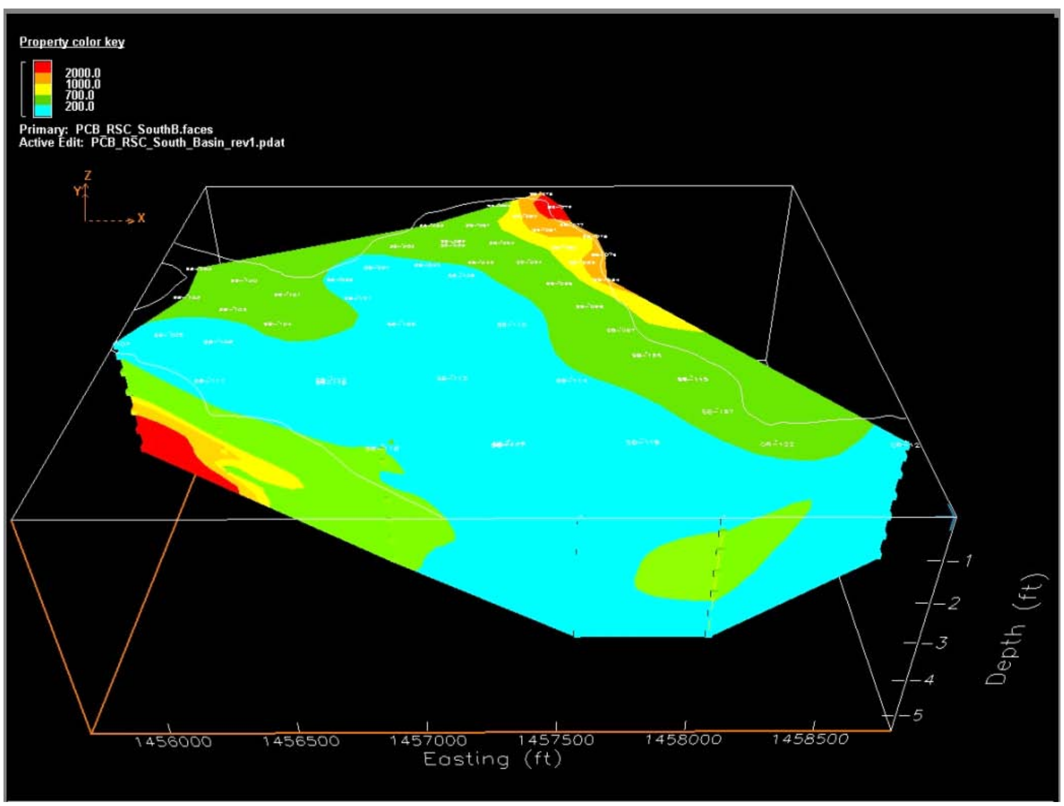
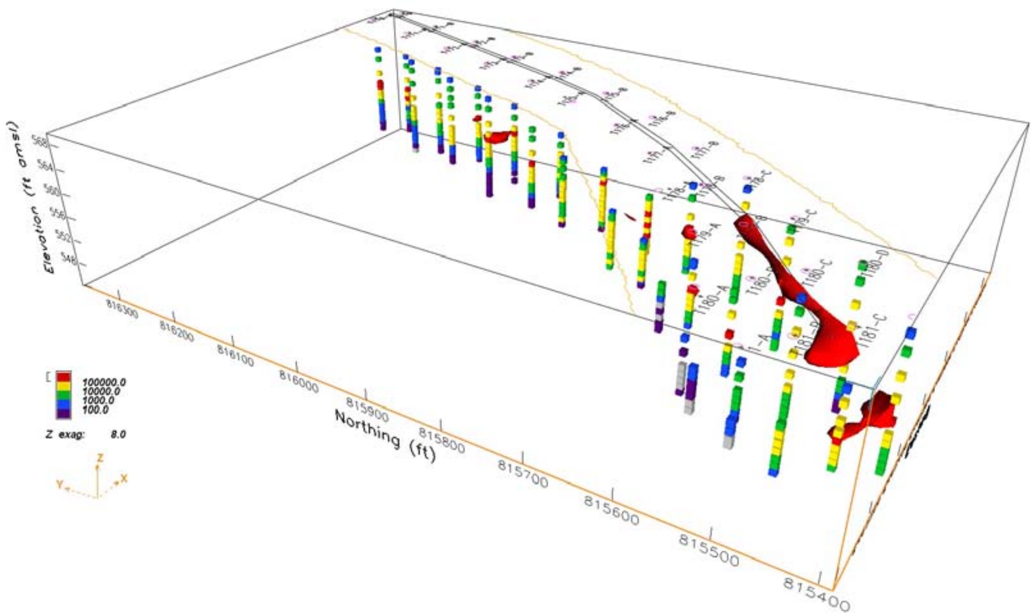


Figure 10. Example HPS 3D contour maps from cores (ug/kg or ppb total PCB). (e) >200 ppb contoured volume shows mixing into embayment. (f) <200 ppb contoured volume added (from Battelle, 2007).



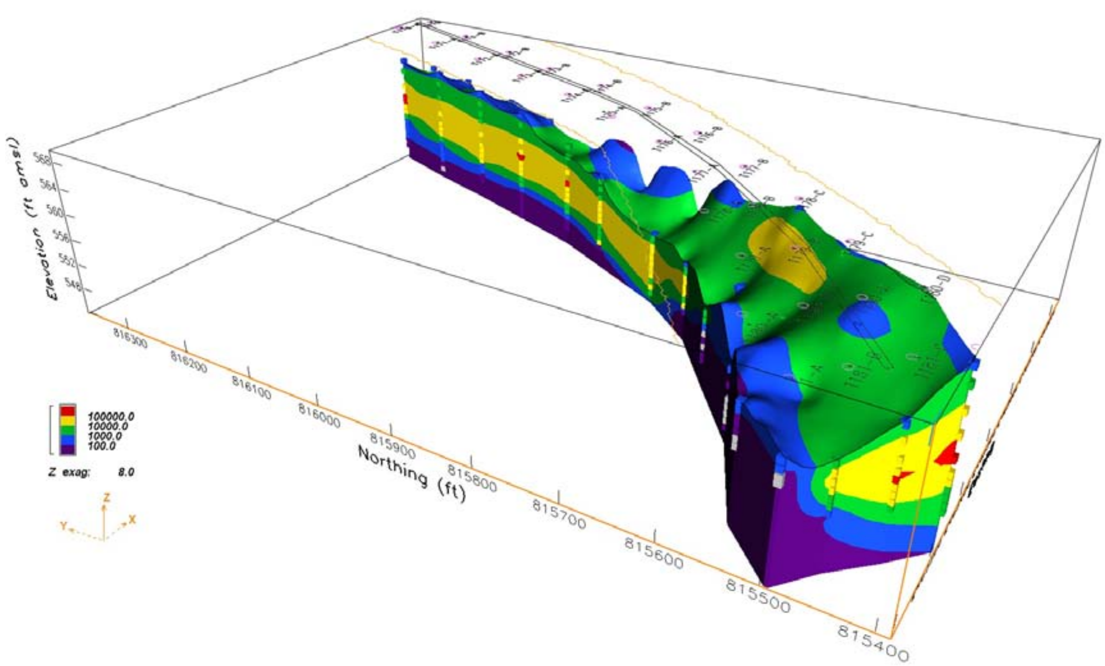


Figure 11. Example Ashtabula 3D contour maps (ug/kg or ppb total PCB). (a) >100,000 ppb contoured volume. (b) all contours including >100, >1000, >10,000, >100,000 ppb (from Battelle, 2010).

5.5 STEP 5: Advanced Chemical Fingerprinting (ACF)

The ACF laboratory analytical and interpretation techniques available for the assessment of PCBs in sediments were discussed in detail in Section 2. Once the data are generated they are investigated in a series of ways, generally starting with analytical chromatograms of compositional bar graphs (or bar chart "fingerprints") to get a preliminary understanding of the PCB composition and compositional variability in the dataset. In Hunters Point South Basin, the PCB composition of some surface sediment had a signature that closely resembled Aroclor 1260 (Figures 12a). In these "fingerprints", the percent composition is shown on the left of the figure for a number of individual congeners shown on the bottom of the figure. This "match" is interpreted to indicate that the source of PCB to this sample has a composition of Aroclor 1260.

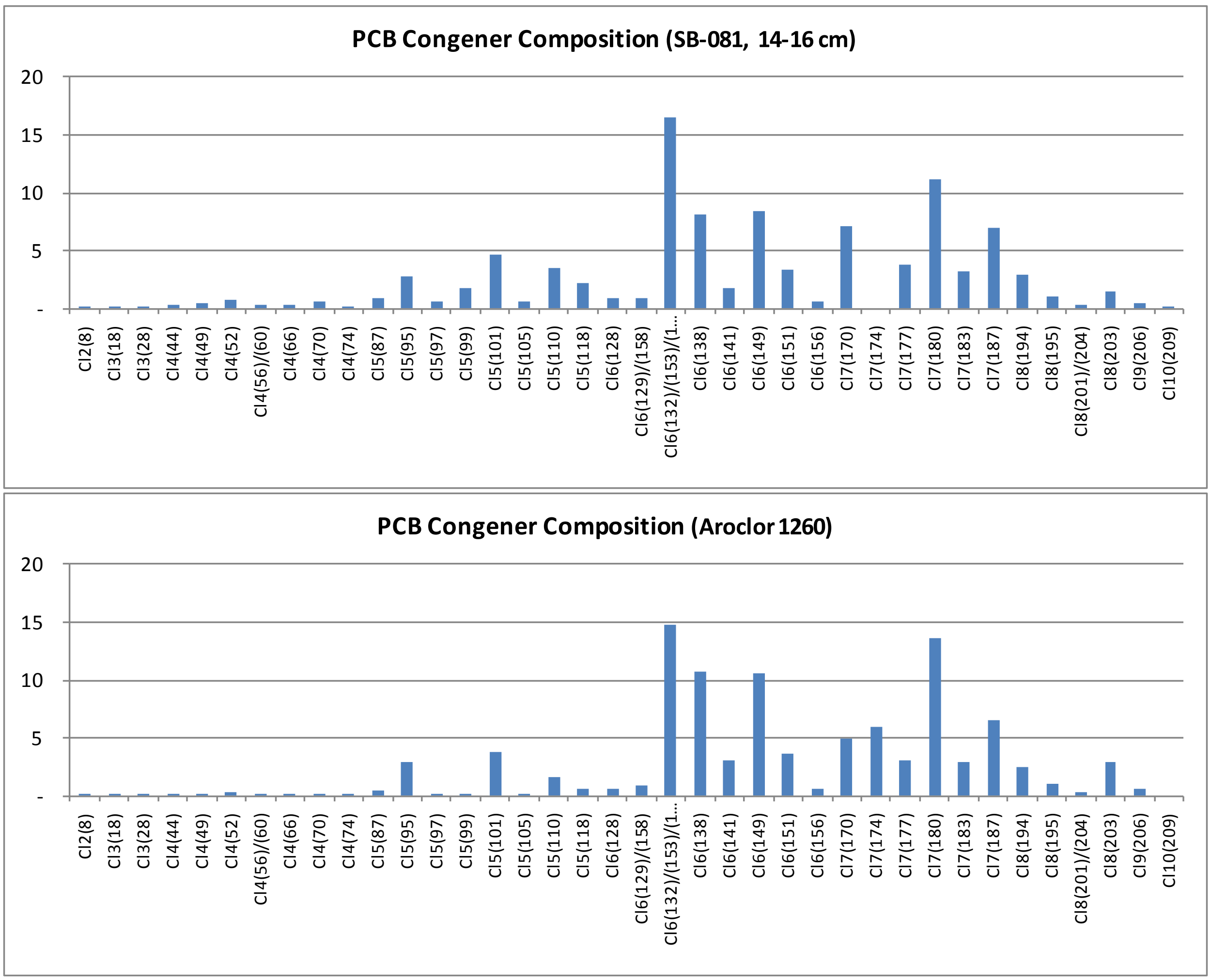


Figure 12a. PCB fingerprint of surface sediment samples from Hunters Point South Basin compared to reference Aroclor 1260.

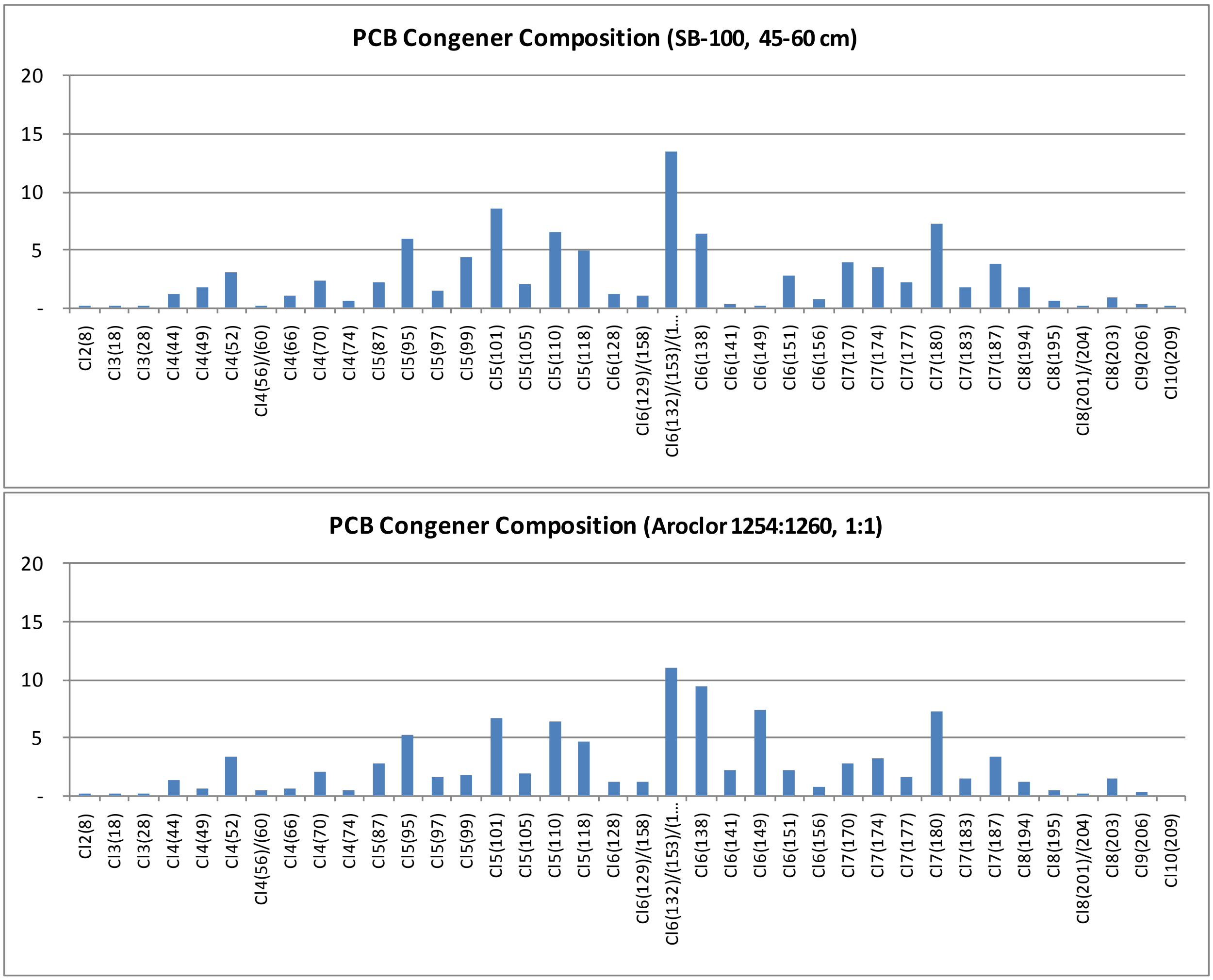


Figure 12b. PCB fingerprint of deeper sediment samples from Hunters Point South Basin compared to a mixture of reference Aroclors 1254 and 1260 in a 1:1 proportion.

Samples from the deeper sediments in Hunters Point South Basin had PCB compositions that did not match any single reference Aroclor composition, but appeared to have a mix of Aroclors. Most of the deeper samples had notable PCB contributions that resembled Aroclor 1254 in addition to Aroclor 1260 (Figure 12b). In contrast to Hunters Point, the majority of the historical PCB contamination in the Ashtabula River study area appears to have been from an Aroclor 1248 source in Fields Brook (Figure 13). Several additional distinctive fingerprints were also noted in the Ashtabula samples that will be discussed later in this section. Some looked visibly similar to reference Aroclors previously shown (e.g., Aroclor 1260), but others did not look like any reference Aroclor and appear to represent other types of sources (dechlorination patterns). So in addition to visually matching compositional patterns to reference Aroclors, we will need additional techniques to quantitatively describe these congener compositions to help decipher source relationships.

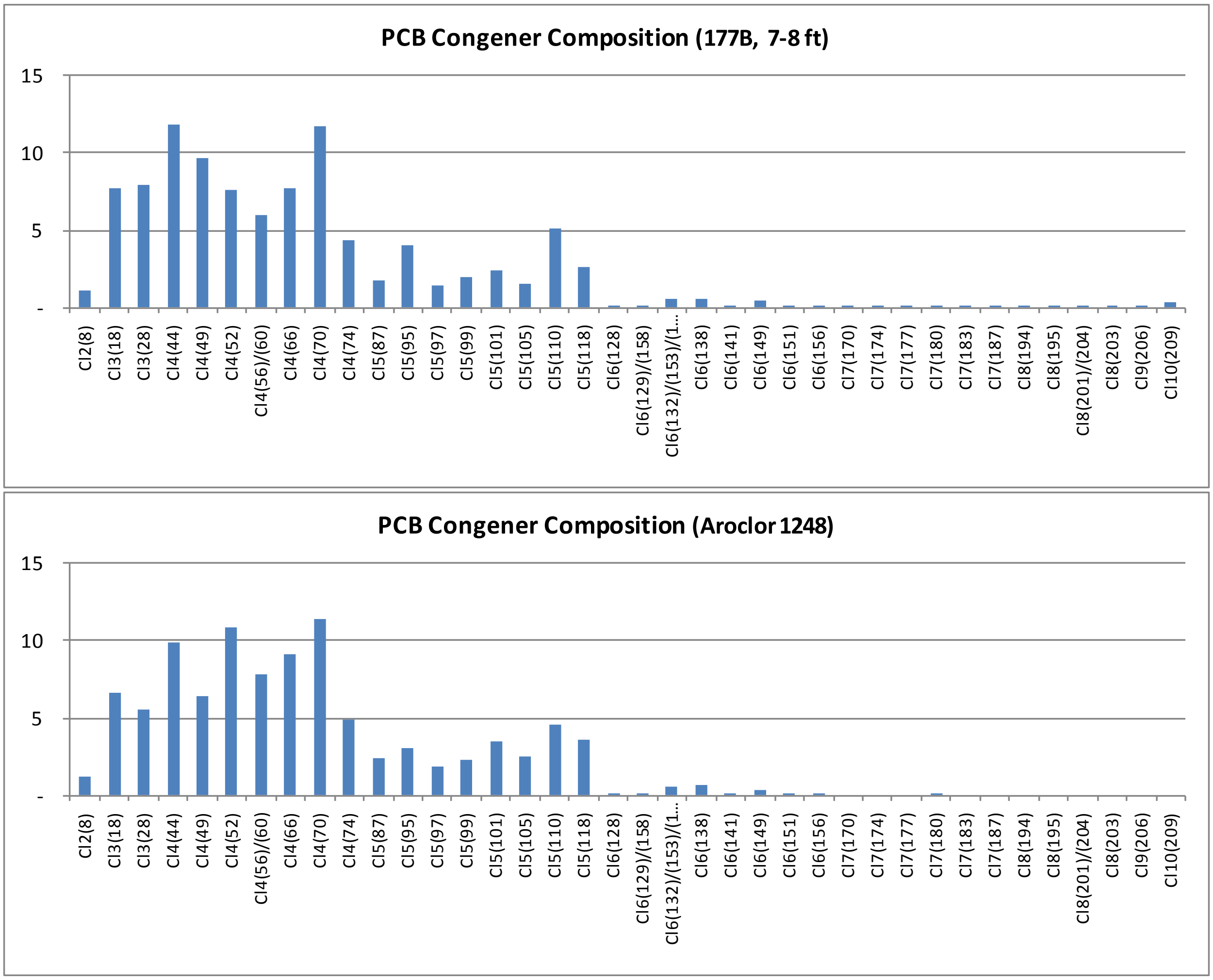


Figure 13. PCB fingerprint of sediment samples from 7-8 ft depth in the center of the Ashtabula Study Area compared to a reference Aroclor 1248; Sample source is assumed to be from the main Field Brook Aroclor 1248 source.

After comparing these bar chart fingerprints, we often use simple techniques such as congener to congener cross plots to view the compositional variations in the data. Figure 14 shows a simple cross plot of congeners PCB187 and PCB52 in core horizons from HPS SB94. If all depths in the core had similar congener composition, data would fall along a single trend (slope or ratio) which could be interpreted to represent a single source of PCBs to this core location over time. However, a change in composition with depth is noted where the ratio of these congeners in the shallow horizons (0-20 cm) is about 7.2 and in the deeper horizons (30-60 cm) it falls to 1.8. This change may represent a change in source composition (or change in alteration which will be discussed later), so here rather than a single source there appear to be two distinct sources that were present at different time periods, with several intermediate depth samples showing a progression from one ratio to the other. If we assume this represents a change in the amounts of

Aroclor 1254 and 1260 that were discussed in the bar chart fingerprints in the preceding paragraphs, then this represents a shift from mainly Aroclor 1260 in the surface samples to more of a mixture of Aroclors 1254 and 1260 in the deeper samples. And this is one of several dated cores so this change in composition at about 30 cm (the two highest concentration samples are duplicates of 30-40 cm) occurs around 1965-1970. This change in composition will be discussed later, but this discussion shows how we are interested in viewing the compositional patterns in the congener data to interpret potential source information. It would become rather tedious to view individual congener cross plots when we have 40 to 100 different congeners, so we need to look at the multivariate techniques that look for these types of compositional patterns in the entire congener dataset at once. And by using multivariate receptor models, we don't need to assume source compositions (such as the Aroclor 1254 and 1260 above), but we can let the receptor models actually determine what the congener composition of the sources are.

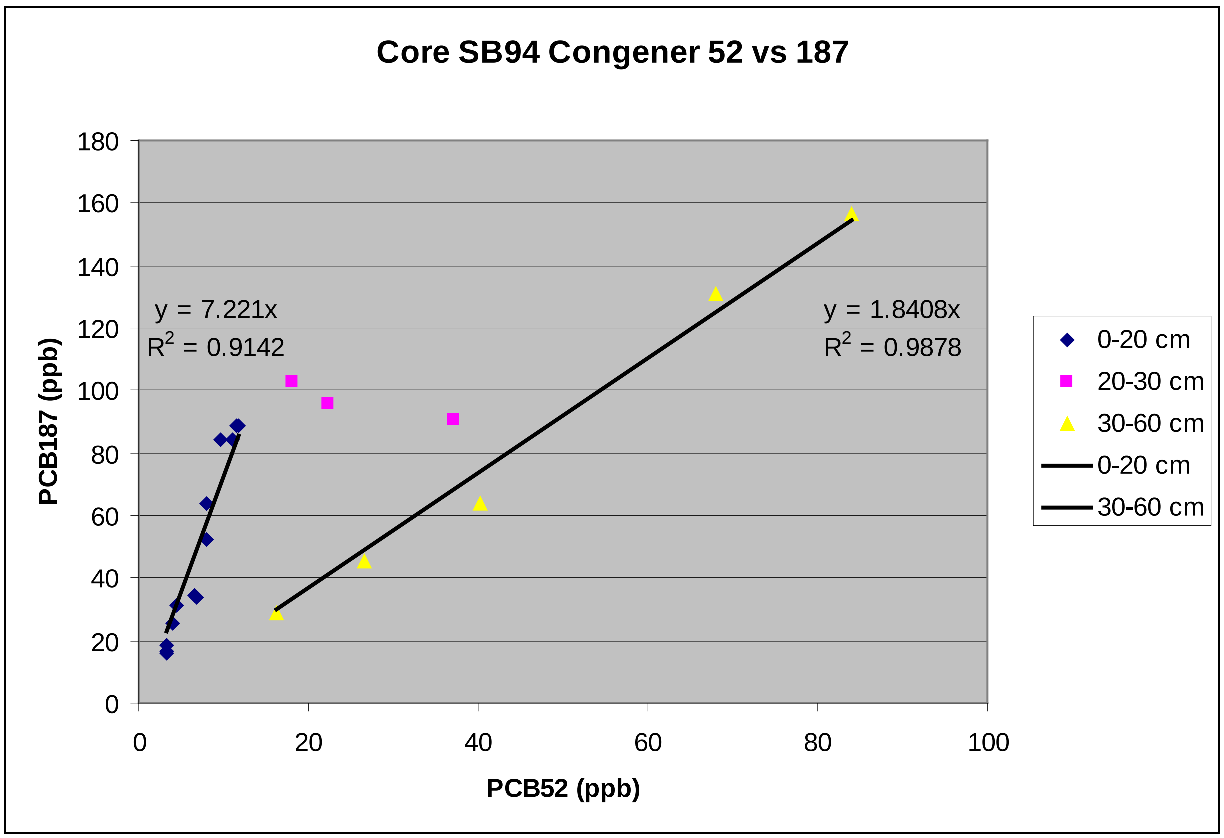


Figure 14. HPS Congener cross plot showing relationship between PCB 187 and 52.

The objective of a multivariate approach to chemical fingerprinting is to determine (1) the number of unique source fingerprints present at the site, (2) the chemical composition of each source fingerprint, and (3) the relative contribution of each source fingerprint in each collected sample. Development of numerical methods to determine these parameters has been a major goal in environmental chemometrics and receptor modeling for more than 25 years (Hopke, et al., 2006; Johnson, et al., 2007). Multivariate receptor models have been used increasingly for the characterization of sources and alteration patterns of chlorinated organic compounds in sediments of complex environmental settings (Jarman, et al., 1997; Johnson, et al., 2000; Barabas, et. al., 2004; Imomoglu, et al., 2002; Magar, et al., 2005; Bzdusek, et al., 2006). A review of these methods, with a focus on PCB forensic application, is provided by Johnson et al., 2007. These multivariate receptor models describe the input measurement data as a function of source profiles and source contributions, as shown in the matrix algebra equation X = GF+E, where X is the input measurement matrix, G is the source contribution matrix, F is the source profile matrix and E the portion of the measured concentration data that cannot be fit by the model. The basic process involves reducing the original data matrix into a factor loading matrix (F) representing source profiles (shown in Appendix 1 as End-Member (EM) Compositions) and a factor score matrix (G) representing the source contributions (shown in Appendix 1 as Mixing Proportions). These various techniques use slightly different methods, but basically all generate a solution whereby multivariate source profiles can be added together according to their source contributions to generate an estimate of each of the original sample compositions.

Receptor modeling for this project was conducted in accordance with philosophies and methodologies outlined by Johnson, et al. (2007). Before any data analysis, the data must first undergo some form of data preparation. The data were carefully reviewed to assess the impact of low concentration samples, non-detects, and the presence of outliers. The appropriate data-screening actions are project–specific as outlined by Johnson, et al., (2007) and may include removal of samples and/or congeners from the data set. Comparing the PVA solutions to the original datasets (both in the Appendices) shows the numbers of samples and congeners that were dropped during the preparation of the datasets (usually due to non-detects). After the data were prepared following such criteria, the resultant data matrix was analyzed with a range of techniques including multivariate receptor modeling methods (see Section 2 for more descriptions). Here we describe the basic steps in applying a multivariate technique such as PVA to the data. The first step in this process is the determination of the number of fingerprints (or source end-members (EMs)) in the system. The next step in the receptor modeling process is to resolve the EM compositions (source profiles) and mixing proportions (source contributions) within each sample. The final step in the process is to compare the resolved end-member congener profiles with known or suspected source patterns (i.e. Aroclor) and alteration mechanisms (e.g. literature reported dechlorination methods – Bedard and Quensen, 1995). We discuss PVA in this effort, because it is a method known well by the authors, and has been applied extensively in PCB forensics applications (Jarman, et al., 1997; Johnson, et al., 2000; Magar, et al., 2005; Johnson, et al., 2007). We also have access to other receptor modeling methods (ALS, PMF, UNMIX – see discussion of their applications in Johnson, et al., 2007) and we ran comparative analyses using all these methods for a performance assessment test in Section 6. Recent receptor modeling method comparisons (Johnson, et al., 2007; Hopke, et al., 2006) indicate that results of these various methods are comparable (assuming diligently screened data sets). The more important consideration is experience of the analyst, and their sensitivity to the scientific/chemical context of the problem.

Figures 15 shows a PCA scores plot for our first demonstration site at HPS to conceptually describe how PVA determines EM source compositions and mixing proportions for each sample. Each dot represents a core horizon congener composition plotted in principal component space, and the closer together core samples plot the more similar they are in congener composition. Once the number of source EMs has been determined (Johnson et al, 2007), the PVA technique attempts to fit a geometric shape (called a polytope or simplex) that will fully enclose the data-cloud. Here we use a triangle since it was determined that there are three EM sources (with one source all points would cluster around a single point and with two sources there would be a line of points between two end-member compositions). The first inner triangle was fit to the three most mutually extreme samples in the data-cloud. The PVA algorithm then iterated once to arrive at the final solution where all the data points were enclosed by the final larger triangle. The end-member compositions and mixing proportions for this PVA solution are included in numerical/tabular form in Appendix 1. Points at the corners of the triangle represent the end-member source compositions, and all the enclosed points in the data-cloud are simple positive linear mixtures of these end-member compositions. In Figure 15, Sample point 3 plots partway between EM1 and EM3, and was resolved as a binary mixture of these two end members (33% EM1 / 66% EM3) with little or no EM2. In contrast, Sample 40 plots near the middle of the triangle and is resolved as 33% EM1, 31% EM2 and 37% EM3. Outliers are allowed with a slight amount of negative contribution (usually 2-5%) to allow for error (e.g., Sample 99 on Figure 15 had a EM-3 mixing proportion of -4% so it plots slightly outside the triangle.). Careful consideration must be given when dealing with outliers. More extreme outliers may need to be dropped in an iterative fashion to allow a convergent solution (no negative contributions and allow the geometric shape to close), or if they represent real compositional differences that we wish to retain in the solution additional EMs may need to be added to the solution. The final step in the process is to compare the resolved end-member congener profiles (compositions represented by the corners of the polytope) with known or suspected source patterns (i.e. Aroclor) and alteration products. This was easy in this case where EM1 and EM2 closely resembled Aroclor 1254 and 1260, respectively. Interpreting the composition of EM3 presents more of a problem, as is seen at the bottom of Figure 15. It resembles an Aroclor 1260 pattern similar to EM2, but it also contains many lower weight congeners. After confirming a lack of typical indications of dechlorination that can produce these lower weight congeners, it was decided to fit this EM pattern to mixtures of known Aroclors. A best fit pattern was found with an 80%/15%/5% mixture of Aroclors 1260/1254/1248 which had a cosine theta value of 0.97. Cosine theta is a fitting parameter with a range similar to a correlation coefficient, with a value of 1.0 representing a perfect correlation (see Johnson et al., 2006). Use of quantitative metrics allows a more objective identification of EMs compared with merely visually matching patterns to standard Aroclor or alteration patterns. The interpretation of this EM as a mixture of Aroclors makes more sense when discussed later in Section 5.6, since mixed patterns are more common from outfalls that might themselves have multiple sources. Now we can compare to earlier discussions and see how well different lines of evidence agree. As we discussed with the bar chart fingerprints, surface samples such as SB81 14-16cm (Figure 12a) from the northeast side of the embayment near the former landfill show more of an Aroclor 1260 source. These samples plot closer to the bottom left corner (EM2) of the PCA data cloud triangle in Figure 15. Deeper samples from everywhere in the embayment represented by SB100 45-60cm (Figure 12b) have a mix of Aroclors 1254 and 1260. These samples plot farther to the right of PCA data-cloud near EM1. And PVA distinguished additional surface samples from the west side of the embayment near Yosemite Creek (samples that plot near the top of the PCA triangle by EM3) appear to have a slightly different composition that appears to be a mixture of Aroclors 1260/1254/1248. Additional discussions and visualizations of spatial relationships at HPS will be given in the next section (Section 5.6).

Figure 16 shows a PCA scores plot for our second demonstration site at Ashtabula. We again use this type of figure to conceptually demonstrate how PVA is used to find a source solution for this dataset. Here we see the data-cloud enclosed in a four corner polygon, or tetrahedron. This is shown to conceptually represent the initial polytope that PVA would generate to try to enclose the data and "unmix" or apportion the amounts of these four corner sources in each sample. Given that there are samples that plot outside the tetrahedron defined by this four corner polytope, PVA would proceed with iterations (not shown here) from this point to try to enclose the full data set. As the number of end-members increase, it becomes impossible to visually show higher dimensional polytopes in PCA space. However, PVA and other receptor model techniques can still derive solutions with more than the three or four end-member sources we are showing in our examples. Most of the Ashtabula data (over 200 of the 300 ACF data points) appear as points along the left side of the tetrahedron where mid-depth horizons with higher concentrations plot. This highlights the mistaken impression that more samples will always improve the receptor model solutions. Only if additional sample compositions plot near the corners of the geometric shape (polytope) will they improve the confidence in the solution. Adding more samples with congener compositions anywhere in the middle of the geometric shape do not help determine the corner locations that indicate the end-member source compositions. Running all the samples for ACF (and not the typical 10-25% that was done at HPS) doesn't improve the forensic solutions for this ESTCP project, though the ACF from the Ashtabula dataset was originally collected by EPA researchers for additional objectives. Unfortunately it is not possible to predict which RSC samples (with only total PCB levels) will have congener compositions at the "corners" in these types of data cloud plots, so we typically run 10-25% of the RSC samples to help determine these corner compositions. By analyzing ACF samples iteratively, it may be possible to selectively run samples from locations that appear to represent the corners, and thereby "fine-tune" the corner compositions. Investigation of any outliers therefore becomes important since they can control where the corners of the tetrahedron will fall (and these corners represent the chemical composition of the end-member sources). As shown at the beginning of this section in Figure 13, samples from the bottom left of the tetrahedron (for example core 177B from 6-7 foot depth) have a composition similar to Aroclor 1248. Toward the top left of the tetrahedron, mid-depth samples show increasing amounts of congeners PCB25 and PCB26 along with additional lower weight congeners which confirms an Ashtabula dechlorination trend (previously described by Imamoglu et al., 2002). The other two corners of the tetrahedron represent a very recent near surface end-member source that resembles Aroclor 1260, and a very deep end-member source that is enriched in congener 209 (also referred to as decachlorobiphenyl or "Deca") as well as other octa- and nona-chlorinated congeners. The recent Aroclor 1260 source is believed to originate from drainage areas near Jacks Marine on the west side of the river opposite from Fields Brook, while the other three patterns are related to sources up Fields Brook. Additional discussions and visual presentations of the Ashtabula data will be given in the next section (Section 5.6).

Earlier in this section when discussing the conceptual basis for PVA operations we glossed over one of the most important aspects of these receptor models, determining the number of end-members (sources). Conceptually we discussed the number of end-members could be seen in the geometric shape of the data cloud plotted in principal component space (but only when there are a few end-members). Johnson et al. (2007) describes a number of quantitative approaches for determining the number of end-members, and the reader is referred to that work for more detailed discussion. In general, the methods most commonly used involve comparing measured versus model predicted values. As additional principal components (i.e. sources) are added to a solution, the back-calculated (i.e. predicted) concentrations for each congener will approach a perfect 1:1 fit as compared to the measured concentrations. A coefficient of determination (CD) metric (Miesch, 1976) can be used to quantify this relationship. As the CD values approach 1.0 the model approaches a perfect fit for that congener in all samples. A CD approaching 0.9 is considered an excellent fit. Johnson et al., (2007) also describes a visual extension of the Miesch CD method (the CD scatter plot array) which allows the user to intuitively evaluate the reason for deviation from a good fit (e.g. outliers, non-detects, etc.).

For the HPS dataset, most congeners reached acceptable CD value with three end-members so the PVA results are reported for a three end-member solution in Appendix 1 and Section 5.6. However, some congeners (PCB49 and PCB99) showed improved CD values when a forth end-member was added. Retaining a fourth end-member improved the fit of these two congeners and resulted in an end-member that suggested evidence of a small amount of dechlorination in a few HPS samples. Other studies have reported preferential enrichment of PCB 49 and PCB99 in studies of dechlorination of Aroclor 1260 in estuarine environments (Fagervold et al., 2007). A hint of this can be seen in Figure 15 where PCB49 and PCB99 are elevated in the modeled End-Member 3 bar chart fingerprint when compared to the homogenized mixture of Aroclors 1260/1254/1248 shown directly below. If a fourth end-member were included it would remove this excess PCB49 and PCB99 and there would be a better fit (higher cosine theta) for End-Member 3. But since the addition of this forth end-member only changed the final solution proportions of the other three end-members slightly in only a few samples, we decided to simplify the solution by discounting any slight amount of dechlorination that might be occurring and select three end-members for the PVA solution with the HPS dataset. This is not an uncommon situation in receptor modeling. There are often a set of strong, consistent patterns that strongly manifest themselves with any permutation of the data set (i.e. varying the number of samples, variables, end-members and varying the model options). There is also often evidence of one or two more subtle patterns that appear to represent a real source or alteration mechanism, but are present in only a few samples. In the case of Hunters Point, we present a solution for a 3 component system, while acknowledging the clear evidence for a fourth, more subtle alteration pattern.

The Ashtabula River dataset presented a similar situation. There is strong, consistent evidence for a four component system, but CD scatter plots indicate presence of a fifth pattern that is more subtle, but real. In Appendix 1 and Section 5.6, we present a solution for the simple four end-member PVA solution. One of those four strong patterns at Ashtabula is a dechlorination pattern (that is much stronger and more apparent than what we saw at HPS). This Aroclor 1248 dechlorination end-member at Ashtabula is seen in a majority of the samples and is strongly indicated by higher levels of congeners PCB25 and 26. This is seen conceptually in Figure 16 where the majority of samples plot between the Aroclor 1248 end-member (represented in the lower left by samples such as 177B 6-7ft) and the dechlorinated Aroclor 1248 end-member (represented in the upper left by samples such as 173B 7-8ft). A few samples in this mid-depth group also show signs of a fifth end-member with a congener pattern that may indicate some form of devolatilization of Aroclor 1242. The addition of this fifth end-member improves the CD fit of only a few congeners such as PCB4/10 and PCB8. But it is only present in a few samples and does not change the mixing proportions of the other four end-members very much. As such, we decided to report a four end-member PVA solution for the Ashtabula dataset. Additional details concerning PVA operation and receptor models can be found in Johnson et al. (2007) and guidance for applying these types of receptor models can be found at http://environ.spawar.navy.mil/Projects/PCB_Fingerprinting.

- **Principal Component Space used as Reference Space**
- **Iteratively resolves a polytope (a triangle if number of sources = 3) that surrounds the data cloud.**
- **Samples are positive linear combinations of End-Members**
- **Vertices (end-members) must have non-negative compositions**

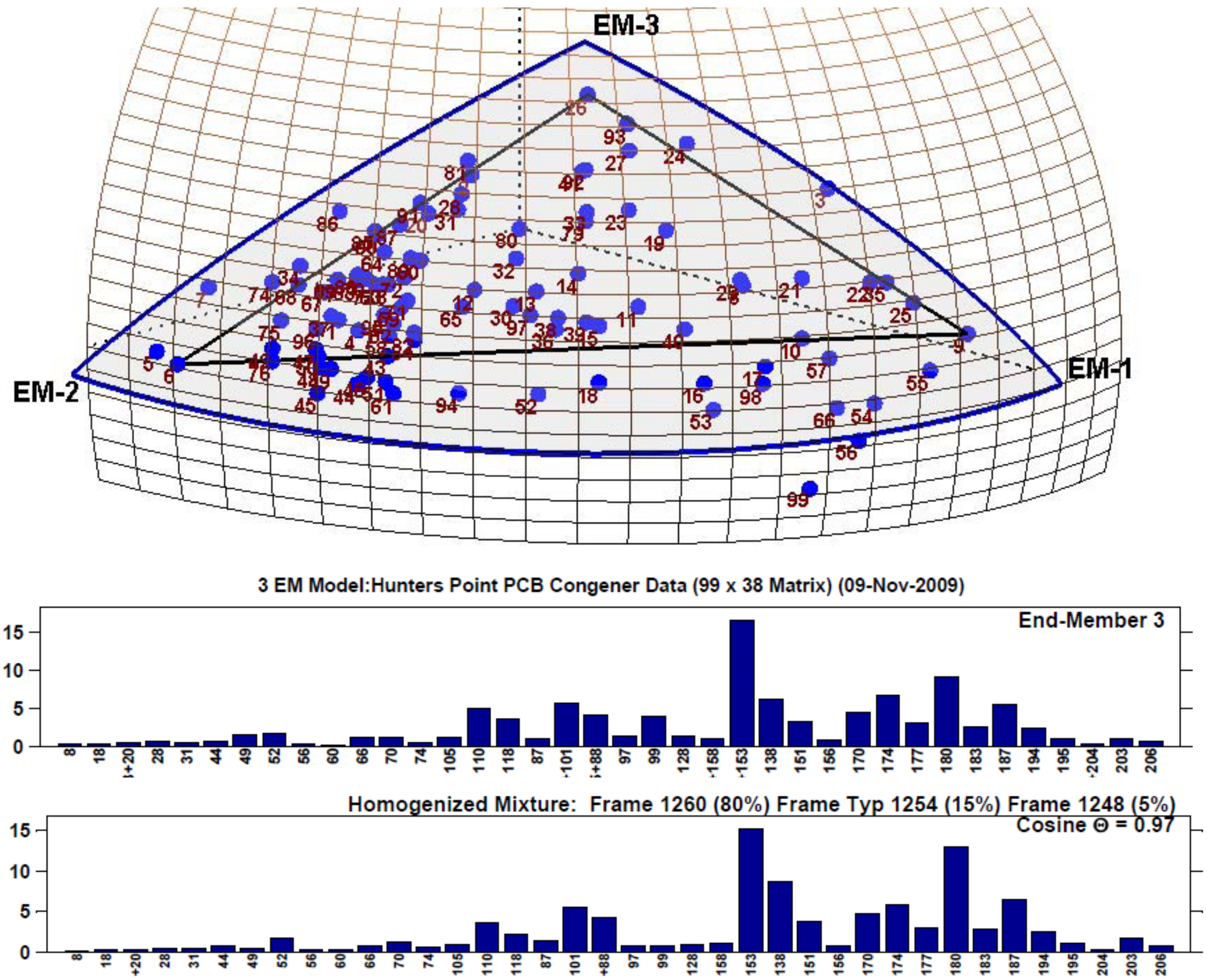


Figure 15 Conceptual model for PVA at HPS. Each dot represents a sample congener composition plotted in principal component space. Samples plotting closer together have more similar compositions (Sample numbers are from Appendix 1).

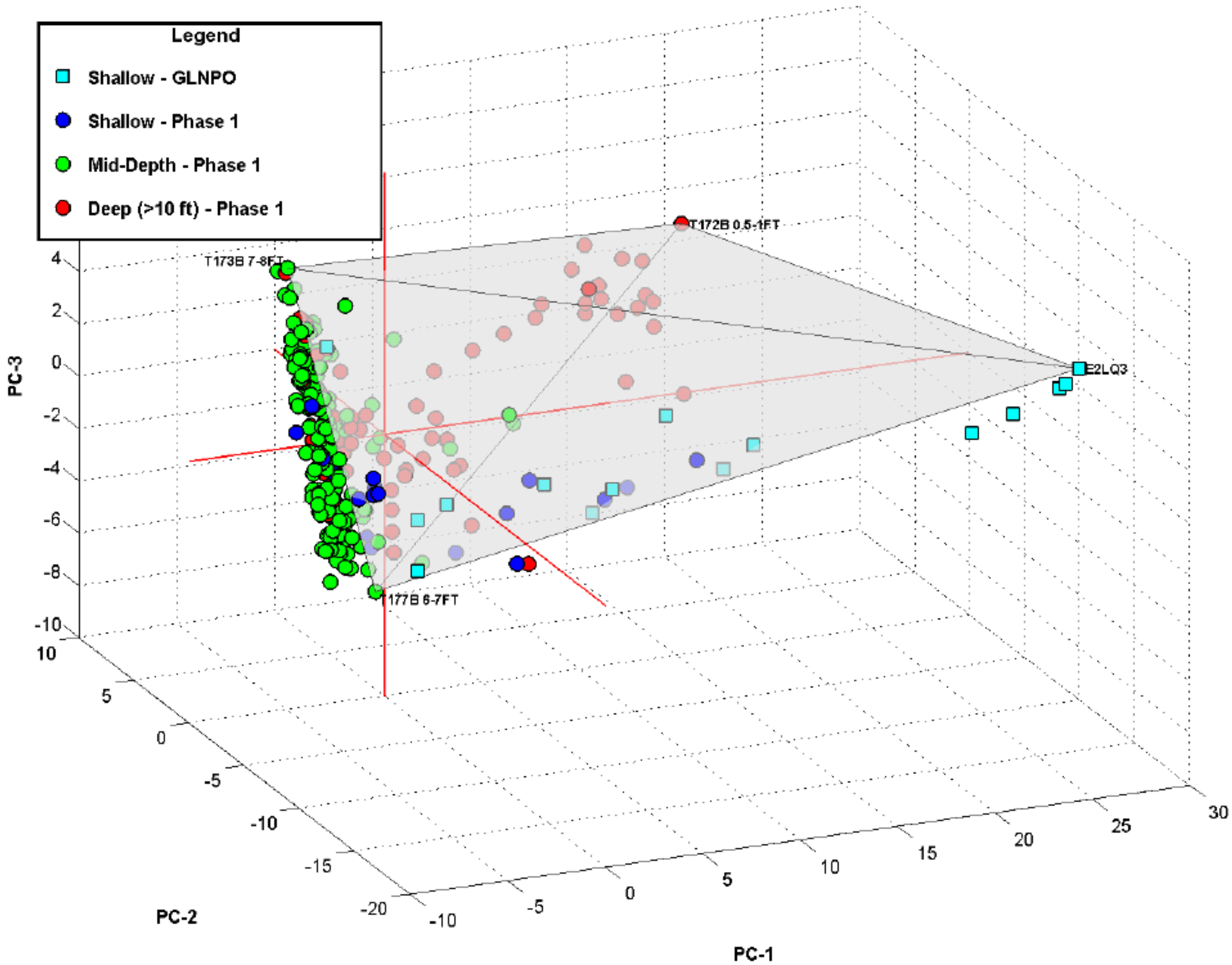


Figure 16 Conceptual model for PVA at Ashtabula. It was determined that there are four end-member source compositions, so the geometric shape that encloses the data cloud is a tetrahedron (highlighted in gray).

5.6 STEP 6: Data Interpretation and Reporting

The manner by which the results and conclusions of a contaminant source study are conveyed needs to consider the audience, and particularly their technical experience. The specific target audience will dictate the level of technical detail conveyed in a report or presentation. Chemical 'fingerprinting' data in graphical and/or tabulate form can be very confusing to all but an experienced chemist. Their interpretation is much easier (and thereby useful) when the results of a contaminant source study are reported using numerous visual displays that either convey the data spatially or with some other easily interpreted visual (e.g., Core Diagrams such as Figures 17 and 20). Such visuals can be more readily explained to, and interpreted by, technical and non-technical audiences. This is important since the value of any contaminant source study will be undermined if the audience cannot understand the results and conclusions. The ideal (but elusive) objective is to present results using data visualization methods that present results accurately and intuitively, such that both the non-technical manager and the experienced scientist/statistician comprehend the process and understand their results.

HPS Case Study

So rather than the PCA Scores plots shown in Section 5.5, figures in this section will summarize congener compositional variations along with spatial information to allow us to visualize potential PCB sources in context of the two case studies (HPS and Ashtabula). For example, Figure 17 shows the three proposed HPS end-members (congener compositions at the three corners of the triangle in Figure 15) as simple bar chart fingerprints. At the bottom of the figure the spatial distribution of these three fingerprints is shown as a series of down-core plots (see locations from Figure 8). This figure essentially shows a transect of core diagrams running west to east, with SB105 to the west near the mouth of Yosemite Creek, SB79 to the east in front of the former landfill, and the other cores in between. The core sections plot depth on the left and percent end-member (EM) composition on the bottom, with each end-member color coded to the end-member bar-graphs at the top of the figure. The gray sections on the left of each core show the sampled horizons in each core, where ACF measurements are present (distributions are interpolated in core sections where no ACF data are available). From this presentation it appears that surface samples in SB79 located in the east by the landfill are mainly green indicating a high contribution of EM2 (Aroclor 1260). Samples from core SB105 located in the west by Yosemite Creek are mostly blue, indicating higher EM3 compositions (Aroclor 1260 with secondary amounts of lower chlorinated congeners). Samples between SB-105 and SB-79 show a mix with more blue (EM3) to the west and more green (EM2) to the east. In most of the cores, the percent of Aroclor 1254 (red) increases as a function of depth. It is interesting to note that Pb210 dating done at core SB94 shows a major change in composition at 30 cm (Figure 14) which is around 1968 (with a sedimentation rate of 0.9 cm/yr and cores collected in 2001 (Battelle, 2007)).

Additional information is needed to help identify the potential PCB sources, including the concentration gradients from the RSC. RSC contour maps in Figure 10 show two distinct areas where high concentrations of PCBs were deposited. A sediment transport study was done as part of the regulatory project (Battelle, 2007), and in addition to the sedimentation rates noted above it also showed sediments are deposited in the quiet depositional embayment with little resuspension or other sediment movement. It is also useful to view information about site history and other upland/upstream studies that provide additional source information. Figure 4 shows shoreline development and fill event history for this area from aerial photos, with all surrounding shorelines built from fill events from the 1940s to the 1970s when the present shoreline was established. Note the 1961 shoreline shows a small peninsula starting to close off the channel that runs north up through the former landfill area to what is presumed to be another CSO location. The landfill continued to fill this channel in the 1965 and 1969 aerial photos until only a small channel remained to empty this old CSO. This is the approximate time period that the dated cores show highest PCB concentrations and a distinct compositional shift from Aroclor 1254 to Aroclor 1260. At about this time period the capacity of the sewer system was expanded (during the construction of what is referred to as the "Moat") and all the CSOs in this area were realigned to empty into Yosemite Creek (Battelle, 2007). So by 1975 the landfill was allowed to completely fill this area with no sign of the former CSO or channel. Some contaminated fill appears to have been used to close off this former CSO channel, as can be seen in Figure 18. Most of the shoreline around South Basin in Figure 18 shows PCB levels below 200 ppb (ug/kg), but where the old CSO channel was filled the shoreline PCB levels jump to 5000-15000 ppb with one value up to 65000 ppb. The congener composition of these shoreline samples resembles Aroclor 1260 so erosion of the shoreline and beach berm in this area represents a good match for the current source of EM2 to this area.

EM3 appears to be mainly Aroclor 1260 with a mix of lighter congeners that appear to be associated with the realigned Yosemite Creek CSO outfalls. After about 1970 when all the CSOs were realigned into the creek and the sewer capacity was increased, the sewer overflows were reduced and surface PCB concentrations from this source were reduced. Prior to this 1970 time when the CSOs were realigned and the old channel through the landfill was filled, deeper samples from both sides of the South Basin appear to have a similar composition with more Aroclor 1254 (EM1). This may indicate one of the earlier fill events used material contaminated with Aroclors 1254 and 1260, and this material was the source for EM1 and EM2 until it was covered by a later fill event. Another possibility was that outfalls on both sides of the South Basin (both behind the former landfill and up in Yosemite Creek) were contributing PCB compositions with a mix of Aroclor 1254 and 1260 (maybe the CSOs were interconnected) so older sediments on both sides of the embayment have similar congener compositions. A RI report (HLA, 1999) from a PRP site (a 55 gallon drum recycling facility) just north of Yosemite Creek discusses waste disposal practices and states "prior to approximately 1980, wastes were disposed at various times to the city landfill, discharged to the city sewer, accumulated onsite in drums, … or buried along the northeastern property boundary." Soil PCB analyses from this site showed total PCB levels (listed as Aroclor 1254 and 1260) at hundreds to thousands of mg/kg (ppm), so these same releases discharged down the city sewer could represent a likely source of the 1-10 ppm in the sediments outside the CSO outfalls. And if the releases were to both sides of South Basin (both the current CSOs and the outfall behind the landfill at the north end of the 1969 shoreline channel in Figures 3 and 4), this might represent the historic source of Aroclor 1254 and 1260 prior to 1970 (deeper than 30 cm).

As we move back in time and move away from present conditions that are better documented, it becomes more difficult to discriminate between possible scenarios. And since this ESTCP project was designed to demonstrate how to conduct a forensics study, it is beyond the scope of this project to continue gathering data to discriminate among possible source scenarios. A major limitation in deriving quantitative apportionments for the EMs around HPS is the large proportion of Aroclor 1260 at all locations. EM3 is very similar to EM2, in that it contains a large amount of Aroclor 1260 although EM3 contains more low weight congeners. A more confident apportionment would be obtained if there were more unique patterns for the individual EMs. For example, previous data (Battelle, 2007; and references therein) has indicated additional pesticides are present in sediments near Yosemite Creek that might make a more unique source pattern for EM3.

Ashtabula Case Study

At the Ashtabula River dredge site there are four EMs, although one pattern appears to be dechlorination so it likely represents the dominant Aroclor 1248 source that has undergone post-release alteration. Figure 19 shows the EM compositions for a PVA model run for four end-members (see Section 5.5 for discussions of considerations that led to the decision to run the model for 4 EMs). Note also that for the Ashtabula model there were 83 congeners versus the 38 congeners for HPS. The additional congeners at the Ashtabula site allow us to better discriminate alteration (dechlorination) from original source patterns. If we had only analyzed the 38 congeners used for the HPS site, we would not have seen the major dechlorination pattern from PCB25 and PCB26 since these congeners were not run at HPS. Core diagrams for the Ashtabula River data are shown in Figure 20, which represents a transect of cores from upstream on the left to downstream on the right. These cores were chosen to show the general relationships between EMs in the dredge area, but multiple other transects could be constructed from other cores at the site. Core diagrams are plotted in elevation above sea level on the left, and percent EM composition along the bottom color coded to EMs from Figure 19. Numbers to the right of each core horizon are Total PCB concentrations in parts per million (mg/Kg). The most obvious feature of these core diagrams is that most of the cores show >90% have a source of Aroclor 1248 (although some show dechlorination). Deeper sections of the cores show increasing amounts of the heavier "Deca" source, but the majority is still Aroclor 1248. There are only sporadic indications of the very recent additions of Aroclor 1260 in the surface sediments of some cores, ignoring the slight indications of Aroclor 1260 at depth. Error bars on the percent EM contributions are thought to be on the order of 10-15% in these types of analyses. Although not run on these samples, previous work (Johnson et al., 2007) shows multiple PVA runs using different groups of input samples for each run (a pseudo Monte Carlo approach) can provide these error bars.

As with the HPS case, additional information (contour maps of concentration, site information from previous work, etc.) is required to help determine the actual locations of PCB sources. Previous forensic work (Imamoglu et al., 2002) reported two compositional patterns in this section of the Ashtabula River which match our first two EMs, an Aroclor 1248 and a dechlorinated Aroclor 1248. Their cores were only 5 to 6 feet deep so they probably didn't reach any of the deeper "Deca" pattern, and collected in 1998 before the release of the more recent Aroclor 1260 contamination. Figure 21 shows a site map from the EPA Superfund work done along Fields Brook that may represent the major PCB sources to the Ashtabula River (USEPA, 1998). This work notes that several of the industries shown in this figure are known PCB sources. Much of the PCB data are reported as Aroclor 1248, which represents the bulk of our Ashtabula patterns. Of special interest is the fact that one of the mapped industries, Millenium $TiCl_4$, is a known PCB source and other forensic studies have noted a similar "Deca" rich end-member associated with titanium tetrachloride facilities (Rodenberg et al., 2010). Battelle (2010) notes this section of river was last dredged in 1962, so although we don't have dated cores these Deca rich sediments below 10 feet may represent sediments deposited before that dredge event. This is consistent with core dating done by Imamoglu et al. (2002) where the bottom of their core at about 5 to 6 feet was estimated to be from about 1970. Sediments shallower than 10 feet (after 1962?) do not show the Deca rich pattern, so presumably there was a change in the release pattern of this source during this time period. So the majority of the PCB sources are presumed to be from the Fields Brook Superfund Site, with only minor additions of Aroclor 1260 very recently from drainage near Jacks Marine (Battelle, 2010).

To see stronger evidence of this minor Aroclor 1260 pattern, some older GLNPO surface samples (0-0.3 ft) that passed similar QA checks were added to the Phase 1 core dataset because the one foot surface horizons in the dredge cores often diluted any signs of the recent Aroclor 1260 pattern (Figure 20). The five GLNPO surface samples with the greatest proportion of Aroclor 1260 (E2LQ0-4) are shown in Figure 16 but not shown in Figure 20 because they are from outside the cored dredge footprint. The GLNPO surface samples are shown in Figure 7 with Station IDs from Appendix 3, except the E2LQ surface samples were taken at the location of the JAM cores. So the source of the Aroclor 1260 appears to be surface drainage near Jacks Marine across the river from Fields Brook which serves as the source for the other patterns (Battelle, 2010). It should be noted, however, that even if some samples have large proportions (%EM) of Aroclor 1260, these samples are typically lower in total concentration so the mass of PCB that constitutes this compositional pattern is rather low. This is also true where the higher proportions of the deeper Deca pattern are present in horizons at the bottom of cores where total PCB concentrations are also lower. So in terms of mass of total PCBs, the middle of the cores with higher concentrations have mainly an Aroclor 1248 pattern (along with some dechlorination of this same source) that represents greater than 99% of the total mass of PCBs. It is always important to view the proportions of the various end-member sources in terms of the mass of PCB, because ultimately that is what needs to be apportioned among the various PRPs.

Source Confirmation

At HPS we have additional onshore studies (Battelle, 2007) that confirm the beach in front of the landfill is a current source of Aroclor 1260 (EM2) to the nearshore sediments (Figure 18), but we know from aerial photos that this beach area was filled in from 1960 to 1970 so we don't know the source of Aroclor 1260 before then. We also don't know the source of Aroclor 1260 for other areas near Yosemite Creek, especially the older (deeper) sediments that have the highest concentrations (although the HLA (1999) report points to a local drum recycling facility). We also lack confirmation of the Yosemite Creek outfall PCB pattern that might match the EM3 pattern that occurs in more recent sediments in the Yosemite Creek area. And of course the source of the older Aroclor 1254 pattern that is present in all deeper horizons across the embayment is highly speculative, although there may be a connection to the drum recycling facility discussed earlier. At the Ashtabula River dredge site the probable sources are better known. The Aroclor 1248 (and dechlorinated Aroclor 1248) and Deca rich patterns are likely from Fields Brook, although actual source patterns from Fields Brook were not collected so we base this conclusion on previous reported work (USEPA, 1998; Imamoglu et al., 2002; Battelle, 2010). The more recent Aroclor 1260 pattern from drainage near Jacks Marine was identified during preliminary work done for the EPA dredge project (Battelle, 2010) so they could ensure all continuing sources had been contained before proceeding with the dredge project. At both of our demonstration sites, the use of existing study designs and samples allowed for a more cost-effective forensics demonstration but also resulted in similar limitations. Without additional analysis of upstream source areas, positive confirmation of the actual PCB sources to our two demonstration site areas is still incomplete. Although outside the scope of this ESTCP project, if this were an actual forensics project this additional confirmation work might be conducted to provide more conclusive evidence of the actual upstream PCB sources.

For future forensics studies it might be best to plan to collect these upland/upstream samples for analysis to confirm source compositions. The best way to accomplish this might be an iterative approach as we described for ACF samples in Section 5.5. In that section we described an iterative approach for ACF where additional ACF samples might be run from locations near the "corner" samples in Figures 15 and 16 to better define the end-member source compositions. This iterative approach could also be used to run some additional samples from upland/upstream of these same source areas in an attempt to match the actual sources. At HPS this was done with upland samples from the landfill shoreline area (Figure 18) for the source of EM2 (but this shoreline source material was only present as a source after this section of shoreline was filled in the 1960-1970 time period, so the source location for the EM2 in older sediments is unknown). Additional work might also include going to upstream Yosemite Creek CSO outfalls and colleting upstream sump material to match EM3, which might require opening manhole covers upland from the outfalls opening to the bay. For Ashtabula sources, additional source samples may need to be collected upstream in Fields Brook and the drainage across the river near Jacks Marine. Additional guidance on actually performing a fingerprinting study at a site can be found in additional references including a companion user's guide on the Navy's SPAWAR website (http://environ.spawar.navy.mil/Projects/PCB_Fingerprinting).

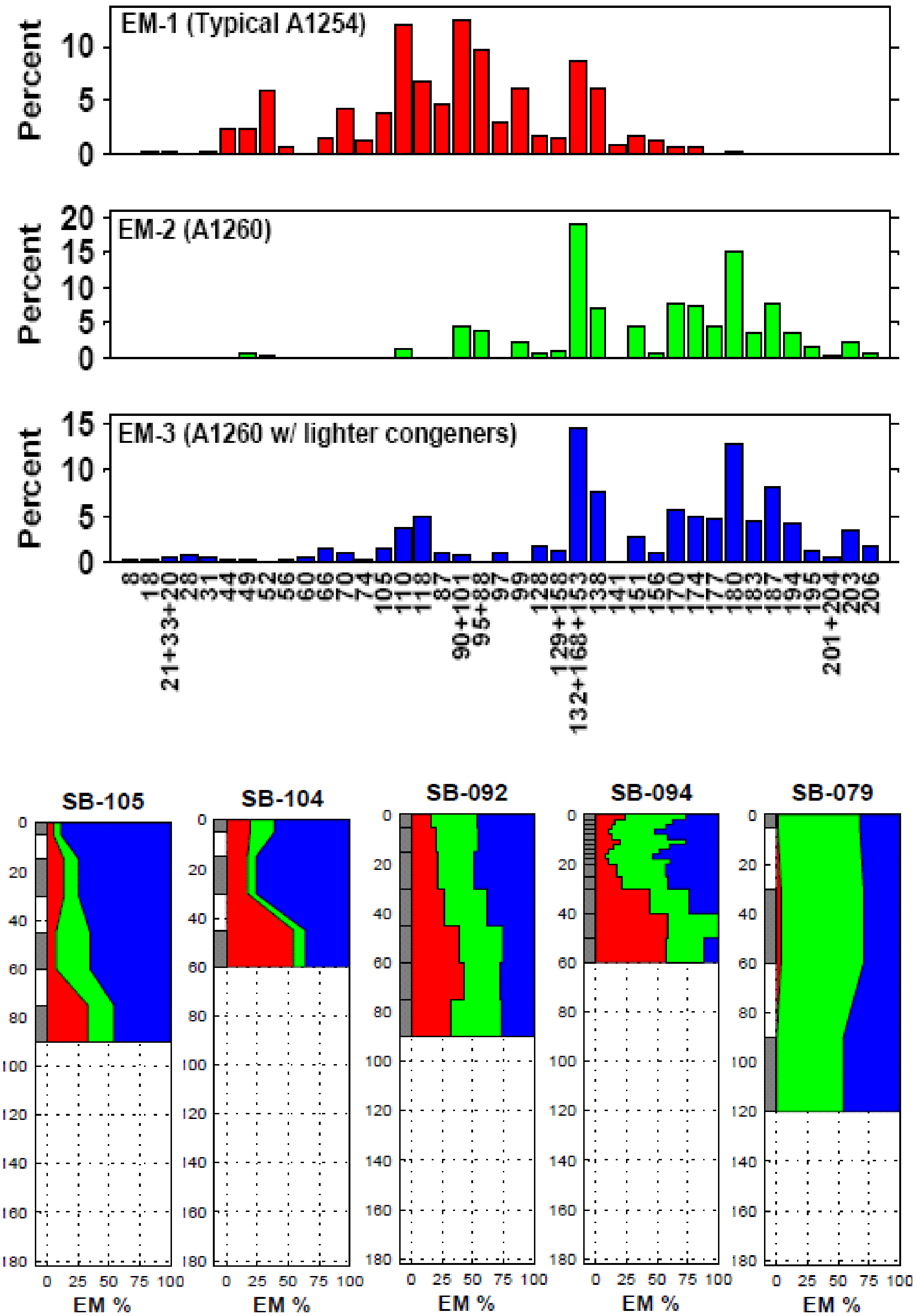


Figure 17. HPS EM Compositions in selected cores.

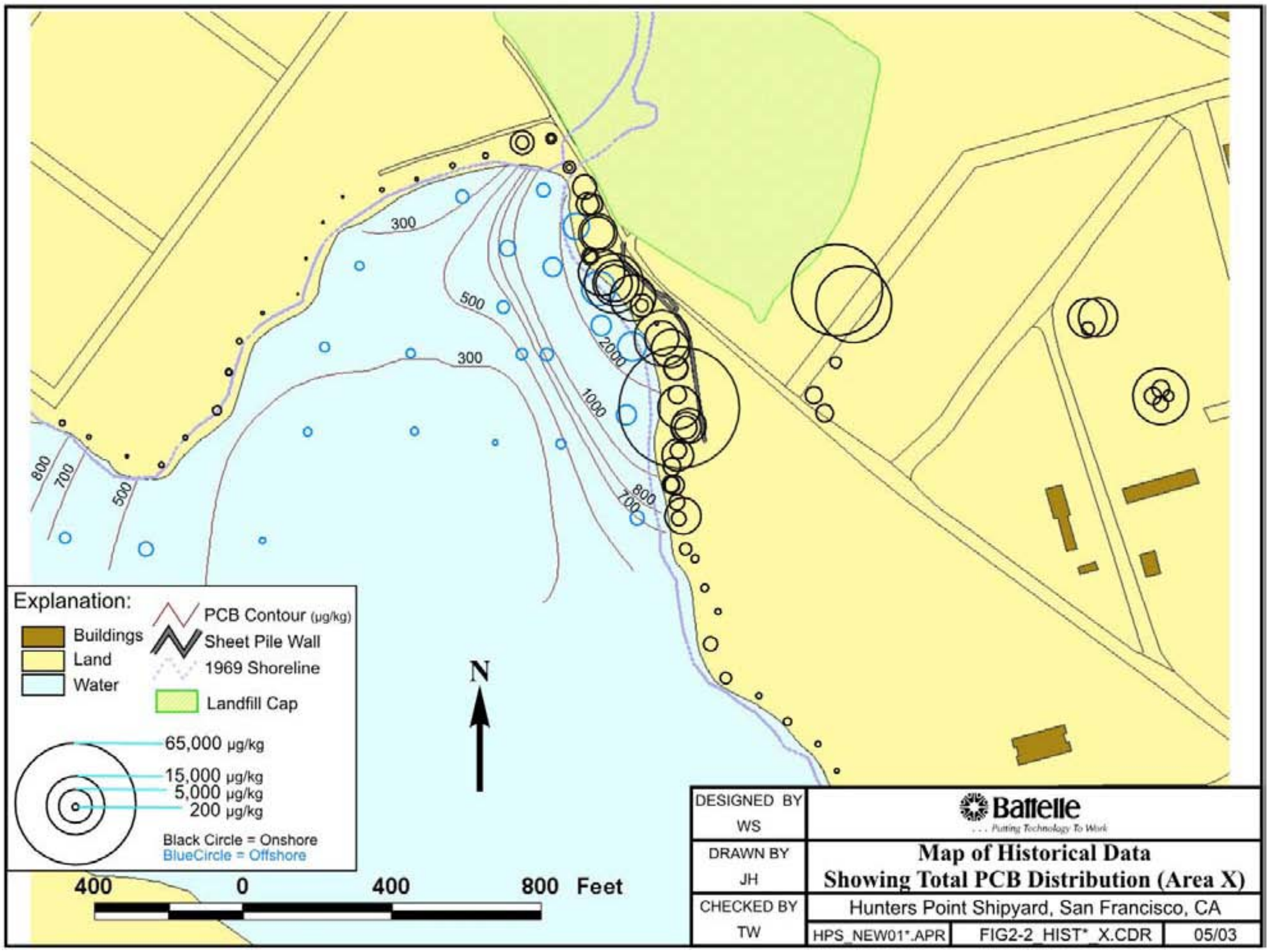


Figure 18. Upland Shoreline PCB levels along South Basin.

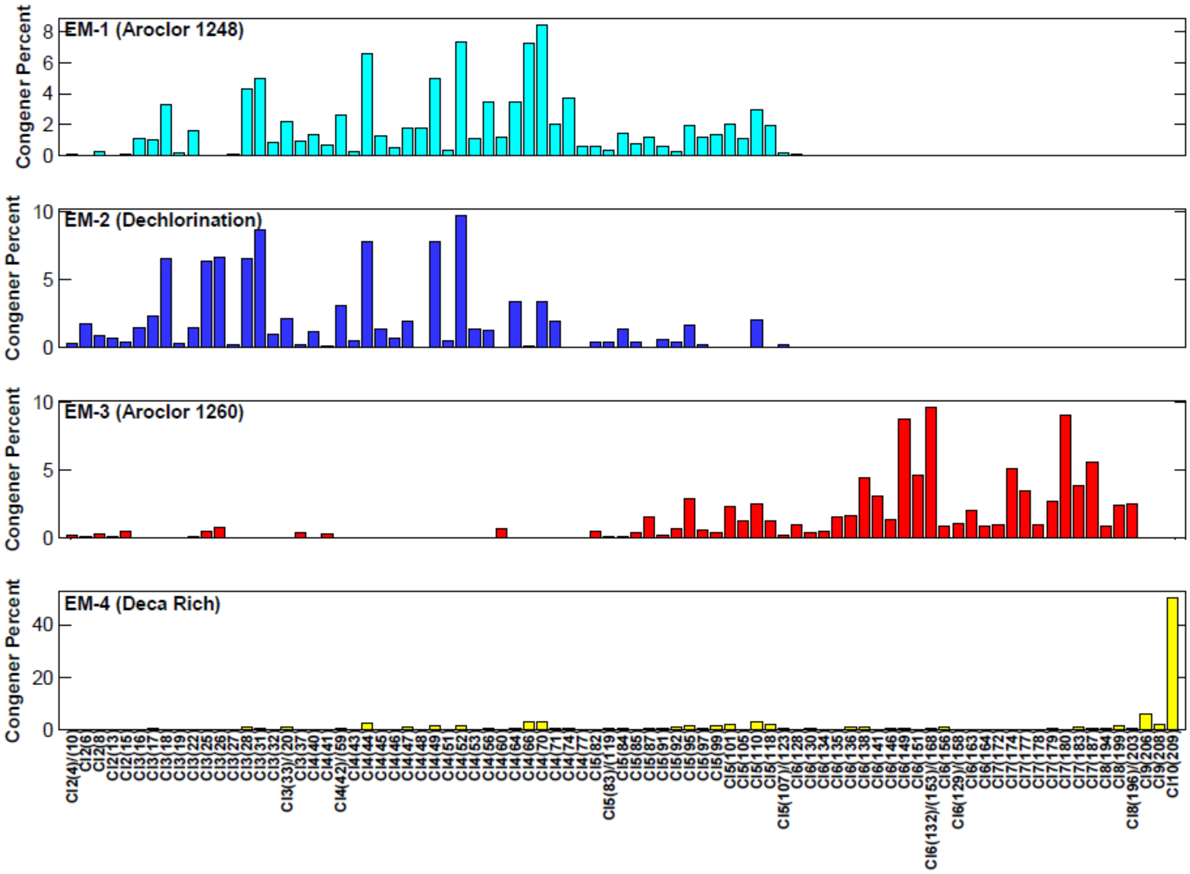


Figure 19. Ashtabula End-member (EM) compositions.

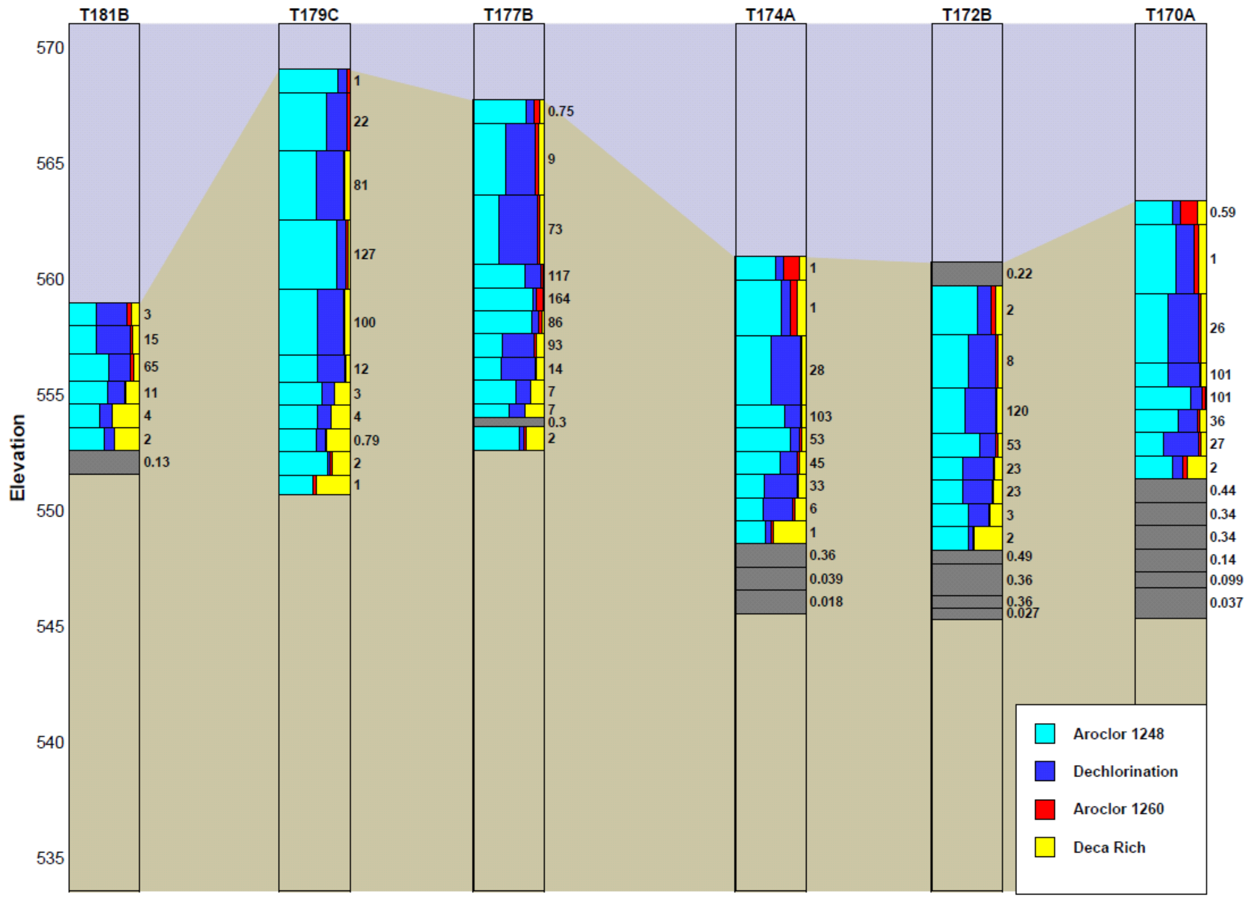


Figure 20. Ashtabula Cores showing %EM compositions and total PCB levels (ppm).

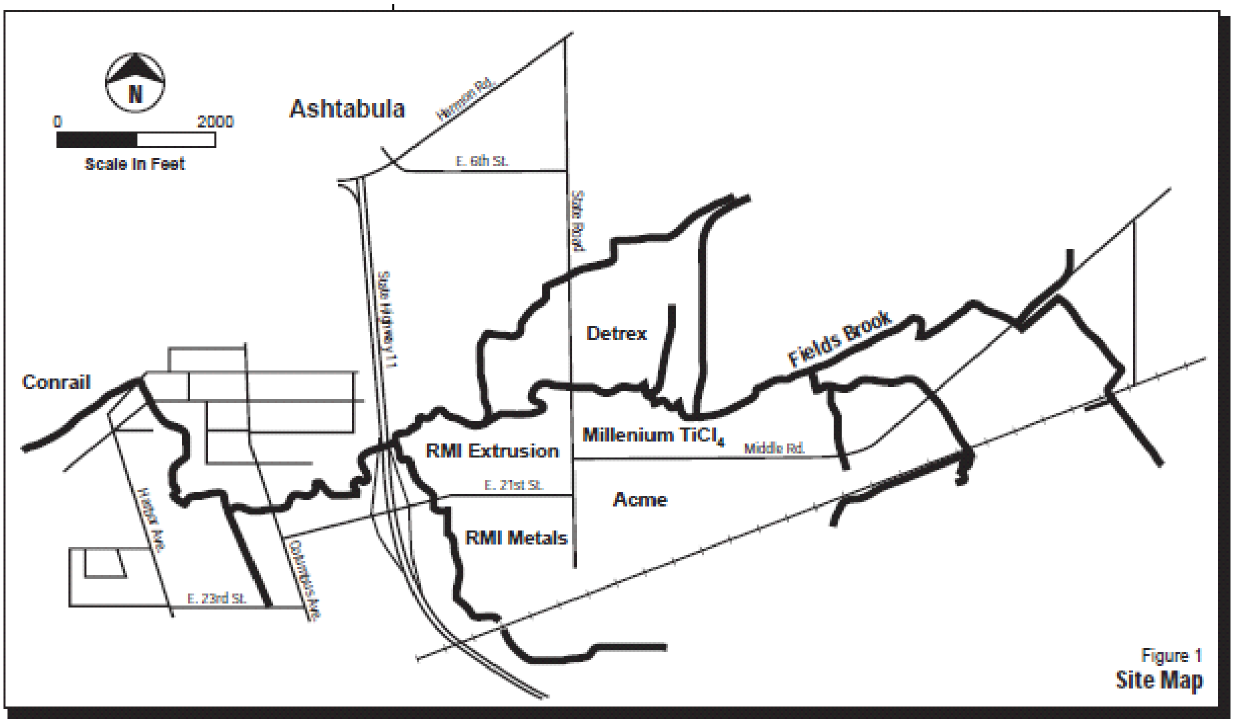


Figure 21. Upstream Fields Brook drainage showing industrial activities east of Ashtabula River (Ashtabula River is located to the left of this figure). This Site Map is from EPA report at http://www.epa.gov/region5/sites/fieldsbrook/pdfs/fieldsbrook_fs_199811.pdf.

6 PERFORMANCE ASSESSMENT

As stated in Table 1 and Section 3, the performance objectives have certain data requirements and success criteria that need to be met. This section describes how these data were used to evaluate the demonstration and show how the performance objectives for a successful demonstration had been met.

6.1 PERFORMANCE OBJECTIVE 1: PARCC parameters for RSC and ACF

Both the RSC and ACF measurements are modifications of standard EPA methods, and both can be evaluated by similar data quality objectives employed by EPA laboratories. This includes the evaluation of data quality parameters that can be characterized by five indicators of data quality referred to as the PARCC parameters: precision, accuracy, representativeness, completeness, and comparability. The specific types of quality assurance samples that can be used to evaluate precision and accuracy vary, with additional measures for the other PARCC parameters.

6.1.1 RSC Quality Control Samples

Since the Hunters Point RSC data were used to select ACF samples, these samples went through full Quality Control (QC) checks. For the Ashtabula River data, the RSC data were not used for ACF sample selection purposes so efforts were not made to collect and review all the QC data. However, the Ashtabula RSC data are included in the Appendix but not considered in this RSC performance assessment.

Precision

Both RSC and ACF used laboratory duplicates to assess precision. For the RSC data, the percent relative standard deviation (%RSD) should be less than 30%. The RSC data are listed in Appendix 1, with the last column listing the %RSD. Note values below the 50 ppb detection limit were not used for precision determinations. Of the 450 measured samples, 48 samples or about 10% had duplicate measurements. The overall average %RSD was 18% as listed at the end of the dataset in Appendix 1. About two thirds of these duplicates (33 samples) were assay duplicates which were run on single extracts, which means a 10 gram dry weight sample was taken from the sampling jar and extracted in 20 ml of methanol. These assay duplicates were run from the same 20 ml methanol extract and measure the precision of the immunoassay alone (without extraction variability). These duplicates are only looking at the variability of the assay and have a %RSD of 12%. A second group of duplicates (15 samples) were extraction duplicates which were run on re-extractions of a second aliquot removed from the sample jar and extracted separately. These extraction duplicates (noted with an E in Appendix 1) measure the variability of both the extraction and assay steps combined and show a %RSD of 29%. This added variability in the extraction duplicates suggests there is more variability associated with sample heterogeneity and the extraction step compared with variability in just the assay step. Given the benchmark for precision is less than 30% RSD, the dataset passes this benchmark for either assay or extraction duplicates.

Accuracy

Both RSC and ACF used several methods to gauge accuracy. Method Blank (MB) should be below reporting limits, and Matrix Spike and/or Laboratory Control Sample target analyte recoveries should be between 40-120%. Method blanks for the RSC immunoassay runs were all below detection. The RSC immunoassay used an Aroclor 1254 as a control sample and the results from the 25 separate runs (with 15-20 field samples per run) are shown in Table 3. The average percent recovery for 25 separate runs was 108%, which meets the requirement of being between 40-120% in data not corrected for surrogate additions.

Other PARCC Parameters

There are multiple ways to assess the representativeness, completeness, and comparability of the RSC data. As stated in the project proposal and Demonstration Plans, the RSC data can be judged to pass these parameters if it is possible to construct the contour maps in Section 5.4. An even better way to judge the RSC data is to compare them to the laboratory congener data which usually include more quality control samples to provide a higher level of quality control. Figure 22 shows a plot of RSC versus ACF congener data (Lab Total PCB calculated as twice the sum of 18 NOAA Status and Trends congeners) for HPS data not from the dated cores. Since all horizons from the dated cores were measured for ACF (about 60 samples), these 43 samples were the samples that were selected by using the RSC data so there are both RSC and ACF data for direct comparison. The data show excellent comparability, with lab data total PCBs about 0.9 times the RSC total value. If the two higher outlier samples marked in the plots are dropped to develop a relationship with the bulk of the data that falls below 5 ppm on the RSC scale, the relationship becomes a good fit to the 1:1 correlation line. But even with these two outlier samples included, the correlation coefficient is 0.95. The RSC dataset therefore passes the requirements for measures of representativeness, completeness, and comparability.

It should be noted that although the excellent relationship between the RSC and ACF data was used here to demonstrate the quality of the RSC data, there are some situations that may result in weaker comparisons even if the quality of the RSC and ACF data are good. Sample heterogeneity is always a concern in comparisons of analytical techniques, so outliers or a poor relationship can be the result of poor sample preparation resulting in sample splits for the different techniques that are not completely homogeneous. Also since the immunoassay shows a different response to each congener, different compositions of congeners at the same total PCB level measured by laboratory ACF methods could show different total PCB levels by RSC immunoassay methods. For example, the immunoassay is calibrated with Aroclor 1254 standards, so a PCB composition with very different composition such as Aroclor 1242 or 1268 might have specific congeners that show less response with the antibodies used in the immunoassay and provide a lower than expected total PCB value. The response factors by Aroclor type are available to normalize immunoassay data for these compositional differences, but additional alterations (such as dechlorination) might make these types of corrections more uncertain. So the use of a good relationship between RSC and ACF can be used to demonstrate the good quality of RSC data, but a poor relationship does not always mean the RSC or ACF data are “wrong” or of poor quality.

Table 3. SRM for measure of accuracy for RSC immunoassays.

<u>Quality Control:</u> Control standards in methanol with certified values of ***3* ± *0.6* ppb PCBs (**as **Aroclor 1254)** are provided with each ImmunoAssay kit. These standard reference materials (SRMs) are included in every batch of twenty samples. Each SRM is treated in the same manner as an unknown sample.

Calib. Curve #	*PCB (Aroclor 1254)*
1	3.19
2	3.52
3	3.18
4	3.62
5	3.13
6	3.28
7	3.37
8	3.18
9	3.05
10	3.13
11	3.15
12	3.11
13	3.17
14	3.28
15	3.60
16	3.45
17	3.12
18	2.97
19	3.05
20	3.14
21	3.26
22	3.22
23	3.57
24	3.23
25	3.10
Mean	3.24
Stdev	0.18
%RSD	5.56%

Analyte (μg/Kg)	*Mean*	*Certified*	*% Recov*
PCB	3.24	3.00	108.09%

<u>Definitions:</u>

Mean: Arithmethic Mean

Stdev*:* Standard Deviation from duplicate assay analyses (n=2...4)

% RSD*:* Percent Relative Standard Deviation whereby; [{stdev/mean} * 100]

% Recov: percent recovery of assay result from certified value [{IA result / cert} * 100]

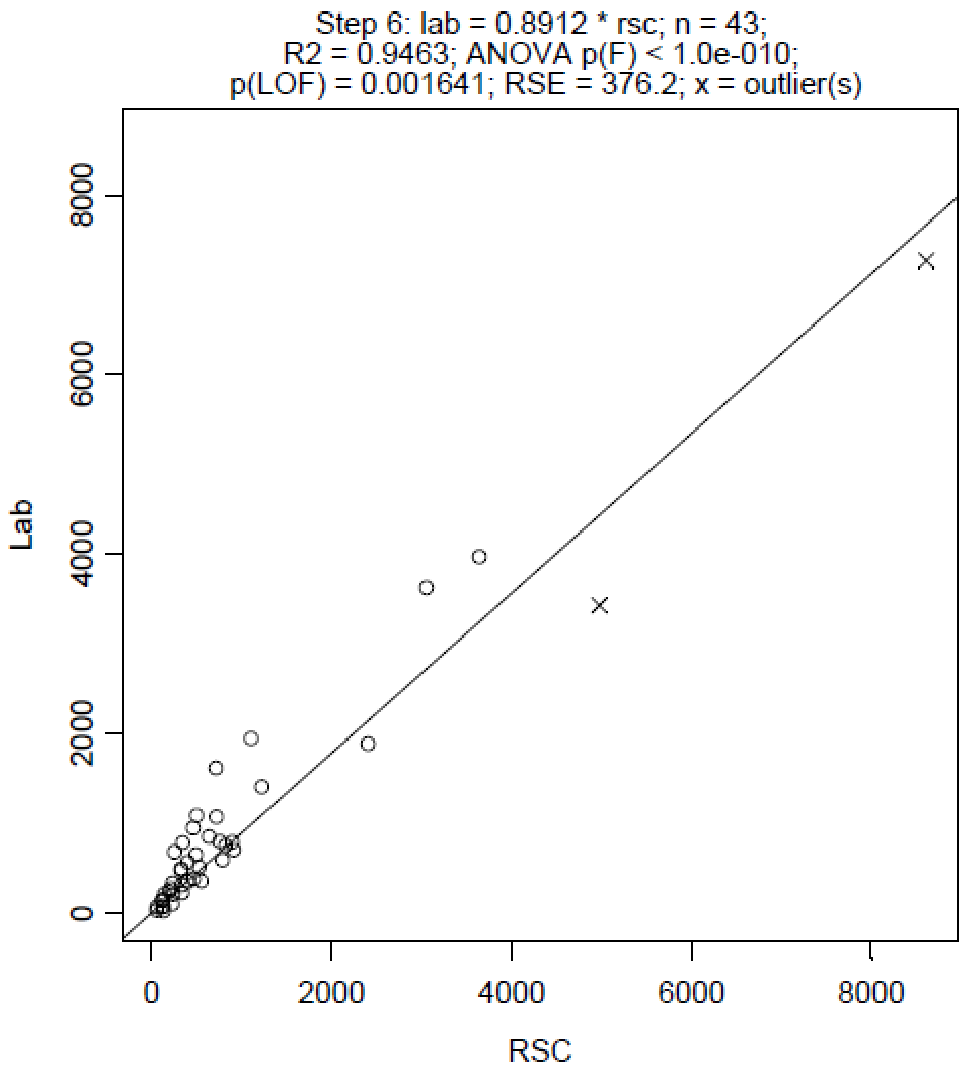


Figure 22. Comparison of RSC to ACF (Laboratory) congener data (in ppb) for HPS data.

6.1.2 ACF Quality Control Samples

Several different approaches were used to ensure that reliable and high quality data were generated, so that such data could be confidently used, including the analysis of a series of laboratory quality control (QC) samples and the subsequent evaluation of the resulting data. The laboratory PCB analysis QC measures included recovery of surrogate internal standard (SIS) compounds, evaluation of procedural blank (PB) samples, laboratory control sample (LCS) recoveries, matrix spike sample (MS) recoveries, matrix spike or field sample duplicates (MSD or DUP) and/or instrument precision checks (IC). The QC results are summarized in the following sections.

The vast majority of the QC samples prepared and analyzed along with the PCB samples met the data quality objectives (DQOs). Some DQO exceedances can be expected with challenging sample matrices and when applying ultra-trace level analytical methods. However, the DQO exceedances that were observed were relatively few and minor, and appear to be isolated sample- or analyte-specific incidents that do not represent the analyses and dataset as a whole. Any DQO exceedances were carefully investigated and the potential impact on the overall data was assessed; no DQO exceedances were observed that would adversely affect the overall quality, reliability, or use of the PCB data. Overall, the quality assurance program, including the analysis of laboratory QC samples processed and analyzed with the field samples, produced data that demonstrate that the methods were appropriate and that the analyses were under control, generating high quality and reliable data that can be used with confidence.

Hunters Point Shipyard Sample Analysis - Quality Control Sample Results

Table 4 summarizes the laboratory QC sample types and DQOs that applied to the analysis of PCB congeners in the Hunters Point Shipyard sediment samples. A summary of the QC sample results are also presented in Table 4.

Surrogate Internal Standard (SIS) Recovery Results

Surrogate compounds were added to all field and QC samples prior to sample preparation. These compounds were added to determine the efficiency of the sample extraction and analysis procedures. Surrogate recoveries were evaluated to assess analytical method accuracy relative to sample matrix and laboratory performance.

The surrogate recovery results were excellent, and demonstrated that the analysis was widely under control and that effective sample processing and analysis was performed. More than 96% of the surrogate recovery data points met the DQOs (Table 4). The few DQO exceedances that were observed were primarily with SIS compounds PCB36 and PCB103 in a few samples in two of the seven analytical batches. There was evidence of matrix interference and contribution to the chromatogram in the region of these two SIS compounds, but this appeared to be isolated and thus did not impact the target congener quantitation.

Table 4: Comparison of Project Results to Data Quality Objectives – Hunters Point Sediment Samples

QC Sample or Measurement Type	Data Quality Objective	Total # of QC Measure Data Points[a]	# of QC Measure Data Points that Met the DQO	% of QC Measure Data Points that Met the DQO
Surrogate Internal Standard Recovery	40 to 120% recovery	560	540	96.4
Method/Procedural Blank	No compound to exceed the 5 times the RL, unless sample amount is >5 times blank amount	308	308	100
Laboratory Control Sample Recovery	40 to 120% recovery for spiked compounds	308	308	100
Matrix Spike / Duplicate Recovery	40 to 120% recovery for spiked compounds Applies to analytes with spiked concentration >5 times the native sample concentration.	616	609	98.6
Matrix Spike/Duplicate Precision	RPD <30%. Applies to analytes with spiked concentration >5 times the native sample concentration.	308	236	76.6
Instrument Check Accuracy/Precision	PD <20%.	308	308	100

[a] Total number of data points of the indicated QC measure. For instance, for Surrogate Recovery it would be the number of surrogate compounds in each sample multiplied by the total number of samples. For the Method Blank it would be the numbers of Method Blank samples analyzed with the sample set, multiplied by the number of target analytes measured.

Laboratory Procedural Blank (PB) Results

A laboratory procedural blank (PB) was prepared with each sample batch by extracting a blank sample matrix (sodium sulfate) as if it were one of the environmental samples. Procedural blanks are used to assess the potential of contamination introduced during sample preparation and analysis.

Trace concentrations were detected of few PCB congeners in some PB samples, but only at ultra-trace amounts that were substantially lower than the method reporting limit (RL) and method detection limit (MDL). Overall, all (100%) of the PB results met the DQOs.

Laboratory Control Sample (LCS) Recovery Results

A laboratory control sample (LCS) was prepared with each sample preparation batch by spiking a blank sample matrix (sodium sulfate) with known concentrations of a set of the PCB target compounds. Laboratory control samples are used to assess the accuracy of the sample preparation and analysis procedures independent of sample matrix effects.

The LCS recovery results were excellent, and demonstrated that in the absence of a field sample matrix the analysis consistently produced accurate results for the target PCB congeners. All (100%) of the LCS recovery data points met the DQOs.

Matrix Spike (MS) / Duplicate (MSD) Sample Recovery Results

A matrix spike and spike duplicate sample (MS/MSD) was prepared with each batch of samples by spiking a separate field sample with known concentrations of a set of the PCB target compounds. MS/MSD sample recoveries are used to assess the accuracy of the sample preparation and analysis procedures in the presence of a field sample matrix.

The MS/MSD sample recovery results were excellent, and demonstrated that in the presence of a field sample matrix the analysis consistently produced accurate results for the target PCB congeners. A total of 609 of the 616 (98.6%) of the MS/MSD recovery data points met the DQOs. The few exceedances that were observed were minor (i.e., generally within a few percent of the DQO), and tended to occur for analytes that experienced congener- and sample-specific matrix interference and/or had high background PCB concentrations relative to the spiking concentration, which results in less reliable results and a QC measure that may not be suitable for assessment.

Matrix Spike Duplicate (MSD) Sample Precision Results

The matrix spike and spike duplicate samples (MS/MSD) were also prepared to evaluate the analytical precision by comparing the consistency in the recoveries, by calculating the relative percent difference (RPD) in the two recovery values.

Very good precision was noted for the samples and analytes that were appropriate for such assessment. However, a total of 236 of the 308 (76.6%) of the MS/MSD precision data points met the DQOs, which is a lower rate of meeting the DQO than one typically would like. The majority of the exceedances were limited to analytes and samples with high background PCB concentrations relative to the spiking concentration, which results in unreliable recovery results (and thus precision calculation) and a QC measure that may not be suitable for assessment (see DQO description for the MS/MSD samples in Table 4); small fluctuations in a high background concentrations means that it is not possible to accurately subtract the background sample concentrations from the measured MS/MSD sample concentration to determine the recovery (and precision) of the much lower MS/MSD spike levels.

Instrument Check (IC) Accuracy/Precision Results

An independent instrument check (IC) sample was prepared with each sample batch by spiking a small amount of solvent with target compounds obtained from a vendor that is different from that used for the calibration standards, and then analyzing the IC as a sample. IC samples are primarily used as an independent measure of accuracy, but can also be used as an additional measure of precision, by calculating the percent difference between the expected and determined concentration.

The IC recovery results were excellent, and demonstrated that the instrument calibrations and overall sample analysis were well under control. All (100%) of the IC recovery data points met the DQOs.

Ashtabula River Sample Analysis - Quality Control Sample Results

Table 5 summarizes the laboratory QC sample types and DQOs that applied to the analysis of PCB congeners in the Ashtabula River sediment samples. A summary of the QC sample results are also presented in Table 5.

Surrogate Internal Standard (SIS) Recovery Results
Surrogate compounds were added to all field and QC samples prior to sample preparation. These compounds were added to determine the efficiency of the sample extraction and analysis procedures. Surrogate recoveries were evaluated to assess analytical method accuracy relative to sample matrix and laboratory performance.

The surrogate recovery results were excellent, and demonstrated that the analysis was widely under control and that effective sample processing and analysis was performed. More than 99% of the surrogate recovery data points met the DQOs (Table 5). The few DQO exceedances that were observed were primarily with SIS compounds with some evidence of matrix interference and contribution to the chromatogram in the region of the SIS compound, and this appeared to be isolated and thus did not impact the target congener quantitation.

Laboratory Procedural Blank (PB) Results
A laboratory procedural blank (PB) was prepared with each sample batch by extracting a blank sample matrix (sodium sulfate) as if it were one of the environmental samples. Procedural blanks are used to assess the potential of contamination introduced during sample preparation and analysis.

Trace concentrations were detected of few PCB congeners in some PB samples, but only at ultra-trace amounts that were substantially lower than the method reporting limit (RL) and method detection limit (MDL). All (100%) of the PB results met the DQOs.

Laboratory Control Sample (LCS) Recovery Results
A laboratory control sample (LCS) was prepared with each sample preparation batch by spiking a blank sample matrix (sodium sulfate) with known concentrations of a set of the PCB target compounds. Laboratory control samples are used to assess the accuracy of the sample preparation and analysis procedures independent of sample matrix effects.

The LCS recovery results were excellent, and demonstrated that in the absence of a field sample matrix the analysis consistently produced accurate results for the target PCB congeners. A total of 1,899 of the 1,902 (99.8%) LCS recovery data points met the DQOs.

Table 5: Comparison of Project Results to Data Quality Objectives – Ashtabula Sediment Samples

(EPA-ORD and GLNPO Project Combined)

QC Sample or Measurement Type	Data Quality Objective	Total # of QC Measure Data Points[a]	# of QC Measure Data Points that Met the DQO	% of QC Measure Data Points that Met the DQO
Surrogate Internal Standard Recovery	40 to 120% recovery	992	987	99.5
Method/Procedural Blank	No compound to exceed the 5 times the MDL, unless sample amount is >10 times blank amount	1,902	1,902	100
Laboratory Control Sample Recovery	40 to 120% recovery for spiked compounds	1,902	1,899	99.8
Matrix Spike Recovery	40 to 120% recovery for spiked compounds Applies to analytes with spiked concentration >5 times the native sample concentration.	1,902	1,900	99.9
Sample Duplicate Precision	RPD <30%. Applies to analytes with concentration >5 times the MDL.	1,902	1,899	99.8

[a] Total number of data points of the indicated QC measure. For instance, for Surrogate Recovery it would be the number of surrogate compounds in each sample multiplied by the total number of samples. For the Method Blank it would be the numbers of Method Blank samples analyzed with the sample set, multiplied by the number of target analytes measured.

Matrix Spike (MS) Sample Recovery Results

A matrix spike (MS) sample was prepared with each batch of samples by spiking a separate field sample with known concentrations of a set of the PCB target compounds. MS sample recoveries are used to assess the accuracy of the sample preparation and analysis procedures in the presence of a field sample matrix.

The MS sample recovery results were excellent, and demonstrated that in the presence of a field sample matrix the analysis consistently produced accurate results for the target PCB congeners. A total of 1,900 of the 1,902 (99.9%) of the MS recovery data points met the DQOs.

Sample Duplicate (MSD) Precision Results

A laboratory duplicates (DUP) was prepared with each batch by extracting a second aliquot of an environmental sample. Laboratory duplicates were evaluated to assess analytical precision related to laboratory performance.

Excellent precision was consistently observed. A total of 1,899 of the 1,902 (99.8%) of the precision measures met the DQOs. The three data points that did not meet the DQO were for target analytes that were detected at low concentrations, and are thus not suitable for a solid assessment of the precision (see DQO description for the DUP samples in Table 5).

Overall both demonstration site datasets pass DQO tests for the PARCC parameters. These datasets therefore represent high quality data that pass all tests for data quality and are ready for use in a forensics study.

6.2 PERFORMANCE OBJECTIVE 2: Data analysis techniques

Multiple levels of graphical and statistical analyses are possible to investigate the forensics data. These various techniques use slightly different methods, but basically all generate a solution whereby multivariate source profiles can be added together according to their source contributions to generate an estimate of each of the original sample compositions. The simplest approach uses PCB congener compositional profiles, others use diagnostic ratio crossplots, while others use modified least squares procedures to generate mixing proportions based on an assumed source profile matrix (e.g. chemical mass balance methods – Hopke, et al., 2006). Such methods work best with a limited number of relatively well known sources. For simple approaches such as diagnostic cross plots, a performance metric such as a linear correlation coefficient was used. This metric ranges from one (perfect correlation between variables) to zero (no correlation between variables). In contrast, self-training receptor modeling methods are better suited to those situations where one cannot (or wishes not to) assume the contributing source fingerprints. These more involved methods include positive matrix factorization (PMF), polytopic vector analysis (PVA); extended self-modeling curve resolution (UNMIX) and alternating least squares (ALS) (see Johnson, et al., 2007 for a comparison of these methods applied to a common PCB data set). These methods differ in their mathematical detail, but are similar in that they use some form of principal component analysis (PCA). Johnson et al. (2007) show how congener compositions can be compared among samples (for example between an actual source composition and a model proposed source composition) using performance metrics. One such performance metric is the cosine theta measurement, which measures the angle between two sample vectors in PCA space. If two samples have the same exact congener compositions, their vectors will overlay in PCA space and the angle between them will be zero. If the cosine of this angle (cosine theta) is equal to one, this indicates an exact match. The cosine theta metric can range from zero to one, similar to the range of the correlation coefficient for linear regressions. In this case, the cosine theta can be viewed as a comparison metric for multivariate correlation just as the correlation coefficient is used to gauge correlation between two variables.

6.2.1 Multivariate analysis procedures (e.g., PCA, PVA, PMF)

Section 3.2 included Performance Objectives for Receptor Models, indicating that method evaluation was conducted using artificial datasets. These artificial datasets were created by mathematically mixing chemicals from known multivariate sources in varying proportions in multiple samples to test how well the receptor models could "unmix" the original sources. This section describes the results of that evaluation. Two artificial data sets were used for this evaluation, as well as the real PCB data set from our first demonstration site at Hunter's Point Shipyard. The first artificial data set was recently published in the peer-reviewed literature (Henry and Christensen, 2010). The second artificial data set was published by co-investigator Dr. Glenn Johnson in an Environmental Forensics book (Johnson, et al., 2007). Four multivariate receptor modeling methods, all of which have seen extensive use in the environmental chemistry literature) were applied to each data set. Each of the three data sets here has distinct advantages as is discussed in the subsections below.

Data Set 1: Henry and Christensen (2010) Data Set

The Henry and Christensen (2010) data set offers several advantages (as compared to Data Set 2) as it pertains to the objectives of this performance evaluation. First, this data set was created by two researchers that have published extensively on receptor model development and deployment, but who are not involved in this particular ESTCP project. Neither were any of the investigators on this ESTCP research involved in the Henry and Christensen paper. Second, Henry and Christensen proposed a statistical performance criterion to measure the success of the methods that they tested: the standard deviation of the true source composition subtracted from the receptor-model estimated composition ($\sigma_{\text{Est-True}}$). We adopt this as one of our performance criterion for both data sets in this exercise. Third, this research was published in the peer-reviewed literature in a reputable journal (*Environmental Science & Technology*). Taken in combination, these aspects of the Henry data set minimize any perceptions that that the receptor model performance objectives are merely self-fulfilling prophesy. That is, if the ESTCP project researchers created the artificial data set, implemented the receptor model methods, and evaluated their results using performance metrics we ourselves proposed, objectiveness and credibility might be suspect.

In addition we recognize that, all things being equal, a data analyst will get best results using the method with which they are most familiar. In the case of the Henry and Christensen data set, we used their results for UNMIX (the method Henry developed and has used extensively: Henry, et al., 1994; Henry, et al., 2003) and PMF (a method Christensen has published on: Bzdusek, et al., 2006). For PVA, Dr. Glenn Johnson (co-investigator on this research) ran the Henry data set using Matlab code that he wrote and has used in many published studies (Johnson, et al., 2000; Magar, et al., 2005). For Alternating Least Squares (Tauler, et al., 1993) we asked Dr. Scott Ramos (Chief Scientist at Infometrix, Inc., Bothell, WA) to conduct the ALS. Infometrix markets a commercial chemometrics software package that implements ALS, and Dr. Ramos was the one primarily responsible for that implementation. Dr. Ramos is also an experience ALS practitioner (Ramos, et al., 2005).

Disadvantages of the Henry and Christensen data set (at least as it applies to this exercise) are that (1) the chemical analytes are not PCBs; and (2) there are a very small number of analytes (eight) as compared to a more typical congener specific data. However, to the extent that these two issues might be of concern, the following second artificial dataset with the Johnson data (a 56 PCB congener data set) balances this. The Henry Data Set is an artificial data set with 200 samples and eight chemical compounds, with 1% multiplicative error in the concentrations and three sources. The data set was included in the Supporting Information on the publishing journal's web site (http://pubs.acs.org/journal/esthag).

Table 6. Comparison of Receptor Models using Artificial Dataset 1. Adapted from Table 1 in Henry and Christensen (2010) by adding our two new columns and similarity metrics.

Table 1. Comparison of True Source Compositions for Data Set 1 (Henry Data Set) with Values Determined from Unmix, PMF (four versions), PVA, and ALS

	compd #	True value	UNMIX	B-PMF NNLS	B-PMF penalty functions	EPA PMF3	EPA PMF3 fpeak=-0.1	Johnson Matlab PVA	Pirouette MCR-ALS
Source 1	1	11.44	11.31	10.9	10.45	11.07	11.72	11.20	11.40
	2	12.83	13.3	15.24	15.15	15.45	12.67	13.29	12.91
	3	11.9	12.17	12.74	13.26	12.54	11.61	12.25	12.00
	4	15.34	16.01	18.46	18.66	18.57	15.01	16.06	15.50
	5	14.79	15.04	16.18	15.76	16.49	14.9	14.97	14.82
	6	12.27	12.08	10.41	11.51	9.73	11.97	12.20	12.32
	7	11.76	11.29	10.15	9.56	10.3	12.07	11.22	11.59
	8	9.66	8.8	5.91	5.65	5.86	10.04	8.81	9.47
	$\sigma_{Est.-True}$		**0.51**	**2.35**	**2.44**	**2.5**	**0.3**	**0.53**	**0.13**
	Corr Coef (*r*)		**0.992**	**0.947**	**0.941**	**0.939**	**0.989**	**0.990**	**0.999**
	Cos θ		**0.999**	**0.986**	**0.985**	**0.984**	**1.000**	**0.999**	**1.000**
Source 2	1	12.54	12.47	11.13	11.72	12.59	12.6	12.58	12.56
	2	8.85	7.86	6.22	7.16	7.18	9	8.39	8.52
	3	10.46	10.43	11.87	11.24	10.26	10.36	10.36	10.39
	4	10.11	9.08	8.08	8.8	8.24	10.29	9.62	9.77
	5	12.63	11.85	9.58	10.72	11.44	12.82	12.33	12.43
	6	15.29	16.61	21.6	19.12	17.29	14.89	15.74	15.62
	7	14.38	14.71	13.56	14	15.06	14.45	14.63	14.55
	8	15.75	16.99	17.96	17.26	17.95	15.59	16.35	16.17
	$\sigma_{Est.-True}$		**0.93**	**3.16**	**1.95**	**1.56**	**0.21**	**0.41**	**0.29**
	Corr Coef (*r*)		**0.991**	**0.873**	**0.931**	**0.985**	**0.998**	**0.998**	**0.999**
	Cos θ		**0.998**	**0.976**	**0.990**	**0.994**	**1.000**	**1.000**	**1.000**
Source 3	1	13.64	13.7	15.77	15.36	13.87	13.48	13.53	13.49
	2	12.12	12.55	12.24	11.66	11.19	11.76	12.11	12.16
	3	9.43	9.33	6.84	7.36	9.03	9.52	9.47	9.53
	4	13.25	13.61	11.92	11.5	11.94	12.84	13.19	13.26
	5	15.96	16.35	17.76	17.02	15.45	15.58	15.89	15.90
	6	8.77	7.99	3.84	5.57	9.38	9.46	8.93	8.93
	7	14.53	14.57	17.39	17.02	15.3	14.6	14.54	14.49
	8	12.31	11.9	14.18	14.52	13.85	12.76	12.33	12.25
	$\sigma_{Est.-True}$		**0.42**	**2.73**	**2.17**	**0.95**	**0.41**	**0.08**	**0.10**
	Corr Coef (*r*)		**0.994**	**0.956**	**0.941**	**0.926**	**0.990**	**1.000**	**1.000**
	Cos θ		**1.000**	**0.982**	**0.988**	**0.998**	**1.000**	**1.000**	**1.000**

Table 6 (above) shows a comparison of the true values of source compositions to those estimated by Unmix, three versions of PMF, PVA and ALS. As noted by Henry & Christensen, $\sigma_{Est\text{-}True}$ indicate that results from Unmix and the EPA PMF3 (with fpeak = -0.1) yielded estimated source compositions that were very close of true compositions ($\sigma_{Est\text{-}True} < 1$). PMF with other options chosen did not fare as well and $\sigma_{Est\text{-}True}$ was much larger. This observation is confirmed using the two similarity metrics from Johnson et al. (2006) that were added to this table: cosine theta (**cosθ**) and correlation coefficient (***r)***.

The estimated source compositions from PVA and ALS solutions (run by Johnson and Ramos) were added to this table. These methods also performed very well, with low $\sigma_{Est\text{-}True}$ values, and cosθ and ***r*** values ≥ 0.99 for all three source compositions.

But before one jumps to the conclusion that any of these is the "best" method, note that one could argue that PMF performed among the best (see results for PMF3 with fpeak=-0.01) or that PMF performed the worst (see results for PMF NNLS). There are many similarities between these methods, and "best performance" is not necessarily a function of which receptor model was used. Rather, it is often a function of method options chosen, the expertise of the analyst, and their sensitivity to the data structure. The results of this method comparison were presented at the Society of Environmental Toxicology and Chemistry North America 31st Annual Meeting in Portland, OR (Leather, et al., 2010).

Data Set 2: Johnson Data Set

Data Set 2 was originally published by Johnson, et al., (2002). The first edition included comparisons of PVA, a prototype version of Henry's Unmix (SAFER3D), and Target Transformation Factor Analysis (an early receptor model method that is now seldom used in the literature). Data Set 2 was reproduced in a second edition of that book (Johnson, et al., 2007), with one of the major changes being the addition of PMF and ALS to the receptor model discussion. Dr. Ramos was added as an author for the 2nd edition, contributing a review of ALS methodology, and implementing on Data Set 2.

Data Set 2 is a three component PCB mixture with 50 samples and 56 congeners. The three PCB source compositions were those reported by Frame, et al, (1996) for Aroclor 1248, the typical formulation of Aroclor 1254, and the late production variant of Aroclor 1254 (see Johnson, et al., 2007). This data set is considerably more complex than the Henry data set in that (1) ten percent noise (rather than 1% noise for the Henry data set) was added to simulate random error; (2) a detection limit was established for each sample such that many low concentration matrix elements were 'censored' as a function of the detection limits; (3) data transcription errors were added to one sample; and (4) a coelution problem was introduced in 35 of the 50 samples. Coelution of non-PCB peaks with PCB congeners during gas chromatographic analysis is a common problem in PCB chemistry.

A key point made in Johnson, et al. (2007) is that each of these complications manifested itself in a different manner, and for each type of problem the appropriate action differed. The key to success in receptor modeling is often related more to vigilant outlier detection and data "cleaning", rather than if one chooses to use PMF, Unmix, PVA or ALS. The appropriate data analysis decision is different for each type of outlier:

1 In the case of coeluting congener, the appropriate decision is to have the chemist go back and reanalyze the chromatograms to ensure that PCB 141 was correctly quantified.
2 In the case of the data transcription error, the appropriate decision is to correct the errors in the spreadsheet, and rerun the analysis.

3 In the case of the low concentration samples with multiple censored data points, usually the only realistic solution is to remove those two samples from the data set.
4 In the case of the remaining censored data points, the non-detects are generally at the low end of the measured range (as is evident in the scatter-plots) and thus do not adversely affect the accuracy of back-calculation. We usually wish to retain as many samples as possible in the analysis. Therefore, in this case, we would typically leave these remaining non-detect samples in the matrix.

Such decisions, while crucial to the success of a receptor model approach, rely on non-statistical domain expertise: analytical chemistry, data transcription, record keeping, non-detect imputation, etc. The data set was adjusted and the analysis run using PVA, ALS, PMF and UNMIX. In Johnson et al. (2007), the results of these four methods were presented as a figure: a bar-graph array (reproduced below as Figure 23). Visually, the source compositions resolved by each method were plotted as bar graphs, with similarity to the true source composition indicated using the cosine theta similarity metric (Davis, 1986; Johnson et al., 2007).

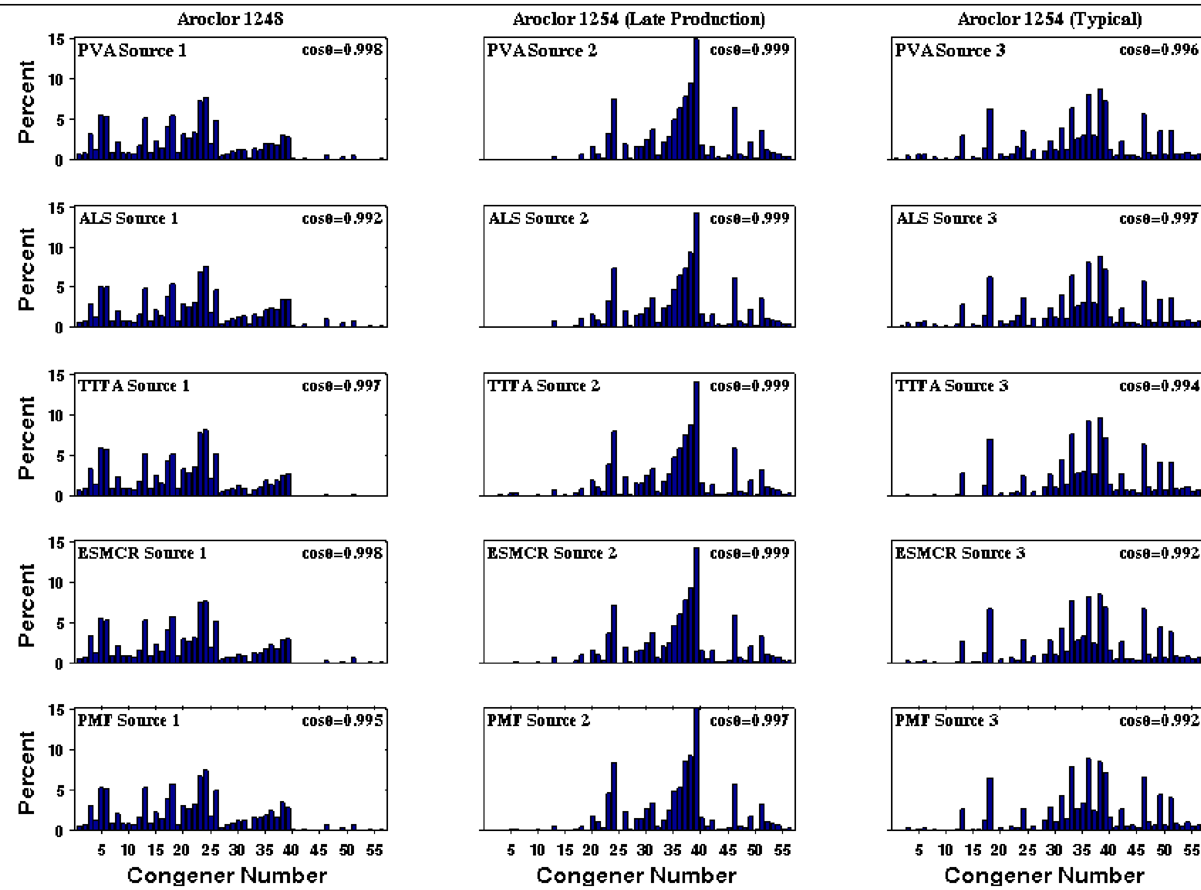


Figure 23. *Comparison of source compositions derived from PVA (row 1), ALS (row 2), TTFA (row 3), ESMCR (prototype of UNMIX – using Ron Henry's SAFER3D software-(row 4) and PMF (row 5). Numbers on the x-axis correspond to congeners reported in Johnson, et al., (2007). Cos*θ *value at the top right of each bar graph indicate the similarity of each profile to the true source profile, as calculated with the cosine theta similarity metric. Reproduced from Johnson, et al., (2007). True source compositions from Frame, et al., (1996).*

It should be noted that when these methods were originally run on these data sets (prior to 2002), the versions of the PMF and UNMIX software used by Henry and Christensen (2010) were not available. PMF in the Johnson et al., (2007) chapter was run using compiled software obtained from the original developer of PMF, Dr. Penti Paatero. Extended Self Modeling Curve Resolution (ESMCR as it was called then) was the prototype of UNMIX, and the software was obtained by Dr. Johnson from Dr. Henry as the software package SAFER3D.

In order for these results to be evaluated in context of the Henry data set (our dataset 1), we have reported the results from Johnson Data Set in a tabular format, with $\boldsymbol{\sigma}_{\text{Est-True}}$, ***r*** and cosθ reported for each source composition estimate (Table 7 below).

Once again, each of these methods performed well, estimating the true source compositions with very low $\boldsymbol{\sigma}_{\text{Est-True}}$ values and high ***r*** and cosθ values (Table 7). None of the four methods had a $\boldsymbol{\sigma}_{\text{Est-True}}$ value greater than 0.38% for any of the three end-members, and all methods exhibited ***r*** and cosθ values greater than 0.99 for each. In terms of the Henry criterion ($\boldsymbol{\sigma}_{\text{Est-True}}$) it is difficult to unequivocally state which method is "best." PVA had the lowest σ for Aroclor 1248. UNMIX had the lowest σ for typical Aroclor 1254. ALS had the lowest σ for its estimate of late-production Aroclor 1254. PMF did not have the lowest σ for any of the three, but it still performed well. Certainly, none of these methods separated itself from the others as a poor performer.

It is however, crucial that we reiterate an important point that was a central theme of the receptor model comparisons presented by Johnson, et al., (2007). While each of these methods provided good results; this was only after vigilant outlier detection and data quality assessment. Until the problem data points were identified and addressed, the goodness of fit diagnostics used to determine the number of sources in the model were not even in agreement. If one is not vigilant, any (and all) of these methods can provide spurious results. The data analyst must be sensitive to potentially confounding issues such as censored data (i.e. non-detects), the noise inherent in low concentration samples, analytical issues such as coelution, and deviation from the conceptual linear mixing model (i.e. alteration). Given a data set that is the product of linear mixing of sources with good quality congener specific PCB data and vigilant outlier detection and data screening, all of these methods can and do work well.

Table 7. Adapted Table from Johnson et al. 2007 for Artificial Dataset 2 Comparisons.

Table 2. Comparison of True Source Compositions for Data Set 2 (Johnson Data Set) with Values Determined from Unmix, PMF, PVA, and ALS

compd no	Source 1: Aroclor 1248					Source 2: Typical Aroclor 1254					Source 3: Late Production Aroclor 1254				
	True value (%)	UNMIX (Henry Safer3D)	Paatero PMF	Johnson Matlab PVA	Pirouette MCR-ALS	True value (%)	UNMIX (Henry Safer3D)	Paatero PMF	Johnson Matlab PVA	Pirouette MCR-ALS	True value (%)	UNMIX (Henry Safer3D)	Paatero PMF	Johnson Matlab PVA	Pirouette MCR-ALS
PCB 16	0.75	0.70	0.68	0.72	0.67	0.02	0.03	0.01	0.00	0.00	0.10	0.15	0.16	0.17	0.17
PCB 17	0.98	0.86	0.85	0.93	0.85	0.02	0.02	0.03	0.00	0.00	0.09	0.16	0.14	0.16	0.17
PCB 18	3.46	3.48	3.09	3.25	3.01	0.09	0.11	0.11	0.00	0.10	0.27	0.40	0.49	0.58	0.54
PCB 22	1.45	1.36	1.30	1.38	1.26	0.02	0.05	0.07	0.00	0.02	0.04	0.08	0.09	0.14	0.14
PCB 28	5.86	5.62	5.35	5.63	5.19	0.06	0.15	0.23	0.00	0.01	0.21	0.35	0.32	0.74	0.69
PCB 31	5.76	5.33	5.26	5.47	5.03	0.12	0.32	0.27	0.00	0.13	0.30	0.40	0.35	0.79	0.74
PCB 32	0.98	0.94	0.90	0.95	0.87	0.01	0.04	0.05	0.00	0.02	0.05	0.09	0.08	0.15	0.14
PCB 33	2.33	2.27	2.19	2.25	2.08	0.05	0.10	0.13	0.00	0.01	0.17	0.19	0.18	0.43	0.39
PCB 37	1.00	1.01	0.92	0.97	0.89	0.01	0.00	0.02	0.00	0.00	0.08	0.09	0.10	0.13	0.13
PCB 40	0.97	0.97	0.93	0.93	0.87	0.16	0.18	0.18	0.12	0.16	0.13	0.12	0.12	0.18	0.17
PCB 41	0.79	0.77	0.73	0.71	0.66	0.02	0.03	0.05	0.00	0.01	0.01	0.03	0.03	0.13	0.11
PCB 42	1.88	1.77	1.72	1.82	1.66	0.10	0.14	0.14	0.00	0.07	0.16	0.24	0.22	0.38	0.37
PCB 44	5.36	5.41	5.30	5.21	4.91	0.72	0.84	0.68	0.45	0.80	2.50	2.78	2.68	3.02	2.94
PCB 45	0.96	0.93	0.88	0.95	0.88	0.02	0.01	0.01	0.00	0.00	0.05	0.09	0.09	0.14	0.13
PCB 47	2.54	2.44	2.35	2.43	2.23	0.08	0.08	0.10	0.00	0.05	0.15	0.26	0.24	0.39	0.37
PCB 48	1.62	1.54	1.52	1.57	1.47	0.05	0.08	0.08	0.00	0.05	0.13	0.19	0.20	0.24	0.22
PCB 49	4.39	4.10	3.95	4.13	3.86	0.28	0.39	0.34	0.07	0.31	1.19	1.40	1.33	1.55	1.51
PCB 52	5.87	5.81	5.81	5.53	5.44	0.89	1.08	0.57	0.73	1.21	5.81	6.79	6.50	6.38	6.29
PCB 53	0.93	0.91	0.87	0.89	0.83	0.04	0.06	0.06	0.00	0.04	0.13	0.13	0.14	0.17	0.16
PCB 56	3.36	3.03	3.10	3.22	3.03	1.83	1.75	1.87	1.69	1.68	0.59	0.55	0.52	0.84	0.87
PCB 60	2.81	2.69	2.68	2.73	2.58	1.02	1.13	1.19	0.87	0.90	0.19	0.06	0.06	0.51	0.48
PCB 64	3.50	3.21	3.29	3.45	3.23	0.39	0.49	0.50	0.24	0.38	0.64	0.78	0.58	0.83	0.81
PCB 66	7.60	7.57	6.72	7.29	6.99	3.84	3.81	4.59	3.34	3.38	1.09	0.52	0.48	1.67	1.55
PCB 70	7.78	7.71	7.48	7.74	7.66	7.36	7.23	8.40	7.63	7.38	3.77	2.95	2.81	3.62	3.71
PCB 71	1.96	2.03	1.92	1.99	1.82	0.12	0.10	0.14	0.00	0.06	0.16	0.21	0.22	0.31	0.30
PCB 74	4.92	5.25	4.94	4.92	4.67	2.36	2.06	2.43	2.01	2.07	0.91	0.92	0.68	1.24	1.23
PCB 77	0.55	0.54	0.49	0.53	0.50	0.22	0.21	0.24	0.18	0.18	0.03	0.01	0.02	0.08	0.08
PCB 82	0.65	0.74	0.81	0.73	0.80	1.65	1.54	1.58	1.67	1.60	1.20	1.19	1.24	1.18	1.21
PCB 84	0.96	0.85	1.03	1.06	1.12	1.70	1.71	1.46	1.73	1.77	2.51	2.90	2.96	2.43	2.45
PCB 85	1.20	1.19	1.24	1.34	1.37	2.68	2.65	2.82	2.63	2.50	1.38	1.13	1.22	1.28	1.32
PCB 87	1.17	1.04	1.33	1.25	1.45	3.68	3.86	3.51	3.74	3.72	4.31	4.43	4.39	4.07	4.10
PCB 92	0.26	0.24	0.32	0.30	0.35	0.61	0.70	0.60	0.67	0.71	1.39	1.44	1.42	1.26	1.25
PCB 95	1.51	1.35	1.70	1.44	1.63	1.98	2.13	1.36	2.30	2.50	6.75	7.79	7.87	6.44	6.52
PCB 97	1.02	1.34	1.61	1.24	1.38	3.00	2.63	2.47	2.86	2.80	2.83	2.87	2.75	2.66	2.70
PCB 99	1.91	1.91	1.97	2.06	2.21	4.88	4.78	4.93	5.06	4.83	3.26	3.39	3.47	3.08	3.22
PCB101	1.99	2.31	2.50	2.08	2.47	5.92	6.10	5.39	6.48	6.51	8.67	8.34	8.85	8.13	8.17
PCB105	1.53	1.87	1.70	1.92	2.27	7.95	7.81	8.60	7.86	7.44	3.23	2.49	2.49	3.05	3.07
PCB110	2.68	2.93	3.60	3.15	3.57	9.08	9.39	9.23	9.50	9.38	10.04	8.61	8.48	8.85	8.94
PCB118	2.47	3.07	2.90	2.92	3.58	14.65	14.36	15.28	14.97	14.35	7.94	6.97	7.19	7.29	7.27
PCB128	0.08	0.14	0.21	0.23	0.34	1.84	1.65	1.60	1.86	1.77	1.53	1.62	1.62	1.35	1.39
PCB130	0.01	0.03	0.05	0.00	0.02	0.54	0.56	0.57	0.59	0.57	0.65	0.62	0.61	0.63	0.62
PCB132	0.15	0.16	0.31	0.20	0.36	1.62	1.62	1.36	1.71	1.71	2.47	2.74	2.72	2.35	2.34
PCB135	0.04	0.08	0.09	0.01	0.06	0.30	0.33	0.27	0.35	0.36	0.66	0.66	0.69	0.65	0.63
PCB136	0.06	0.11	0.10	0.05	0.09	0.26	0.32	0.22	0.30	0.32	0.76	0.61	0.78	0.69	0.67
PCB137	0.02	0.06	0.07	0.03	0.08	0.56	0.46	0.48	0.53	0.50	0.45	0.46	0.47	0.43	0.43
PCB138	0.43	0.43	0.81	0.66	1.11	6.42	6.02	5.80	6.48	6.28	6.27	6.75	6.69	5.68	5.76
PCB141	0.09	0.05	0.16	0.08	0.15	0.74	0.75	0.65	0.76	0.77	1.06	1.21	1.23	1.02	1.02
PCB146	0.05	0.08	0.14	0.03	0.08	0.49	0.51	0.42	0.49	0.50	0.72	0.71	0.70	0.68	0.66
PCB149	0.35	0.30	0.47	0.40	0.58	1.96	2.13	1.80	2.26	2.32	3.94	4.50	4.48	3.55	3.58
PCB151	0.08	0.09	0.11	0.05	0.09	0.24	0.28	0.23	0.28	0.30	0.75	0.75	0.77	0.72	0.71
PCB153	0.45	0.71	0.79	0.61	0.87	3.55	3.45	3.28	3.68	3.59	4.07	3.96	4.06	3.69	3.72
PCB156	0.04	0.06	0.08	0.07	0.15	1.22	1.19	1.20	1.28	1.22	0.89	0.90	0.90	0.81	0.83
PCB158	0.04	0.10	0.13	0.09	0.15	0.97	0.94	0.96	0.97	0.94	0.88	0.73	0.68	0.79	0.79
PCB163	0.08	0.19	0.19	0.15	0.20	0.75	0.82	0.74	0.79	0.80	1.11	0.91	1.08	1.00	0.99
PCB170	0.08	0.09	0.12	0.06	0.10	0.38	0.36	0.32	0.39	0.39	0.56	0.61	0.60	0.56	0.55
PCB180	0.22	0.23	0.23	0.19	0.22	0.45	0.44	0.42	0.49	0.50	0.72	0.77	0.77	0.71	0.72
$\sigma_{Est.-True}$		**0.17**	**0.27**	**0.16**	**0.36**		**0.13**	**0.28**	**0.17**	**0.18**		**0.38**	**0.37**	**0.31**	**0.28**
Corr Coef (r)		**0.996**	**0.992**	**0.997**	**0.986**		**0.999**	**0.996**	**0.999**	**0.998**		**0.987**	**0.988**	**0.995**	**0.996**
Cos θ		**0.998**	**0.995**	**0.998**	**0.992**		**0.999**	**0.997**	**0.999**	**0.999**		**0.992**	**0.992**	**0.996**	**0.997**

Data Set 3: Hunters Point Shipyard (HPS) Demonstration Site

Data Set 3 is that from the HPS ESTCP demonstration site. This data set is real PCB sediment data set, which offers both advantages and disadvantages. The advantage is that artificial mixed data sets with random Gaussian noise (even with the more complicated/realistic error scenarios introduced in Data Set 2) still represent a pretty simple system. Real data presents unknowns that can be much more complicated and difficult to interpret. The disadvantage is that in the end, we do not have the luxury of the true known sources to which we can compare the methods. An initial analysis was done using PVA (as that is the method with which co-investigator Johnson is most familiar). Data screening, outlier detection and evaluation of goodness of fit were all evaluated, as recommended by Johnson, et al. (2007). We acknowledge that there are differences in how these evaluations are done in practice of PVA, ALS, PMF and Unmix, but submit that much of these differences are due to the legacy of each methods individual historical development. While CD scatter-plots are generally part of the practice of PVA, there is no reason why that approach could not be applied in ALS. While Henry's signal-to-noise ratio is built into the Unmix software, there is no reason why it cannot be used in PVA. The differences in these receptor model methods lie more in the manner in which source (end-member) compositions and contributions are derived (see Johnson, et al. (2007) and the original method publications for details of these methods).

For purposes of this method comparison, we will assume that goodness-of-fit diagnostics and outlier detection for all four methods would result in the same data reduction of the HPS data (in the case of this example, an 85 samples, 36 congener subset of original HPS congener specific data set). The goodness-of-fit evaluation identified at least three congener patterns (i.e. sources) present in that data set, but there was evidence of a possible fourth pattern – present in a small number of samples – and that signal could not be attributed to noise or error. For the purposes of this method comparison we will look at a solution for the first-order three component system. This comparison shown here was done using the same nominal methods as for Data Set 1 and 2, but with different software and data analysts in some situations, as follows:

- ALS – run by Johnson using ALS matlab software from the original developer's website
- PMF – Run by Leather using EPA PMF3 software
- PVA – Run by Johnson using PVA Matlab Software
- Unmix – Run by Johnson using EPA Unmix6 software.

In evaluating the results of these methods, note that Figure 24 shows all four resolved very similar congener patterns for the proposed end-member sources. Note also that two of the three patterns are highly collinear (that is two patterns have a high similarity to Aroclor 1260). As discussed in the HPS case study writeup, the source apportionment challenge here is less dependent on receptor modeling method. Rather, it is primarily dependent on the answer to questions that must be answered outside of the realm of statistics. With these source compositions in hand, questions that must be addressed now are:

1. Is the slightly lighter version of the EM Pattern 3 real? In other words now that we know what we are looking for, do we see that pattern independently?
2. Is this slightly lighter 1260 pattern represent alteration of the clean Aroclor 1260, or another source with a small amount of lighter Aroclors present (i.e. Aroclors 1248 & 1254)? By comparing the third pattern in the figure below to a 1248/1254/1260 mixture,

we are implying a mixture interpretation, but be aware that is an interpretation from the data analyst, on the back end of the analysis (regardless of receptor model method).

Figure 25 shows the spatial relationships for these HPS end-member sources in the surface horizon. The mixing proportions for these four different methods show a high degree of similarity. The take home message of this receptor model method comparison is that all four methods provide similar results. But when faced with bad data, any or all of these methods can produce spurious results. One of the most crucial steps in the data analysis process is vigilant outlier detection and data cleaning. Even with good data, these methods can be problematic in the hands of an inexperienced user and/or a user without sensitivity to PCB chemistry and familiarity with the specific site and its contaminant history. In the hands of an experienced practitioner, these methods should result in source patterns and contributions that are consistent.

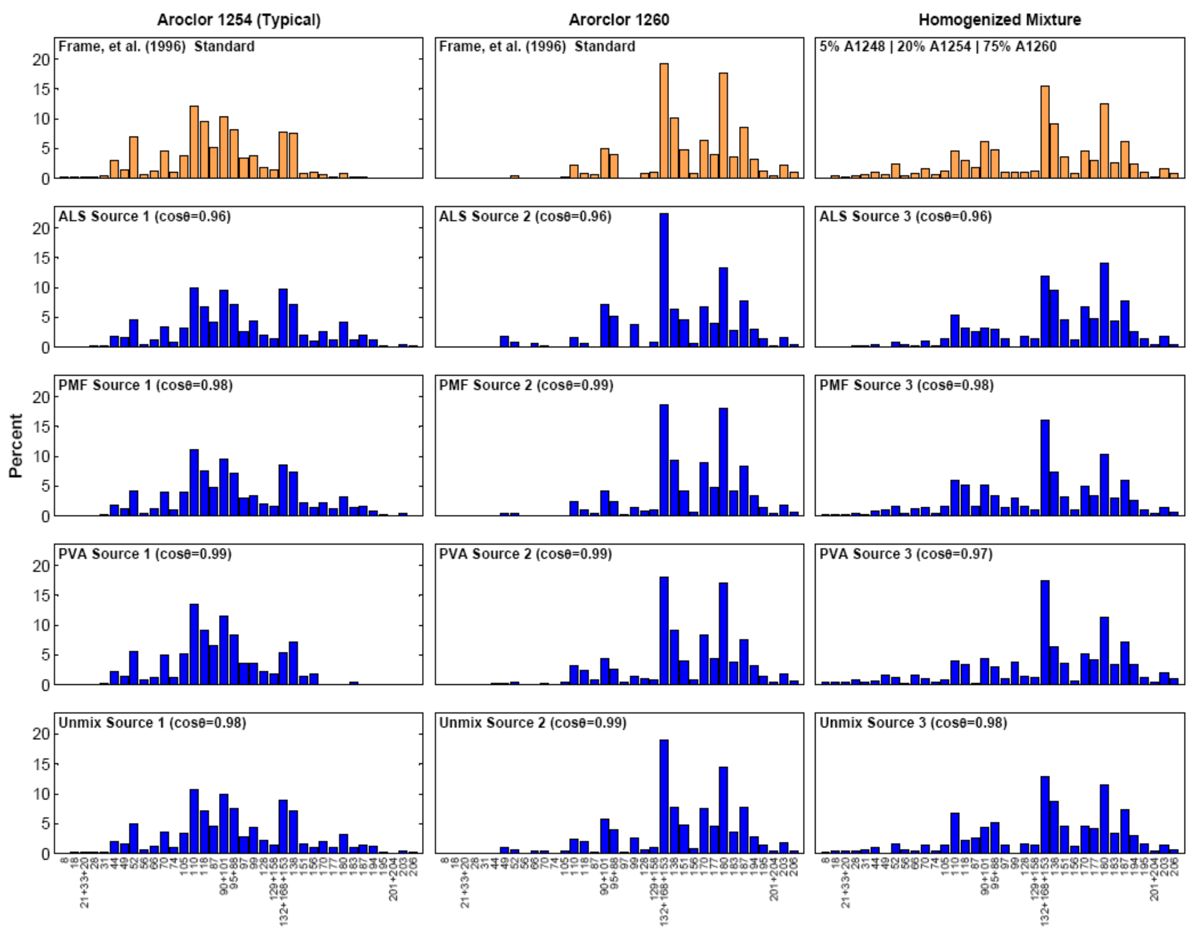


Figure 24. *Comparison of source compositions derived from ALS (row 1), PMF (row 2), PVA (row 3), and Unmix-(row 4). Cosθ value at the top right of each bar graph indicate the similarity of each profile to the interpretted source profile, as calculated with the cosine theta similarity metric.*

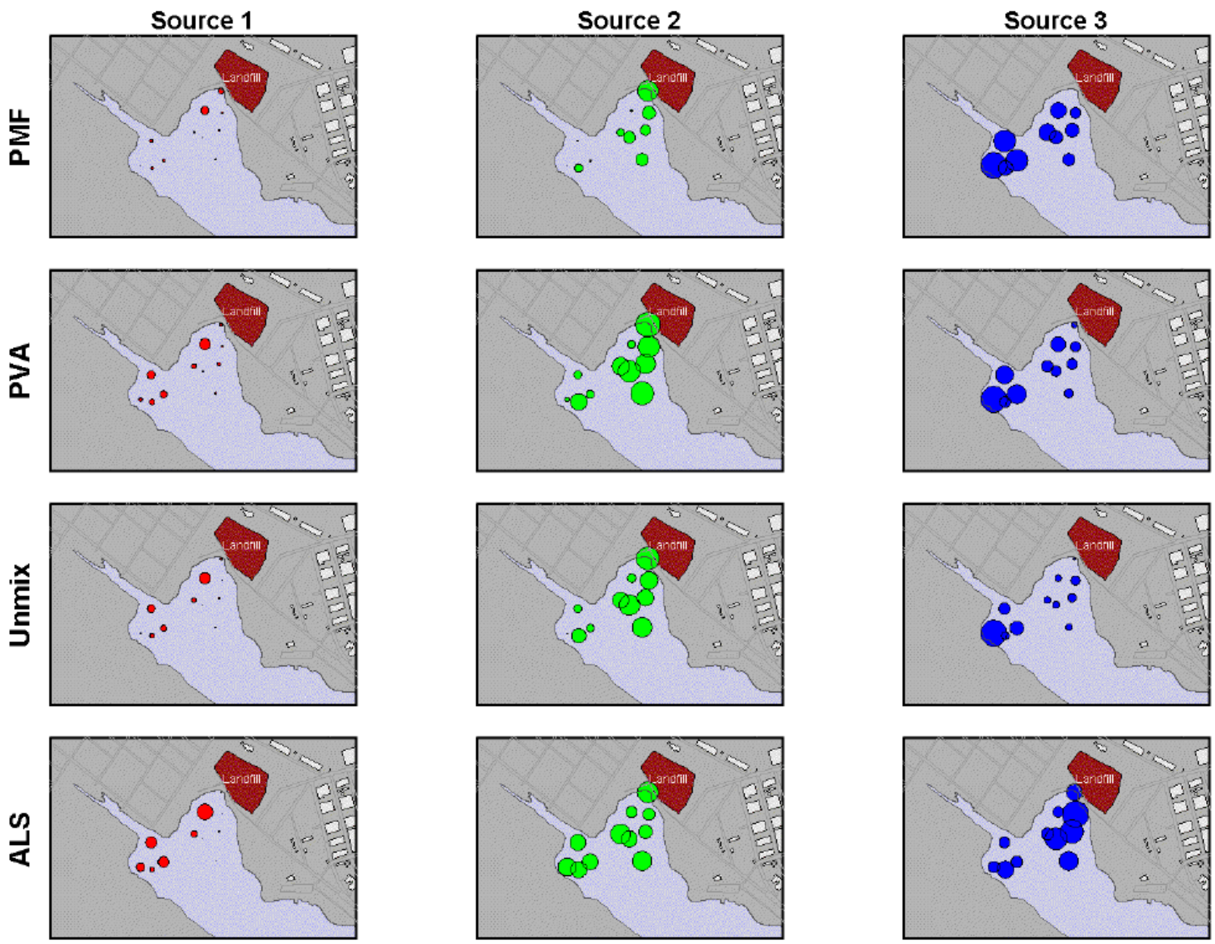


Figure 25. Comparison of source apportionment derived from PMF, PVA, Unmix, and ALS for surface sediments. Bubble size is proportional to %contribution in surface sediments. Source 3 appears more common by Yosemite Creek, Source 2 is more common by former landfill, and Source 1 is usually more common at depth in all areas but shown here in these surface plots.

So the overall conclusion is that these receptor model methods have passed their performance evaluation. Given a dataset that has undergone some measure of preparation to overcome problems associated with non-detects, interferences, and other analytical errors, all of these receptor models should perform a similar apportionment of PCB sources during a forensics study. The greatest concern is therefore that the PCB dataset should be of high quality, so that any required preparation will be minimal. And of course the receptor models require a certain level of expertise, but given these prerequisites these receptor models can perform a successful forensics study. Given either a simple artificial dataset or a more realistic “real” dataset, these techniques have passed the above tests for accuracy and precision as part of their performance assessment.

7 COST ASSESSMENT

ESTCP projects are required to develop and validate, to the extent possible, the expected operational costs of the technology. The intent of this section is to provide guidelines for developing costs, based on information obtained during the demonstration project and other historical information conducting similar studies. This will aid in establishing realistic cost estimates for implementing the technology and comparing it to potential alternative technologies.

Table 8. Cost Model for a Forensics Study

Cost Element	Data to be Tracked
Step 1: Site Selection	• Personnel required and associated labor
Step 2: Conceptual Site Model (Baseline characterization)	• Costs to collect any pre-existing data • Development of testable hypotheses
Step 3: Study design with Workplan and Sampling Plan	• Personnel required and associated labor
Step 4: RSC	• Field deployment costs • Analytical costs • Data Analysis
Step 5: ACF	• Field deployment costs • Analytical costs • Data Analysis
Step 6: Final Report	• Personnel required and associated labor

Table 8 provides the data that are needed to develop cost information for a forensics investigation. In addition to gauging performance, ESTCP demonstrations also track the overall costs associated with the technology. By incorporating pre-existing data into the study, it was possible to leverage the costs of this ESTCP project with the earlier Hunters Point assessment and EPA Ashtabula River dredge projects. This provided significant cost savings to this ESTCP project, especially with analytical costs and field deployment costs. Such opportunities to leverage costs may be available in other forensic projects, but it is not always possible. Ideally, a potential forensic investigation can be incorporated into the larger site investigation, and data obtained from both can be used for forensic interpretation as well as meet other project needs (e.g., for a Remedial Investigation). Any coordinated sample collection and analysis can significantly reduce costs since sampling and analysis is often the most expensive part of a study. The costs presented in this section are for a stand-alone forensic investigation, and are thus a "worst case" scenario. Actual costs will be highly site-specific, and will depend greatly on the scope of the project to meet the objectives (i.e., the types and numbers of samples collected and analyzed), and other site considerations (e.g., logistics, site access, boat and sampling gear, and other site-specific challenges with collecting samples). It is not possible to provide general field costs to accurately estimate such costs for a specific study.

The costs to conduct cost elements Steps 1-3 (Table 8) are primarily labor-based, with much of the work being conducted by a fairly senior technical staff with support from a junior staff member. Hourly rates for consultants and other appropriate staff to conduct these tasks will likely be in the $150-225/hr range for a senior technical staff, and in the $75-125/hr for junior technical staff. Labor costs for planning, data reduction, analysis, and reporting typically range from $1000-1600/day, depending on the experience and qualifications and staff mix of the scientists.

Cost elements Steps 4 and 5 include field and laboratory analytical, both of which are comprised of labor-based costs and different direct costs, and also the primarily labor-based data analysis activities. Cost element Step 6 is, like Steps 1-3, primarily labor-based with significant proportion of senior technical staff conducting the work, with some support from junior staff. The total costs for a forensic interpretation and report can vary greatly, depending on the complexity of the project, the level of historical and records research involved, and the variety of the analyses that are applied. Forensic interpretive reports commonly cost $25,000-50,000 to produce, but can be more depending on project specifics. The collection and use of historical site information and data can be important in a forensic investigation, and can add significant cost depending on the availability of such information.

Labor costs for experienced field sample collection staff are commonly in the $800-1600/day range, depending on the experience and qualifications of the field scientist. A field team of 2-3 is common, and the numbers of samples that can be collected in a day can vary from 10 to 50, depending on the types of samples and the field conditions. Costs for mobilization, equipment, and boat hire can be significantly different depending on the type of sampling required. Collecting 100 surface grab samples may take less than a week and cost only $20,000, but 25-50 sediment cores (which would result in >100 samples) may take several weeks and cost $100,000, or more.

Approximate analytical costs are summarized in Table 9. Using past site data where both RSC and ACF have been used, it is possible to project approximate costs for these types of field and laboratory requirements. The per sample costs for RSC are $50-150 considering both the test kit cost and labor, depending on the amount of sample preparation (the higher costs are associated with more drying, grinding, and splitting of samples in heterogeneous sediments to ensure sample splits for ACF will be representative). The per sample costs for ACF run from $450-$1,200 depending on the number of PCB congeners desired and the analytical method chosen, and can be higher depending on the amount of unique laboratory work required (e.g., to analyze multiple dilutions to obtain both low detection limits for some very low concentration congeners along with data for congeners present at high concentrations). The unit costs are also significantly influenced by the numbers of samples that are analyzed; few samples typically result in higher unit costs and large numbers of samples reduce unit costs. These analytical costs for the ACF analysis in Table 10 assumes that the analysis is conducted by gas chromatography low-resolution /mass spectrometry with the spectrometer operating in selected ion monitoring mode (GC/LRMS-SIM). This is the optimal analytical approach for most PCB sediment analysis. GC/HRMS (e.g., EPA Method 1668a) provide even better sensitivity and selectivity, but the additional cost (approximately 50-100% higher cost) can rarely be justified for a sediment PCB investigation, unless the data are also to be used for human health risk assessment purposes (Method 1668a can generate more reliable data for a small set of congeners that are particularly important for risk assessment, such as PCB77, PCB81, and PCB126).

Table 9: Approximate Analytical Costs for Measuring PCB in Sediment Samples

Analysis Type	Unit Cost ($/sample)	Total Cost[a]
Total PCB Screening Assessment (for RSC)		
Immunoassay Analysis – Total PCB	$50-150	7,500-15,000
Laboratory Aroclor Analysis – Total PCB	$150-200	15,000-20,000
Detailed PCB Congener Characterization (for ACF)		
22 Congener Analysis – GC/ECD or GC/LRMS[b]	$250-400	6,250-10,000
44 Congener Analysis – GC/ECD or GC/LRMS	$450-600	11,250-15,000
100+ Congener Analysis – GC/LRMS	$550-700	13,750-17,500
100+ Congener Analysis – GC/HRMS (EPA Method 1668a)	$900-1,200	22,500-30,000

[a] Total cost based on an example projects that would include 100 RSC samples and 25 ACF samples. Note that Table 9 illustrates different options for the RSC and ACF analysis; not all of these would be performed in a project (typically one of the two methods for the RSC analysis and one of the last three listed methods for the ACF analysis would be used).

[b] A 22 congener analysis would typically not be considered to have a sufficient number of PCB congener data for an ACF data analysis, and are presented for illustration purposes because such an analysis is fairly common in contaminated site characterization when a forensic investigation is not being considered..

It is very difficult to place a cost estimate for a forensics study since there are so many site specific variables. Approximate cost for a complete, stand-alone, forensic study is summarized in Table 10. This is based on the collection of 100 surface sediment samples, which are analyzed by RSC. A total of 25 of those samples are subsequently also analyzed by ACF methods. The need for coring (to gain historical data) and higher cost analytical options will increase the costs. The actual cost of a forensic study can vary greatly, depending on the site characteristics and easy of sampling, the numbers of samples that need to be collected and analyzed to meet the study objectives, and the complexity of the site. The information in Table 10 is provided for general illustration purposes, recognizing that each site is unique and different.

As discussed earlier, the costs in Table 10 reflect a stand-alone forensic investigation, for a total cost of $112,250-$212,500. However, forensic investigations are often conducted at sites that are already being investigated (e.g., as part of an RI/FS investigation) and a forensic investigation can then cost effectively be included in the overall scope. Most of the cost elements in Table 10 would be part of most environmental site investigations, and the incremental cost to modify the scope of the investigation and also conduct an environmental study is relatively small. The additional cost for a forensic investigation would be approximately half of the Step 2 and 3 costs, the Step 5 costs (except the field costs), and the Step 6 costs, for a total incremental additional costs to conduct a forensic investigation of $64,250-$112,500. This cost estimate is for a relatively straight forward investigation, with no need for comprehensive characterization (e.g., collection of sediment cores). By leveraging with other regulatory project work the cost for a forensic study can generally be cut in half regardless of the site specific conditions. The best cost savings measure is to plan carefully and conduct a forensics study along with other regulatory projects similar to what was done for this ESTCP project. That is the most cost-effective strategy for conducting a forensics project at most DoD sites.

Table 10. Approximate Costs for a Contaminated Sediment Forensics Study

Cost Element	Approximate	Comment
Step 1: Site Selection	N/A	The decision to investigate a site is generally made outside the site project and budget.
Step 2: Conceptual Site Model (Baseline characterization)	12,000-24,000	Compilation of pre-existing data, reports, and site history. Develop hypotheses of possible sources of contamination. Cost can vary significantly based on the availability of historical data and information, and the complexity of the site.
Step 3: Study Design	24,000-36,000	Develop the Study Plan, including Workplan and Sampling and Analysis Plan, describing the key elements of conducting the forensic study.
Step 4: RSC		Deployment of field team and sample collection. Sample PCB analysis. Compilation and preliminary summary and analysis of the data.
Field Deployment/Sampling	20,000-50,000	
Sample Analysis	7,500-15,000	
Data Compilation/Analysis	2,500-5,000	
Step 5: ACF		
Field Deployment/Sampling	(20,000-50,000)[a]	Deployment of field team and sample collection, if needed for ACF samples. Sample PCB analysis. Compilation and preliminary summary and analysis of the data.
Sample Analysis	13,750-17,500[b]	
Data Compilation/Analysis	7,500-15,000	
Step 6: Final Report	25,000-50,000	Data analysis, interpretation, and report preparation.
Total Cost for a Stand-Alone Forensic Study		$112,250-$212,500
Total Incremental Cost to Add a Forensic Study to a Site Investigation		$64,250-$112,500

[a] The field deployment/sampling cost is not typically needed specifically for the ACF analysis, if samples were collected for RSC and a subset of those used for the ACF component.
[b] Based on 100+ Congener Analysis by GC/LRMS.

This section has presented approximate costs for conducting a forensic investigation, as a stand-alone project and as part of an already to be conducted regulatory project. The primary objective of this ESTCP project was to evaluate and demonstrate the applicability and value of conducting a forensic investigation, and the procedures for conducting such a study. Approximate costs have also been presented. Unlike most other ESTCP projects, this project does not lend itself to comparing to another technology or performing a cost comparison. The forensic approach described in this document is primarily a data interpretation procedure, based on thought processes – it is not a piece of equipment, software, or analytical procedure that can be directly compared to another alternative. The alternative is to not conduct a forensic investigation, and instead base contaminant source assessment purely on concentration distribution from basic site characterization, which would result in incomplete and possibly erroneous understanding of sources.

8 IMPLEMENTATION ISSUES

Much of this section can be considered "lessons learned" from applying the forensic techniques at the two demonstration sites in this project and how it might impact future application of this technology at other potential sites. As discussed in several previous sections of this report, a forensics study requires high quality data and an experienced team. A geochemist is required to ensure the data quality is sufficient to conduct any of the described statistical analyses. A statistical analyst must be experienced with the particular techniques such as the receptor models used to determine source information. And the remedial project manager (RPM) needs to interpret all these data and integrate them into the regulatory program so they will prove useful to making regulatory decisions. If the regulatory project is not prepared to use the forensic results than any forensics project may turn out to be a waste of time and effort. It therefore becomes important to access the regulatory program under which the site operates to determine how receptive they will be to the forensic study results. To avoid litigation among the various potential responsible parties (PRPs), some type of arbitration is often employed. It is therefore important to have a technically defensible approach (such as the one described in this report) that can be presented to an impartial arbitrator so that the DoD's case is fairly represented. Many PRPs will often bring their own experts for arbitration, so the DoD should have access to their own set of technical arguments for apportionment among PRPs. Often a final decision from arbitration will be some negotiated solution that represents some compromise between the positions argued be the various PRPs. In that case it is important to have the best, most technically defensible forensics study that is possible. But the fingerprinting techniques described here may prove even more useful to the RPM for identifying unsuspected PCB sources so they can be controlled prior to any sediment remedial efforts. These sediment remedial efforts are often costly, and the last thing a RPM needs is for an unidentified PCB source to re-contaminate the sediments because everyone thought they "knew there was only one source". The following sections provide additional insight into some implementation issues for RPMs considering a forensics study at their sites. Additional information on these and other topics can be found in a companion user's guide on the Navy's SPAWAR website (http://environ.spawar.navy.mil/Projects/PCB_Fingerprinting).

8.1 Appropriate Sites and Methodologies for Forensic Studies

As stated in Section 5.1, there are multiple criteria that should be considered to determine if particular sites will be appropriate for forensic study. In addition to the possibility of non-site PRP sources, other considerations may play into discussions of whether a site is appropriate for forensic studies. Equal to or of greater concern than the need to apportion responsibility for PCB sources, a site manager must first identify PCB sources at sediment sites to ensure these sources are contained prior to any remedial efforts.

Forensic studies are typically done in depositional areas where finer grain sediments (and sorbed contaminants such as PCBs) are deposited. But samples can also be collected in higher energy areas (exposed beaches, stream beds, and other "sandy" areas) that are more erosional in nature (contaminants may therefore have moved from original source and depositional areas). A main concern (in addition to the possible movement of contaminants from original source areas) is that PCB concentrations are sufficiently high (Total PCB > 100 ppb) so that most congeners are above detection limits. As noted earlier, if too many congeners are below detection (rule of thumb is more than 10% of congeners), there are often problems running the multivariate receptor models used to "unmix" the sources.

All of the sediment collection techniques used in this report are commercially available and represent typical sediment techniques. Sediment samples can either be collected with surface grabs or deeper penetrating coring devices. Advantages of surface grabs are they are relatively inexpensive and easy methods to obtain surface sediments, especially for initial analysis of sites with RSC. But surface grabs typically only recover the top several inches (depending on the size of the grab) and provide information on recently deposited sediments. Cores can be divided into separate depth horizons to provide a time series to look at contaminant source history. At both of our demonstration sites, cores were selected to provide this picture of sources over time. At HPS we had a few dated cores which are useful to determine when specific horizons were deposited, so for example in Figure 14 we can see the shift in sources that occurred between about 1965 and 1970. It was then possible to use this shift in composition in the other undated cores to infer the presence of a time horizon across the site. At Ashtabula, the particular cores used in this study were not dated but other studies have collected dated cores in this same study area so it was again possible to infer time horizons across the study area. Dated cores provide valuable historic source information that can be linked to other site history information, and may therefore be worth the additional costs compared to surface grabs depending on the specific forensic needs at the site.

All of the analytical techniques are also available from contractors, and analytical laboratories should be selected to provide high quality data. There does still need to be some evaluation of the data quality produced by the laboratory to ensure that the data quality will serve all the needs of the particular forensic objectives. Detection limits for individual PCB congeners for ACF data in this report were around 0.1 to 0.5 ppb (microgram/kilogram), so that samples with total PCB concentrations above 100 ppb provided a dataset of 38 congeners at the first demonstration site (for HPS) and total concentrations above about 500 ppb provided a dataset of 83 congeners at the second demonstration site (for Ashtabula). The number of individual congeners that can be expected to be above detection limits will be related to the total concentration of the samples, and samples with total PCB concentrations below about 100 ppb (not a "hard" number, may vary depending on site) will often not have enough congeners above detection limits to be useful for forensic study. This 100 ppb level is also the detection limit (assuming no matrix interferences which may raise detection limits) of the RSC immunoassay used at HPS. So the RSC (immunoassay) data can serve as a useful screening technique to determine when samples below 100 ppb should not be considered for full ACF analysis since that congener data would probably be incomplete and not useful for the later ACF interpretation techniques.

The total PCB analytical method used in this document (i.e., RSC Immunoassay (IA)) was summarized in Section 2, and some key aspects of three total PCB method options (including relative cost) are also summarized in Table 11. As discussed earlier, the IA technique (Method 4020) is a rapid and cost-effective method for conducting Total PCB analysis, and is usually suitable for RSC analyses. This is also what was used for the two case studies described in this document. The Total PCB as Aroclor (Method 8082) method is an alternative for generating screening-level Total PCB data, as long as the PCB composition has a relatively close resemblance to Aroclors. Because Method 8082 is the most widely used Total PCB method, PCB data may have been generated for regulatory or other purposes for the site using this method, and may be available for use in a RSC assessment. The Total PCB as homologue method (Method 680) produces the most reliable and highest quality Total PCB data, and additional useful information by producing results for each of the 10 PCB homologues. However, Method 4020 (ELISA IA analysis) is the most suitable RSC method for most purposes, and can often provide Total PCB analysis for less than $100/sample, with sensitivity and data quality that meet most RSC needs. The speed of the IA analysis is also a significant advantage, with the potential benefit of being able to map out PCB concentration gradients while still in the field and adjust subsequent sampling in a timely manner; the two other Total PCB methods are both laboratory based and require several days (at best with more expensive rush orders) to several weeks (more typical at these stated costs) to obtain the results.

Table 11. Comparison of Total PCB Analytical Methods

Method	Approximate Unit Analytical Cost ($)	Approximate Sediment Detection Limit (ppb)	Key Technical Advantages and Disadvantages
ELISA IA Method (Method 4020)	50-150	100	Advantage: Rapid Disadvantage: Potential calibration issues (can be avoided)
PCB-as-Aroclor Method (Method 8082)	150-225	10	Advantage: Widely available Disadvantage: Susceptible to interferences and misidentification
PCB-as-Homologue Method (Method 680)	250-325	1	Advantage: Accurate; not impacted by PCB alteration Disadvantage: Not widely available

The PCB congener analytical methods (i.e., ACF) used for this document were summarized in Section 2, and some key aspects of three different method options (including relative cost) are also summarized in Table 12. When selecting the detailed PCB congener ACF analytical method, balancing the information needs with data quality and cost generally becomes an even more involved consideration than when selecting the RSC method. It is important to select enough PCB congeners, and an appropriate set of diagnostic PCB congeners, to be able to identify and differentiate potential PCB sources. Using information such as the PCB congener composition of Aroclor formulations, and possible PCB dechlorination pathways, it is possible to select a set of congeners that represents common environmental PCB contamination, including possible degradation products that may be of interest. A total of 80 to 120 well selected PCB congeners are typically sufficient to provide the necessary PCB analytical data. For instance, the 117 PCB congeners reported for the Ashtabula River case study (Appendix 3) represent 97% of the Total PCB in all Aroclor formulations and most environmental samples; the 92 additional possible PCB congeners are either not present in Aroclor formulations or environmental samples, or present at such ultra-trace levels that they would not be detected and/or useful for forensic purposes. Aroclor mixtures are generally the most appropriate PCB source material for assessing potential environmental PCB contamination, but a few non-Aroclor unique PCB source materials are possible. It is usually possible to conduct a high quality PCB forensic investigation with less than 100 PCB congeners. A smaller set of 44 PCB congeners was used in the HPS work (Appendix 3), and this did provide solid information for general PCB characterization, but might prove somewhat limiting for forensic purposes if samples show alteration from original patterns. The 44 PCB congeners were enough to differentiate the various Aroclor compositions, but may not be enough especially when looking for different types of dechlorination and other alteration effects. It can also be difficult to predict which congeners will be important for the data analyses ahead of time, and it is a fairly small increase in analytical cost to analyze 80-100 PCB congeners versus, for instance, 40-50 PCB congeners.

Table 12. Comparison of PCB Congener Analytical Methods

Method	Approximate Unit Analytical Cost ($)	Approximate Sediment Detection Limit (ppb)	Key Technical Advantages and Disadvantages
GC/ECD Congener Method (Method 8082) ~20 PCB congeners	250-400	0.25	Advantage: Widely available Disadvantage: Susceptible to interferences and misidentification
GC/LRMS Congener Method (Modified Method 680/1668) ~40-120 PCB congeners	450-650	0.05	Advantage: Accurate; not impacted by interferences Disadvantage: Not suitable for some WHO congeners
GC/HRMS Method (Method1668a) >100 PCB congeners (including WHO congeners)	800-1,200	0.01	Advantage: Accurate and sensitive; not impacted by interferences Disadvantage: Costly

Method 8082 is generally considered inadequate for generating PCB congener data for a PCB forensic investigation. The NOAA National Status and Trends Project 18 major PCB congeners are often monitored using this method. However, electron capture detection (ECD) methods are highly susceptible to interferences from other compounds or sample matrix components, which can make it difficult to accurately resolve and quantify discrete PCB congeners in the analysis, and can result in inaccurate quantitation (both incorrectly elevated *and* reduced concentrations may be observed, depending on how and to what interferences contribute in the chromatogram). Because of the interference and resolution limitations of conducting PCB congener analysis using a GC/ECD instrument, PCB congener analysis by Method 8082 is generally limited to no more than 20 to 30 PCB congeners. The GC/High Resolution (HR) MS (Method 1668a) method is widely considered the ultimate PCB congener method for forensics studies, providing the highest quality data; it is, however, a costly analysis (often in excess of $1000 per sample). The GC/Low Resolution (LR) MS method (modified Method 680/1668) generally provides data of almost equal quality to GC/HRMS, often for about half the analysis cost of GC/HRMS analysis. The number of PCB congeners, sensitivity, and data quality in general that can be obtained with a GC/LRMS is generally adequate for the ACF analyses. GC/LRMS most often provides the optimum balance between information needs, data quality, and cost for most ACF projects and was used for the case studies in this document.

A tiered analytical approach is recommended for a PCB forensic investigation, as was also demonstrated for PAH forensics work (Stout et al., 2003). By combining large numbers of less expensive RSC immunoassay Total PCB sample analyses with more expensive ACF PCB congener analyses, a high quality yet cost effective study design can be developed. The larger number of RSC samples allow for sufficient spatial coverage to map out contaminant plumes and gain a general understanding of the contaminant concentrations, including the possibility of seeing the location of potential source areas. The PCB information from the RSC can then be used to select a subset of samples for ACF analysis to provide the unique PCB congener fingerprints and diagnostic data needed to match the site samples to potential sources. The initial contour mapping provides an initial understanding of the site to better formulate a conceptual model that makes optimum use of the subsequent ACF analyses. In this manner, the more costly PCB congener analyses are not wasted by analyzing samples with no detectable PCB or generating redundant PCB information. In summary, combining the ELISA IA method (Method 4020) for the RSC Total PCB analysis with the GC/LRMS method (modified Method 680/1668) for the ACF congener-specific analysis generally provides an effective analytical plan, although the other described methods can also generate useful information, assuming their listed strengths and weaknesses are recognized and accommodated.

8.2 How Results are Interpreted to Identify Mixed PCB Sources

PCB environmental forensics investigations often involve the collection of hundreds of samples. If such data are analyzed by congener specific methods, each sample will have associated with it 50 to more than 100 chemical measurements. Such large chemical data sets translate to major data management and data analysis challenges. As such, it often makes sense that multivariate statistical methods are one important tool used to analyze such data. Unfortunately, there are very large sets of different data analysis methods that can be and have been used in environmental forensics investigations. The majority of these have been borrowed from scientific disciplines that predate by decades the current practice of environmental forensics (e.g., diagnostic ratio analysis in petroleum geochemistry, principal component analysis (PCA) in psychometrics, geology, and countless other disciplines). The methods discussed in this report are based on the authors' collective experience. A comprehensive discussion of methods available to PCB forensics investigations goes beyond the scope of this document (see Johnson et al., 2007 and references therein).

Given the wide range of potentially useful methods, it is best to begin in terms of general data analysis objectives and philosophy. The major objective of a PCB forensics investigation is generally the identification and delineation of multiple sources in an impacted system. Given data from a well-designed sampling plan that spans the desired geographical and temporal range of the study, three things should be determined:

1. The number of chemical patterns contributing to a chemical system. Ideally, different sources produce different chemical end member patterns, but this is not always the case.
2. The unique chemical composition ("fingerprint") of each chemical end member pattern.
3. The relative contribution of each fingerprint in each sample.

The systems under study (sites with historical contamination) are not well-designed experiments. Rather, they are the results of inadvertent releases ("accidental experiments") that generally occurred long before any detailed environmental investigations were undertaken. The contamination is often decades old, and records associated with the chemical releases are often sparse or nonexistent. This makes for an extremely complex system with many unknowns: site history, source chemistry, timing of release, and the presence of additional, unsuspected sources. A priori knowledge of all contaminant sources that have impacted a system is rare. A philosophy of exploratory data analysis (EDA) must be adopted, rather than classical hypothesis testing. The objective of EDA is to allow patterns and correlations to be derived directly from the analysis of ambient data, with minimal a priori hypotheses. A number of proven methods are discussed in this report (e.g., PCA, receptor models, ratio methods, simple graphics), but any number of methods that meet the above listed objectives, and conform to EDA philosophy, are potentially applicable to PCB forensics investigations.

The data analysis and interpretation techniques discussed in this report are widely available, with some (concentration contour mapping techniques, receptor models such as UNMIX and PMF) available free of charge to download from EPA websites. But just as we would recommend spending a little more money to obtain a contract laboratory that can provide higher quality data with lower PCB congener detection limits, we would also recommend paying extra to find a contractor with data analysis experience in the type of forensic study that you wish to conduct rather than downloading fingerprinting techniques yourself from the internet. These contractors should also have experience with many types of visual displays that can be used to present the data in a more comprehensible fashion. The best, most technically defensible forensics studies are done with high quality data and people experienced with the fingerprinting techniques used in the study. This is the best way to ensure that complex cases of mixed PCB sources can be deciphered from the collected PCB data, as described below by summarizing our case studies from Section 5.

Section 2 provides a short description of a number of interpretation techniques, and Section 5 shows how some of these techniques were applied at our two demonstration sites. Figure 26 shows a simplified flowchart of all the steps described in Section 5, but we caution that most forensic studies do not proceed in such a linear fashion as suggested by this figure. Most studies have a more iterative aspect to them, where later steps may reveal information that requires a return to earlier steps in the process. For example, at HPS during Step 5 we saw a similar PCB congener pattern at depth (>30cm dating before 1970) on both sides of South Basin. This might force a return to Step 2 (CSM) to consider what site history might have led to this compositional pattern being present on both sides of South Basin. This might suggest the possibility that outfalls on both sides had the same source in the past, so there would be a need to have the sampling plan (Step 3) collect samples from depth on both sides of South Basin to investigate this possibility. Luckily in this case a surplus of samples were collected, so the Step 4 RSC contour maps show that plenty of samples were already collected at depth and measured for Step 5 ACF congener compositions. In other cases it might have been necessary to actually return to earlier steps so Figure 26 should be viewed as more of a conceptual framework, rather than the actual linear steps taken to conduct a forensics study.

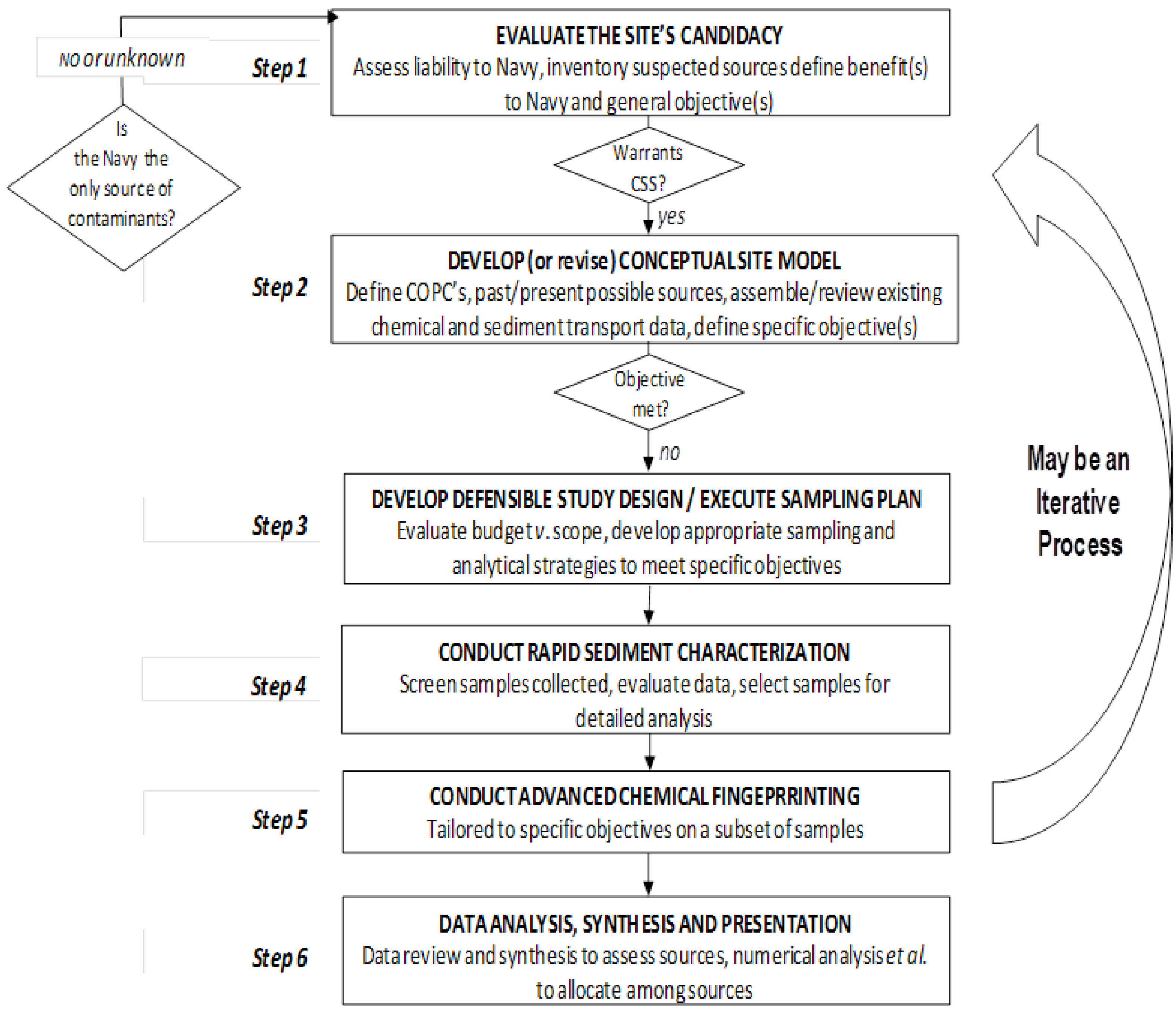


Figure 26. Conceptual Flowchart Showing Considerations, Steps, and Decision Points for Conducting a Contaminant Source Study (CSS) at Navy site (modified from Stout et al., 2003)

In Section 5.4 (Step 4), we show how a tiered analytical program can provide low cost total PCB RSC data in sufficient quantities to map out PCB concentrations in contour maps. These contour maps can be used to select a subset of samples for ACF congener analysis. In Section 5.5 (Step 5), we show interpretation often starts with simple visual comparisons of the bar chart "fingerprints" before more complex techniques such as PCA and the multivariate receptor models are used to provide quantitative mixing proportions. Tabulated results from an example receptor model (Polytopic Vector Analysis (PVA)) are provided in Appendix 1, and these mixing proportions are used in section 5.6 (Step 6) to construct the core diagrams. These core diagrams provide a spatial view of how the end member compositions have been mixed throughout the site over time, and therefore used to infer how the different PCB sources have mixed across the site over time.

Those familiar with forensics and the use of PCA can conceptually "see" the geometric shape of the data cloud in the PCA scores plots (for example the triangle for HPS in Figure 15), so they can see how the position of the various sample points plotted within this geometric shape provides the mixing proportions seen in the core diagrams (for example Figure 17). The triangle in Figure 15 can be thought of as a three end member mixing diagram (a ternary mixing diagram), where each sample congener composition can therefore be represented by a linear mixture of these three distinct end member compositions represented by the corners of the triangle (shown as the mixing proportions in Appendix 1). The PCA scores plot in Figure 15 shows the surface sediments to the east near the former landfill (sample point 5 (sample numbers given in Appendix 1) is the surface sample from core SB79 in front of landfill) plot closer to the bottom left corner marked EM2 (with a Aroclor 1260 source pattern) and surface samples from Yosemite Creek (sample 26 is surface sample from core SB105) plot up closer to the top corner of the triangle marked EM3 (representing a mix of Aroclors 1260/1254/1248). Deeper samples from both sides of South Basin plot over to the right near EM1 (sample point 25 is 45-60 cm in core SB104 by the creek and sample point 55 is 30-40 cm in core SB81 by the landfill) which indicates a 50% mix of Aroclors 1260 and 1254. It is often too simplistic to rely on the shape of a data cloud in a PCA scores plot to infer the number of end member compositions because there is more potential source information in the additional principal components not plotted. We therefore advocate the use of additional metrics like the CD scatterplots discussed in the case studies (section 5.5) to more accurately determine the number of end members (or what we typically think of as sources).

One last "lesson learned" concerns the number of samples required for forensic studies. This issue is often site or project specific, depending on the objectives of the study. But Figure 16 demonstrates one important lesson, where at Ashtabula we see most of the samples (around 200 of the 252 samples) are shown as mid-depth green circles plotting to the left side of the figure. The EPA had additional project objectives so they ran all RSC samples for ACF congener analysis, rather than the 25% subset that was run at HPS. It is clear that most of the mid-depth green circles are providing redundant congener compositional information, rather than additional source information. So for our forensic study objectives, if the samples had been run in smaller batches covering the spatial and temporal ranges, the pattern seen in Figure 16 would have become clear with far fewer samples (and therefore lower cost). And if batches were run in an iterative fashion, far fewer mid-depth samples could have been run to display this four end member composition tetrahedron pattern. One might even suggest that the surface samples are still poorly represented in Figure 16, so if an iterative study were done more surface samples could be collected to show the distribution of the more recent Aroclor 1260 source. But since this pattern only represents a small amount of the mass of PCB at the site it is probably not important. The important point was to find the recent source of this Aroclor 1260 to the sediments, and contain it prior to remediation of the sediments. EPA did this so their dredge site will not be re-contaminated by this previously unknown source which has now been contained.

So in summary, the case studies presented here in Section 5 of this report show how a forensics study can identify mixed PCB sources at sediment sites. Although without additional validation of actual source locations (outside the scope of this ESTCP study, but should be an objective of actual site forensic studies), some of the site conclusions about source locations remain speculative. At HPS, three different end member congener compositions (PCB fingerprints) were released over time from two different source locations. At Ashtabula, four different end member congener compositions (PCB fingerprints) were released over time from two different source locations. Quantitative mixing proportions from a PVA receptor model are presented in Appendix 1. Spatial displays to demonstrate how these mixing proportions vary across the sites (although different cores could be selected to show different areas) are shown in Figures 17 (for HPS) and 20 (for Ashtabula). For those familiar with forensics studies and the use of PCA, one can conceptually visualize these mixing proportions in the PCA scores plots shown in Figures 15 (for HPS) and 16 (for Ashtabula).

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Appendices

A Points of Contact
1 PVA Source Solutions showing End-member Composition and Mixing Proportions
2 RSC Data, including both Hunters Point Shipyard (HPS) and Ashtabula Data
3 ACF Data, including both Hunters Point Shipyard (HPS) and Ashtabula Data

Appendix A. Points of Contact

The team assembled for this demonstration consists of the following:

Jim Leather, SPAWAR SYS CEN (SSC) – Overall Program Manager and Lead on RSC;
Greg Durell, Battelle – Lead on ACF;
Glenn Johnson, University of Utah – Lead on Statistical Methods;
Marc Mills, EPA - EPA Coordinator for dredge project on the Ashtabula River.

Dr. Leather served as the overall program manager and the main point of contact for all ESTCP requirements. He was responsible for monthly and quarterly website reports, yearly meetings (Annual meeting, IPRs, etc.), and any other administrative requirements. He also served as lead for the Rapid Sediment Characterization (RSC) data used for this demonstration. He can be contacted at jim.leather@navy.mil or 619 553-6240.

Mr. Durell served as the lead for the Advance Chemical Fingerprinting (ACF) data used for this demonstration. He has extensive experience in PCB fingerprinting and was tasked to oversee the QA checks and conduct many of the evaluation of the data to determine sources. His team at Battelle collected these data for the original regulatory projects at both demonstration sites. He can be contacted at durell@battelle.org or 781 952-5233.

Dr. Johnson is an expert in the field of PCB fingerprinting and served as lead on the application of advanced statistical techniques such as advance receptor models to investigate the ACF data. In addition to Polytopic Vector Analysis (PVA), he was tasked to compare other statistical techniques to determine advantages and limitations among the various data analysis methods. He can be contacted at gjohnson@egi.utah.edu or 801 581-6151.

Dr. Mills was the EPA Coordinator for the dredge project on the Ashtabula River, and provided full access to the data as needed. He also assisted with transfer of the technology within the EPA to facilitate use among regulators. He can be contacted at mills.marc@epamail.epa.gov or 513 569-7322.

Appendix 1 Polytopic Vector Analysis (PVA) Solutions

Hunters Point Shipyard (3 EM Sources; 38 Congeners; 99 Samples)

Ashtabula Dredge Cores (4 EM Sources; 83 Congeners; 252 Samples)

Appendix 1A. PVA Three End Member (EM) Solution for Hunters Point

	EM Compositions		
Congener	**EM1**	**EM2**	**EM3**
8	0	0	0.2787
18	0.1555	0	0.2693
21+33+20	0.1803	0	0.3768
28	0.0161	0	0.5351
31	0.286	0	0.4009
44	2.2544	0	0.6297
49	1.4674	0	1.4853
52	5.3081	0	1.6579
56	0.805	0	0.3182
60	0.5718	0.1504	0.023
66	1.4347	0	1.1951
70	4.7614	0	1.1941
74	1.2394	0	0.456
105	4.86	0	1.1886
110	12.798	0.6674	4.887
118	9.2403	0.6261	3.5744
87	5.9064	0	1.027
90+101	10.4574	1.9346	5.5804
95+88	7.1518	0.995	4.0506
97	3.3952	0	1.2485
99	3.4746	0	3.8554
128	2.3331	0.7353	1.2731
129+158	1.712	0.8808	1.0283
132+168+153	5.9089	17.5526	16.5542
138	7.5091	8.8523	6.15
151	1.412	4.192	3.2801
156	1.6034	0.6002	0.8108
170	0.4605	9.735	4.4371
174	0	3.8637	6.6987
177	0.401	5.1885	3.1028
180	0.5367	20.3379	9.1304
183	1.0449	4.4577	2.5425
187	0.2352	8.9771	5.4999
194	0.428	4.2253	2.3388
195	0	1.8832	1.0214
201+204	0	0.5481	0.339
203	0.3429	2.8069	0.9746
206	0.3087	0.79	0.5866

Appendix 1A. Cont.

	PVA 3 EM Solution	Mixing Proportions		
	Core (horizon)	EM1	EM2	EM3
1	SB-075 (0-5 cm)	11%	50%	41%
2	SB-075 (30-60 cm)	6%	25%	70%
3	SB-075 (90-120 cm)	33%	1%	66%
4	SB-075 (150-180 cm)	13%	50%	39%
5	SB-079 (0-5 cm)	1%	68%	33%
6	SB-079 (30-60 cm)	4%	69%	30%
7	SB-079 (90-120 cm)	-2%	56%	47%
8	SB-087 (0-5 cm)	34%	22%	45%
9	SB-087 (15-30 cm)	68%	9%	25%
10	SB-087 (45-60 cm)	44%	25%	33%
11	SB-087 (75-90 cm)	29%	31%	41%
12	SB-092 (0-5 cm)	16%	38%	47%
13	SB-092 (5-15 cm)	20%	35%	46%
14	SB-092 (15-30 cm)	21%	30%	49%
15	SB-092 (30-45 cm)	27%	35%	39%
16	SB-092 (45-60 cm)	39%	36%	26%
17	SB-092 (60-75 cm)	43%	30%	28%
18	SB-092 (75-90 cm)	33%	42%	27%
19	SB-100 (0-5 cm)	23%	20%	57%
20	SB-100 (15-30 cm)	6%	33%	63%
21	SB-100 (45-60 cm)	40%	16%	45%
22	SB-100 (75-90 cm)	46%	11%	43%
23	SB-104 (0-5 cm)	19%	20%	62%
24	SB-104 (15-30 cm)	17%	7%	76%
25	SB-104 (45-60 cm)	55%	10%	36%
26	SB-105 (0-5 cm)	5%	6%	89%
27	SB-105 (15-30 cm)	14%	12%	75%
28	SB-105 (45-60 cm)	7%	28%	66%
29	SB-105 (75-90 cm)	34%	21%	46%
30	SB-106 (0-5 cm)	21%	38%	42%
31	SB-106 (5-15 cm)	8%	30%	63%
32	SB-106 (15-30 cm)	16%	32%	53%
33	SB-106 (30-45 cm)	17%	23%	61%

Appendix 1A. Cont.

	Core (horizon)	Mixing Proportions		
		EM1	EM2	EM3
34	SB-106 (45-60 cm)	3%	46%	52%
35	SB-106 (60-75 cm)	49%	10%	42%
36	SB-106 (75-90 cm)	25%	38%	38%
37	SB-108 (0-5 cm)	10%	50%	42%
38	SB-108 (5-15 cm)	25%	37%	39%
39	SB-108 (15-30 cm)	26%	35%	40%
40	SB-108 (30-45 cm)	33%	31%	37%
41	SB-120 (30-45 cm)	13%	18%	70%
42	OR-123 (0-5 cm)	9%	58%	35%
43	SB-081 (0-2 cm)	17%	51%	34%
44	SB-081 (2-4 cm)	17%	55%	29%
45	SB-081 (4-6 cm)	16%	59%	27%
46	SB-081 (6-8 cm)	17%	54%	30%
47	SB-081 (8-10 cm)	12%	54%	36%
48	SB-081 (10-12 cm)	14%	56%	32%
49	SB-081 (12-14 cm)	15%	55%	32%
50	SB-081 (14-16 cm)	13%	55%	34%
51	SB-081 (16-18 cm)	19%	54%	29%
52	SB-081 (18-20 cm)	29%	46%	26%
53	SB-081 (20-25 cm)	43%	39%	20%
54	SB-081 (25-30 cm)	59%	28%	14%
55	SB-081 (30-40 cm)	65%	19%	18%
56	SB-081 (40-50 cm)	62%	35%	5%
57	SB-081 (50-60 cm)	50%	25%	26%
58	SB-094 (2-4 cm)	15%	48%	38%
59	SB-094 (4-6 cm)	14%	44%	44%
60	SB-094 (6-8 cm)	11%	38%	53%
61	SB-094 (10-12 cm)	20%	54%	27%
62	SB-094 (12-14 cm)	14%	46%	41%
63	SB-094 (14-16 cm)	11%	42%	48%
64	SB-094 (16-18 cm)	8%	39%	55%
65	SB-094 (20-25 cm)	17%	40%	44%
66	SB-094 (50-60 cm)	58%	32%	12%

Appendix 1A. Cont.

	Core (horizon)	Mixing Proportions EM1	EM2	EM3
67	SB-110 (0-2 cm)	7%	47%	47%
68	SB-110 (2-4 cm)	5%	48%	48%
69	SB-110 (4-6 cm)	7%	45%	49%
70	SB-110 (6-8 cm)	9%	43%	50%
71	SB-110 (8-10 cm)	13%	43%	45%
72	SB-110 (10-12 cm)	11%	41%	49%
73	SB-110 (12-14 cm)	10%	43%	48%
74	SB-110 (14-16 cm)	3%	49%	49%
75	SB-110 (16-18 cm)	7%	53%	41%
76	SB-110 (18-20 cm)	10%	59%	33%
77	SB-110 (20-25 cm)	7%	45%	49%
78	SB-110 (25-30 cm)	11%	43%	48%
79	SB-110 (30-40 cm)	17%	24%	60%
80	SB-110 (40-50 cm)	14%	29%	58%
81	SB-110 (50-60 cm)	5%	24%	73%
82	SB-114 (0-2 cm)	17%	47%	38%
83	SB-114 (2-4 cm)	8%	44%	49%
84	SB-114 (6-8 cm)	17%	48%	36%
85	SB-114 (8-10 cm)	5%	37%	59%
86	SB-114 (10-12 cm)	1%	37%	63%
87	SB-114 (12-14 cm)	6%	35%	60%
88	SB-114 (14-16 cm)	8%	43%	50%
89	SB-114 (16-18 cm)	10%	38%	53%
90	SB-114 (18-20 cm)	6%	37%	58%
91	SB-114 (30-40 cm)	6%	31%	64%
92	SB-114 (40-50 cm)	13%	18%	70%
93	SB-114 (50-60 cm)	11%	9%	81%
94	SB-094 (0-2 cm)	24%	50%	27%
95	SB-094 (8-10 cm)	13%	46%	42%
96	SB-094 (18-20 cm)	10%	51%	40%
97	SB-094 (25-30 cm)	22%	38%	42%
98	SB-094 (30-40 cm)	45%	33%	24%
99	SB-094 (40-50 cm)	62%	44%	-4%

Appendix 1B. PVA Four End Member (EM) Solution for Ashtabula

	Congener	EM Compositions			
		EM1	EM2	EM3	EM4
1	**Cl2(4)/(10)**	0.1051	0.2705	0.1830	0.0000
2	**Cl2(6)**	0.0000	1.7578	0.1763	0.0000
3	**Cl2(8)**	0.2735	0.8239	0.3420	0.0000
4	**Cl2(13)**	0.0000	0.6463	0.1262	0.0000
5	**Cl2(15)**	0.0848	0.3347	0.5353	0.0000
6	**Cl3(16)**	1.1011	1.3716	0.0000	0.2059
7	**Cl3(17)**	1.0524	2.2432	0.0000	0.5920
8	**Cl3(18)**	3.2936	6.5409	0.0000	0.1515
9	**Cl3(19)**	0.1560	0.2847	0.0403	0.0000
10	**Cl3(22)**	1.5768	1.4406	0.1578	0.1963
11	**Cl3(25)**	0.0000	6.3426	0.5676	0.0000
12	**Cl3(26)**	0.0000	6.6332	0.8426	0.0000
13	**Cl3(27)**	0.0949	0.2183	0.0748	0.0000
14	**Cl3(28)**	4.3458	6.5693	0.0000	0.9436
15	**Cl3(31)**	4.9613	8.6024	0.0000	0.4278
16	**Cl3(32)**	0.8193	0.9778	0.0000	0.0010
17	**Cl3(33)/(20)**	2.2097	2.0871	0.0000	0.9975
18	**Cl3(37)**	0.9840	0.1682	0.4078	0.0630
19	**Cl4(40)**	1.3231	1.1412	0.0000	0.1580
20	**Cl4(41)**	0.6597	0.0415	0.3296	0.0000
21	**Cl4(42)/(59)**	2.6204	3.0971	0.0000	0.6264
22	**Cl4(43)**	0.2732	0.4779	0.0411	0.0000
23	**Cl4(44)**	6.6089	7.7315	0.0000	2.5115
24	**Cl4(45)**	1.2787	1.2802	0.0000	0.1730
25	**Cl4(46)**	0.5525	0.6431	0.0000	0.0000
26	**Cl4(47)**	1.7678	1.8579	0.0000	0.8269
27	**Cl4(48)**	1.7663	0.0000	0.0000	0.0000
28	**Cl4(49)**	5.0132	7.7570	0.0000	1.6390
29	**Cl4(51)**	0.3163	0.4262	0.0032	0.0104
30	**Cl4(52)**	7.3176	9.6723	0.0000	1.3925
31	**Cl4(53)**	1.1281	1.3248	0.0000	0.0506
32	**Cl4(56)**	3.4339	1.2568	0.0000	0.6550
33	**Cl4(60)**	1.1931	0.0000	0.7302	0.0000
34	**Cl4(64)**	3.5054	3.3264	0.0000	0.2990
35	**Cl4(66)**	7.2635	0.0612	0.0000	2.7088
36	**Cl4(70)**	8.4708	3.3041	0.0000	2.9786

Appendix 1B. Cont.

	Congener	EM Compositions			
		EM1	EM2	EM3	EM4
37	**Cl4(71)**	2.0109	1.9183	0.0000	0.3864
38	**Cl4(74)**	3.7253	0.0000	0.0000	0.5225
39	**Cl4(77)**	0.6037	0.0074	0.0068	0.1924
40	**Cl5(82)**	0.6469	0.3197	0.4826	0.0000
41	**Cl5(83)/(119)**	0.3352	0.3998	0.0944	0.6515
42	**Cl5(84)**	1.4452	1.3317	0.1369	0.5767
43	**Cl5(85)**	0.7894	0.4073	0.4134	0.0000
44	**Cl5(87)**	1.2046	0.0000	1.5903	0.2597
45	**Cl5(91)**	0.6043	0.5972	0.2701	0.3351
46	**Cl5(92)**	0.3048	0.3438	0.7546	0.8113
47	**Cl5(95)**	1.9435	1.5931	2.8751	1.4614
48	**Cl5(97)**	1.1868	0.1856	0.6142	0.6505
49	**Cl5(99)**	1.3258	0.0000	0.3997	1.6539
50	**Cl5(101)**	2.0435	0.0000	2.3551	2.1381
51	**Cl5(105)**	1.1150	0.0000	1.2772	0.0000
52	**Cl5(110)**	2.9533	2.0332	2.5410	2.8373
53	**Cl5(118)**	1.9581	0.0000	1.2551	2.0752
54	**Cl5(107)/(123)**	0.1762	0.1361	0.2592	0.5562
55	**Cl6(128)**	0.0570	0.0126	0.9596	0.0000
56	**Cl6(130)**	0.0000	0.0021	0.4349	0.5127
57	**Cl6(134)**	0.0000	0.0000	0.5326	0.2114
58	**Cl6(135)**	0.0000	0.0000	1.5637	0.1681
59	**Cl6(136)**	0.0000	0.0000	1.6908	0.7388
60	**Cl6(138)**	0.0000	0.0000	4.4381	0.8236
61	**Cl6(141)**	0.0000	0.0000	3.1247	0.0000
62	**Cl6(146)**	0.0000	0.0000	1.4138	0.4377
63	**Cl6(149)**	0.0000	0.0000	8.8152	0.5251
64	**Cl6(151)**	0.0000	0.0000	4.6665	0.0000
65	**Cl6(132)/(153)/(168)**	0.0000	0.0000	9.6592	0.6840
66	**Cl6(156)**	0.0000	0.0000	0.9158	0.8502
67	**Cl6(129)/(158)**	0.0000	0.0000	1.0905	0.0302
68	**Cl6(163)**	0.0000	0.0000	2.0790	0.1396
69	**Cl6(164)**	0.0000	0.0000	0.9278	0.0000
70	**Cl7(172)**	0.0000	0.0000	0.9674	0.0000
71	**Cl7(174)**	0.0000	0.0000	5.1116	0.0000
72	**Cl7(177)**	0.0000	0.0000	3.4587	0.0000

Appendix 1B. Cont.

	Congener	EM Compositions			
		EM1	EM2	EM3	EM4
73	**Cl7(178)**	0.0000	0.0000	1.0122	0.1500
74	**Cl7(179)**	0.0000	0.0000	2.7407	0.3017
75	**Cl7(180)**	0.0000	0.0000	9.1027	0.1858
76	**Cl7(183)**	0.0000	0.0000	3.9190	0.9773
77	**Cl7(187)**	0.0000	0.0000	5.5796	0.3944
78	**Cl8(194)**	0.0197	0.0000	0.9019	0.3848
79	**Cl8(199)**	0.0000	0.0000	2.4561	1.5905
80	**Cl8(196)/(203)**	0.0000	0.0000	2.5545	0.4072
81	**Cl9(206)**	0.0000	0.0000	0.0000	5.9601
82	**Cl9(208)**	0.0000	0.0000	0.0000	1.7228
83	**Cl10(209)**	0.0000	0.0000	0.0000	50.0875

Appendix 1B. Cont.

	Core Horizon	Mixing Proportions			
		EM1	**EM2**	**EM3**	**EM4**
1	**T170A 6-7FT**	52.5%	15.1%	6.2%	26.2%
2	**T170A 7-8FT**	40.6%	48.6%	2.9%	7.9%
3	**T170A 8-9FT**	61.5%	26.9%	3.3%	8.3%
4	**T170A 9-10FT**	79.2%	15.7%	5.0%	0.1%
5	**T170A 10-11FT**	46.8%	45.0%	1.2%	7.1%
6	**T170-A-NML**	46.3%	42.8%	3.6%	7.4%
7	**T170-A-KJI**	57.5%	25.7%	6.5%	10.3%
8	**T170A 17-18FT**	53.0%	11.6%	24.0%	11.3%
9	**T170B 2.1-3FT**	5.7%	-2.1%	17.8%	78.6%
10	**T170B 3-4FT**	45.0%	10.9%	1.2%	42.9%
11	**T170-B-VU**	48.5%	4.0%	4.0%	43.4%
12	**T170B 5.5-6FT**	48.3%	3.2%	15.3%	33.2%
13	**T170B 6-7FT**	42.9%	43.2%	-0.4%	14.4%
14	**T170B 7-8FT**	49.5%	39.8%	2.6%	8.1%
15	**T170B 8-9FT**	67.6%	15.3%	4.4%	12.8%
16	**T170B 9-10FT**	38.2%	53.2%	1.4%	7.2%
17	**T170-B-ONM**	44.4%	43.2%	3.3%	9.1%
18	**T170-B-LKJ**	62.0%	29.6%	8.4%	0.1%
19	**T170B 16.1-17.1FT**	68.8%	13.1%	12.4%	5.7%
20	**T171A 5-6FT**	21.8%	6.1%	5.3%	66.8%
21	**T171A 6-7FT**	43.8%	31.8%	1.4%	23.0%
22	**T171A 7-8FT**	38.9%	48.7%	2.8%	9.6%
23	**T171A 8-9FT**	70.1%	18.6%	3.6%	7.7%
24	**T171A 9-10FT**	69.2%	16.7%	4.7%	9.4%
25	**T171-A-PON**	40.7%	49.3%	3.1%	6.9%
26	**T171-A-MLK**	54.3%	31.8%	4.2%	9.8%
27	**T171-A-JIH**	64.0%	18.1%	7.6%	10.3%
28	**T171A 18.4-19.4FT**	66.2%	13.3%	15.8%	4.7%
29	**T171B 3-4FT**	2.9%	-2.3%	11.3%	88.1%
30	**T171B 4-5FT**	37.1%	8.4%	0.2%	54.3%
31	**T171-B-TS**	48.7%	3.5%	4.0%	43.9%
32	**T171B 6.3-6.5FT**	57.6%	21.8%	1.7%	18.9%
33	**T171-B-QP**	50.8%	33.2%	2.3%	13.7%
34	**T171B 8-9FT**	49.9%	33.7%	3.0%	13.4%
35	**T171B 9-10FT**	66.3%	16.2%	3.3%	14.2%
36	**T171-B-LKJ**	55.0%	33.9%	2.5%	8.6%

Appendix 1B. Cont.

	Core Horizon	Mixing Proportions			
		EM1	EM2	EM3	EM4
37	T171-B-IHG	44.7%	21.1%	19.5%	14.7%
38	T171B 17.2-17.6FT	80.9%	11.1%	5.8%	2.3%
39	T172A 3-4FT	9.2%	13.1%	14.3%	63.4%
40	T172A 4-5FT	38.8%	47.9%	1.8%	11.5%
41	T172A 5-6FT	56.2%	28.8%	3.0%	12.1%
42	T172A 6-7FT	67.9%	16.9%	2.8%	12.4%
43	T172A 7-8FT	72.1%	20.9%	2.7%	4.4%
44	T172-A-RQP	35.2%	54.1%	2.4%	8.2%
45	T172-A-ON	50.8%	35.0%	4.7%	9.6%
46	T172A 13-13.8FT	81.1%	13.9%	3.7%	1.4%
47	T172-A-LKJI	63.2%	18.5%	6.0%	12.3%
48	T172A 16.5-17.5FT	70.0%	5.6%	14.9%	9.5%
49	T172B 3-4FT	52.4%	5.5%	2.7%	39.4%
50	T172B 4-5FT	52.0%	28.2%	2.0%	17.8%
51	T172B 5-6FT	44.8%	40.9%	1.4%	12.8%
52	T172B 6-7FT	44.8%	42.2%	0.8%	12.1%
53	T172B 7-8FT	67.8%	23.2%	2.0%	7.0%
54	T172-B-PO	47.4%	42.3%	1.7%	8.7%
55	T172-B-NML	51.3%	38.7%	2.9%	7.1%
56	T172-B-KJI	64.8%	19.3%	5.7%	10.2%
57	T173A 6-7FT	49.7%	21.4%	1.4%	27.6%
58	T173A 7-8FT	57.0%	20.3%	0.0%	22.7%
59	T173A 8-9FT	46.5%	40.9%	1.9%	10.7%
60	T173A 9-10FT	73.5%	15.8%	3.0%	7.8%
61	T173A 10-11FT	66.0%	26.6%	1.4%	6.0%
62	T173A 11-12FT	34.0%	56.5%	-0.2%	9.7%
63	T173A 12-13FT	48.5%	42.0%	0.8%	8.8%
64	T173-A-MLK	51.6%	35.0%	3.5%	10.0%
65	T173-A-JIH	64.8%	18.0%	5.5%	11.7%
66	T173A 18.7-19.7FT	71.5%	11.3%	5.8%	11.4%
67	T173B 4-5FT	-4.3%	4.1%	9.7%	90.6%
68	T173B 5-6FT	47.7%	11.3%	1.2%	39.9%
69	T173B 6-7FT	42.7%	40.5%	3.8%	13.1%
70	T173B 7-8FT	33.1%	56.9%	1.8%	8.2%
71	T173B 8-9FT	51.6%	35.1%	3.3%	10.0%
72	T173B 9-10FT	74.3%	15.5%	3.4%	6.8%

Appendix 1B. Cont.

	Core Horizon	Mixing Proportions			
		EM1	EM2	EM3	EM4
73	T173B 10-11FT	52.4%	39.7%	2.9%	5.0%
74	T173B 11-12FT	52.6%	38.0%	1.9%	7.5%
75	T173-B-MLK	61.7%	26.9%	3.4%	8.0%
76	T174A 3-4FT	42.5%	8.2%	2.8%	46.6%
77	T174A 4-5FT	39.8%	41.0%	4.3%	15.0%
78	T174A 5-6FT	41.9%	46.1%	1.5%	10.6%
79	T174A 6-7FT	64.5%	22.7%	4.3%	8.6%
80	T174A 7-8FT	77.5%	13.0%	4.3%	5.3%
81	T174A 8-9FT	70.1%	22.7%	1.4%	5.9%
82	T174-A-QPO	51.8%	40.4%	2.3%	5.6%
83	T174-A-NML	64.7%	14.2%	8.5%	12.7%
84	T174A 14.4-15.4FT	56.9%	11.9%	23.0%	8.3%
85	T174B 2-3FT	46.4%	8.5%	6.2%	38.9%
86	T174B 3-4FT	55.0%	18.8%	1.1%	25.1%
87	T174B 4-5FT	37.7%	44.9%	3.3%	14.1%
88	T174B 7-8FT	71.5%	21.9%	3.4%	3.2%
89	T174B 8-9FT	48.1%	40.2%	2.2%	9.6%
90	T174-B-QPO	50.3%	37.4%	4.0%	8.4%
91	T175A 1.5-2FT	56.7%	26.4%	5.7%	11.3%
92	T175A 5-6FT	55.5%	30.5%	3.7%	10.4%
93	T175A 6-7FT	76.4%	11.1%	4.8%	7.8%
94	T175A 7-8FT	69.1%	19.7%	3.5%	7.7%
95	T175A 8-9FT	62.3%	27.5%	2.5%	7.7%
96	T175A 9-10FT	62.4%	28.8%	5.1%	3.7%
97	T175-A-ON	59.5%	10.8%	11.4%	18.3%
98	T175A 12.1-12.5FT	72.2%	10.9%	7.7%	9.3%
99	T175B 1-2FT	47.7%	21.0%	4.2%	27.1%
100	T175B 2-3FT	58.7%	29.3%	4.2%	7.8%
101	T175B 3-4FT	53.0%	35.0%	2.1%	9.9%
102	T175B 4-5FT	39.1%	47.1%	2.6%	11.2%
103	T175B 5-6FT	52.4%	33.8%	1.9%	11.9%
104	T175B 6-7FT	76.3%	10.9%	3.3%	9.5%
105	T175B 7-8FT	73.7%	18.8%	3.4%	4.1%
106	T175B 8-9FT	71.1%	21.6%	1.8%	5.4%
107	T175B 9-9.85FT	41.4%	46.9%	1.8%	10.0%
108	T175B 9.85-10.7FT	50.3%	42.8%	3.4%	3.5%

Appendix 1B. Cont.

	Core Horizon	Mixing Proportions			
		EM1	EM2	EM3	EM4
109	T175B 10.7-11.3FT	67.0%	15.2%	6.2%	11.6%
110	T176A 0-1FT	52.2%	31.4%	5.9%	10.5%
111	T176A 1-2FT	56.8%	31.9%	3.4%	7.9%
112	T176A 2-3FT	36.1%	47.3%	8.6%	8.0%
113	T176A 3-4FT	46.6%	41.2%	3.2%	9.0%
114	T176A 4.5FT	79.8%	8.2%	4.6%	7.4%
115	T176A 5-6FT	61.9%	31.1%	1.8%	5.3%
116	T176A 6-7FT	56.0%	34.2%	3.0%	6.9%
117	T176A 7-8FT	51.7%	34.0%	4.1%	10.3%
118	T176A 8-8.77FT	62.2%	37.0%	3.3%	-2.5%
119	T176A 8.77-9.55FT	46.6%	48.0%	4.5%	0.9%
120	T176A 9.55-9.8FT	68.3%	16.9%	6.1%	8.6%
121	T176A 9.8-10.55FT	59.9%	35.9%	4.6%	-0.5%
122	T176B 0-1FT	69.1%	19.9%	4.0%	6.9%
123	T176B 1-2FT	55.3%	34.4%	1.8%	8.5%
124	T176B 2-3FT	57.2%	34.4%	2.9%	5.6%
125	T176B 3-4FT	51.8%	36.8%	2.6%	8.8%
126	T176B 4-5FT	81.3%	10.5%	4.1%	4.1%
127	T176B 5-6FT	92.0%	6.2%	3.8%	-2.0%
128	T176B 6-7FT	76.4%	18.2%	2.9%	2.6%
129	T176B 7-8FT	59.3%	35.5%	2.0%	3.3%
130	T176B 8-8.95FT	44.9%	45.7%	1.2%	8.2%
131	T176B 8.95-9.9FT	52.2%	37.4%	2.0%	8.5%
132	T176B 9.9-10.9FT	48.7%	38.0%	3.7%	9.6%
133	T177A 1-1.45FT	49.7%	36.8%	2.4%	11.1%
134	T177A 1.45-2FT	44.1%	41.1%	2.6%	12.3%
135	T177-A-WV	53.9%	30.4%	3.0%	12.8%
136	T177A 3.3-4FT	72.6%	16.3%	2.7%	8.4%
137	T177A 4-5FT	68.0%	19.9%	3.1%	8.9%
138	T177A 5-6.15FT	52.1%	39.2%	3.2%	5.5%
139	T177-A-RQ	58.7%	34.7%	3.0%	3.6%
140	T177A 6.7-7.3FT	58.9%	23.9%	2.4%	14.8%
141	T177A 7.3-7.65FT	72.3%	11.3%	6.0%	10.5%
142	T177B 0-1FT	65.1%	5.7%	3.3%	25.9%
143	T177B 1.4-2FT	50.9%	23.5%	-1.6%	27.2%
144	T177B 2-3FT	60.9%	19.6%	0.7%	18.8%

Appendix 1B. Cont.

	Core Horizon	Mixing Proportions			
		EM1	EM2	EM3	EM4
145	T177B 3-4FT	39.6%	48.1%	1.9%	10.3%
146	T177B 4-5FT	41.3%	45.2%	2.3%	11.2%
147	T177B 5-6FT	82.7%	10.1%	3.9%	3.3%
148	T177B 6-7FT	84.4%	5.2%	8.9%	1.5%
149	T177B 7-8FT	73.0%	22.5%	4.0%	0.5%
150	T177-B-QPO	36.4%	54.0%	3.4%	6.2%
151	T177-B-NML	46.5%	40.7%	5.0%	7.9%
152	T177B 14.1-15.1FT	75.4%	10.3%	8.3%	6.1%
153	T178A 6.05-7.1FT	47.8%	35.3%	2.0%	14.9%
154	T178A 7.1-8.1FT	59.6%	23.4%	4.0%	13.0%
155	T178B 1-2FT	58.5%	23.0%	1.7%	16.8%
156	T178B 2-3FT	54.0%	26.0%	1.2%	18.8%
157	T178B 3-4FT	48.7%	39.5%	3.9%	7.9%
158	T178B 4-5FT	57.6%	29.5%	2.8%	10.1%
159	T178B 5-6FT	69.9%	15.9%	4.9%	9.3%
160	T178B 6-7FT	74.7%	19.4%	5.1%	0.8%
161	T178-B-SRQ	59.5%	26.3%	3.5%	10.7%
162	T178C 0.5-1FT	52.7%	-1.8%	3.2%	45.9%
163	T178C 1-2FT	69.6%	1.1%	2.3%	27.0%
164	T178C 2-3FT	65.4%	9.0%	0.0%	25.6%
165	T178C 3-4FT	56.8%	21.3%	-1.0%	22.9%
166	T178C 4-5FT	54.0%	33.3%	2.2%	10.6%
167	T178C 5-6FT	63.9%	27.7%	1.5%	6.9%
168	T178C 6-7FT	45.3%	42.1%	3.3%	9.3%
169	T178-C-SRQ	42.8%	46.7%	3.2%	7.3%
170	T178-C-PON	84.9%	11.4%	3.7%	0.1%
171	T178-C-MLKJ	48.9%	42.7%	1.9%	6.5%
172	T178C 16.6-17.6FT	75.7%	8.7%	8.1%	7.6%
173	T179B 1-2FT	49.8%	7.9%	0.9%	41.5%
174	T179B 2-3FT	61.8%	16.6%	-0.7%	22.4%
175	T179B 3-4FT	52.3%	31.9%	1.7%	14.1%
176	T179B 4-5FT	55.8%	33.3%	3.6%	7.3%
177	T179-B-UTS	60.4%	30.1%	2.9%	6.6%
178	T179-B-RQP	68.3%	20.4%	2.6%	8.7%
179	T179-B-ON	70.9%	22.4%	4.2%	2.4%
180	T179B 12.5-13.5FT	68.1%	19.4%	8.9%	3.6%

Appendix 1B. Cont.

	Core Horizon	Mixing Proportions			
		EM1	EM2	EM3	EM4
181	T179C 1.15-2FT	50.2%	-3.1%	4.1%	48.8%
182	T179C 2-3FT	69.6%	2.6%	3.8%	24.1%
183	T179C 3-4FT	53.5%	11.4%	2.6%	32.5%
184	T179C 4-5FT	55.5%	18.7%	-1.3%	27.1%
185	T179C 5-6FT	62.5%	18.1%	-2.0%	21.5%
186	T179-C-UT	54.0%	38.5%	1.5%	6.0%
187	T179-C-SRQ	55.2%	35.4%	2.3%	7.1%
188	T179-C-PON	81.9%	12.3%	2.7%	3.0%
189	T179-C-MLK	53.2%	37.6%	1.7%	7.4%
190	T179-C-JIH	68.8%	29.2%	3.5%	-1.5%
191	T179C 18.5-19.5FT	83.0%	13.7%	3.9%	-0.6%
192	T180B 1-2FT	55.4%	23.2%	1.7%	19.7%
193	T180B 2-3FT	62.7%	23.8%	3.5%	10.1%
194	T180B 3-4FT	52.3%	34.5%	2.9%	10.4%
195	T180B 4-5FT	54.8%	32.6%	3.8%	8.9%
196	T180-B-UTS	59.1%	29.7%	4.4%	6.8%
197	T180C 0-1FT	56.6%	11.6%	1.7%	30.1%
198	T180C 1-2FT	50.8%	19.8%	-1.1%	30.5%
199	T180C 2-3FT	54.9%	22.8%	-0.6%	22.9%
200	T180C 3-4FT	50.8%	33.7%	1.8%	13.7%
201	T180C 4-5FT	58.8%	33.4%	2.2%	5.6%
202	T180-C-UTS	56.8%	34.6%	2.3%	6.4%
203	T180-C-RQP	76.7%	18.2%	3.3%	1.7%
204	T180-C-KJI	71.9%	21.6%	4.8%	1.7%
205	T180C 16.6-17.6FT	71.8%	12.9%	10.4%	4.9%
206	T180D 2-3FT	50.2%	21.1%	1.2%	27.4%
207	T180D 3-4FT	54.0%	23.8%	-0.7%	23.0%
208	T180D 4-5FT	56.0%	19.3%	0.4%	24.4%
209	T180-D-UTS	56.7%	33.8%	2.1%	7.4%
210	T180-D-RQP	66.8%	23.7%	4.3%	5.3%
211	T180-D-ONM	69.0%	25.1%	3.0%	3.0%
212	T180-D-LKJ	51.0%	43.5%	3.7%	1.8%
213	T180-D-IHG	58.3%	34.8%	3.2%	3.7%
214	T180D 20.3-21.3FT	94.1%	6.1%	1.2%	-1.3%
215	T181A 3.2-4.2FT	67.2%	7.3%	19.1%	6.4%
216	T181B 1-2FT	50.7%	13.8%	-0.4%	35.9%

Appendix 1B. Cont.

	Core Horizon	Mixing Proportions			
		EM1	EM2	EM3	EM4
217	T181B 2-3FT	44.8%	17.1%	-1.7%	39.8%
218	T181B 3-4FT	54.7%	24.1%	0.8%	20.5%
219	T181B 4-5.2FT	55.6%	31.3%	5.1%	8.0%
220	T181B 5.2-6.4FT	38.8%	47.4%	4.2%	9.6%
221	T181B 6.4-7.4FT	38.8%	43.6%	6.5%	11.1%
222	T181C 0.4-1FT	48.1%	26.6%	3.3%	22.1%
223	T181C 1-2FT	55.8%	23.4%	0.4%	20.4%
224	T181C 2-3FT	72.0%	17.4%	4.8%	5.9%
225	T181C 3-4FT	81.2%	10.9%	4.2%	3.7%
226	T181C 4-5FT	68.1%	19.3%	4.2%	8.5%
227	T181C 5-6FT	82.5%	13.4%	3.5%	0.6%
228	T181-C-TS	81.9%	11.8%	4.2%	2.2%
229	T181-C-RQP	51.8%	37.9%	-6.0%	16.4%
230	T181C 10.8-11.8FT	71.3%	31.6%	2.1%	-5.0%
231	T181D 0-1FT	76.1%	6.7%	2.1%	15.1%
232	T181D 1-2FT	59.4%	16.2%	0.1%	24.3%
233	T181D 2-3FT	62.6%	20.4%	-2.1%	19.0%
234	T181D 3-4FT	65.6%	21.9%	0.1%	12.4%
235	T181D 4-5FT	62.2%	31.9%	2.4%	3.5%
236	T181D 5-6FT	36.3%	58.0%	0.8%	4.9%
237	T181-D-TSR	74.1%	17.2%	3.0%	5.8%
238	T181-D-QPO	84.5%	13.2%	3.8%	-1.5%
239	T181-D-NML	77.6%	20.9%	4.6%	-3.0%
240	T181-D-KJIH	55.1%	33.7%	2.6%	8.6%
241	T181D 18.5-19.5FT	78.2%	15.0%	4.5%	2.3%
242	FAD-005	39.3%	7.4%	43.1%	10.1%
243	FAD-008	45.8%	12.5%	29.7%	12.0%
244	FAD-012	55.1%	6.0%	30.7%	8.2%
245	FAD-015	44.3%	5.2%	39.6%	10.9%
246	FAD-021	69.6%	2.7%	22.1%	5.6%
247	FAD-023	77.7%	8.2%	13.8%	0.3%
248	E2LQ0	11.1%	2.4%	73.7%	12.8%
249	E2LQ1	17.0%	3.1%	67.2%	12.7%
250	E2LQ2	21.2%	3.0%	63.1%	12.7%
251	E2LQ3	8.5%	2.9%	75.3%	13.4%
252	E2LQ4	11.9%	2.7%	72.5%	12.9%

Appendix 2 RSC Data

Hunters Point Shipyard Immunoassay

Ashtabula Dredge Cores Immunoassay

Appendix 2A. Hunters Point Shipyard (HPS) RSC Data

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1		2	3	Mean	Stdev	%RSD
SB75	CAD-461	1587				1587		
	CAD-462	635				635		
	CAD-463	2409				2409		
	CAD-464	780				780		
	CAD-465	556				556		
	CAD-466	354				354		
	CAD-467	406				406		
SB76	CAD-468	6645				6645		
	CAD-469	12709				12709		
	CAD-470	53304		52990		53147	222	0.42%
	CAD-471	9763		9157		9460	428	4.52%
	CAD-472	714		885		800	120	15.06%
	CAD-473	415				415		
	CAD-474	366				366		
SB77	CAD-475	1732				1732		
	CAD-476	2332				2332		
	CAD-477	131				131		
	CAD-478	102		132		117	22	18.39%
	CAD-479	151		178		164	20	11.98%
	CAD-480	227				227		
	CAD-481	96				96		
SB78	CAD-482	1224				1224		
	CAD-483	1338		1604		1471	188	12.78%
	CAD-484	3701	E	5337		4519	1156	25.59%
	CAD-485	0.1				0.1		
	CAD-486	12		13		13		
	CAD-487	4				4		
	CAD-488	5				5		
SB79	CAD-489	1233				1233		
	CAD-490	970				970		
	CAD-491	826				826		
	CAD-492	1882				1882		
	CAD-493	4518		7334		5926	1991	33.59%
	CAD-494	12				12		
	CAD-495	1				1		

Definitions:

Mean: Arithmethic Mean

Stdev*:* Standard Deviation from duplicate assay analyses (n=2 or 3)

% RSD*:* Percent Relative Standard Deviation whereby; [{stdev/mean} * 100]

Label: **SB =** South Basin, **DUP** = Field Duplicate, **R** = Field Resample, **E** = Laboratory Extraction Duplicate

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1	2	3	Mean	Stdev	%RSD
SB80	CAD-496	1169			1169		
	CAD-497	3113			3113		
	CAD-498	8256	8555		8405	212	2.52%
	CAD-499	8737			8737		
	CAD-500	2922			2922		
	CAD-501	358			358		
	CAD-502	362			362		
SB81REP1	CAD-503	1464			1464		
	CAD-504	2660			2660		
	CAD-505	6425			6425		
	CAD-506	4522	2972		3747	1096	29.24%
	CAD-507	568			568		
	CAD-508	242			242		
	CAD-509	161			161		
SB82	CAD-510	1007			1007		
	CAD-511	1957			1957		
	CAD-512	2179	1999		2089	128	6.12%
	CAD-513	407	261		334	104	31.01%
	CAD-514	150			150		
	CAD-515	104			104		
	CAD-516	106			106		
SB83	CAD-517	1200			1200		
	CAD-518	2175			2175		
	CAD-519	2119	2112		2116	5	0.26%
	CAD-520	154	117		135	26	19.24%
	CAD-521	21			21		
	CAD-522	2			2		
	CAD-523	1			1		
SB84	CAD-524	1386			1386		
	CAD-525	1263			1263		
	CAD-526	3006			3006		
	CAD-527	948			948		
	CAD-528	15			15		
	CAD-529	5			5		
	CAD-530	7			7		
SB85	CAD-531	539			539		
	CAD-532	671			671		
	CAD-533	1314			1314		
	CAD-534	1501			1501		
	CAD-535	1001			1001		
	CAD-536	472			472		
	CAD-537	414			414		

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1		2	3	Mean	Stdev	%RSD
SB86	CAD-538	280				280		
	CAD-539	328				328		
	CAD-540	245				245		
	CAD-541	88		45		67		
	CAD-542	164				164		
	CAD-543	383				383		
	CAD-544	714				714		
SB87	CAD-545	763				763		
	CAD-546	2059				2059		
	CAD-547	5177	E	7989		6583	1988	30.20%
	CAD-548	3201				3201		
	CAD-549	719				719		
	CAD-550	403				403		
	CAD-551	237				237		
SB88	CAD-552	317				317		
	CAD-553	446				446		
	CAD-554	307				307		
	CAD-555	305				305		
	CAD-556	1029				1029		
	CAD-557	572				572		
	CAD-558	180				180		
SB89	CAD-559	400				400		
	CAD-560	1144				1144		
	CAD-561	5145				5145		
	CAD-562	3616				3616		
	CAD-563	983				983		
	CAD-564	237				237		
	CAD-565	156				156		
SB90	CAD-566	590				590		
	CAD-567	909				909		
	CAD-568	4045				4045		
	CAD-569	4533				4533		
	CAD-570	1054				1054		
	CAD-571	272				272		
	CAD-572	184				184		
SB91	CAD-573	186				186		
	CAD-574	614				614		
	CAD-575	1056				1056		
	CAD-576	3667				3667		
	CAD-577	2145				2145		
	CAD-578	765				765		
	CAD-579	112		105		108	5	4.63%

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1		2	3	Mean	Stdev	%RSD
SB92	CAD-580	219				219		
	CAD-581	333				333		
	CAD-582	766	E	467	492	575	166	28.78%
	CAD-583	1598				1598		
	CAD-584	639				639		
	CAD-585	261				261		
	CAD-586	129				129		
SB93	CAD-587	262				262		
	CAD-588	386				386		
	CAD-589	855				855		
	CAD-590	1556				1556		
	CAD-591	431				431		
	CAD-592	219				219		
	CAD-593	105				105		
SB94	CAD-594	527				527		
	CAD-595	953				953		
	CAD-596	2044		1800		1922	173	8.99%
	CAD-597	2240				2240		
	CAD-598	349				349		
	CAD-599	164				164		
	CAD-600	27				27		
SB95	CAD-601	414				414		
	CAD-602	570				570		
	CAD-603	1481				1481		
	CAD-604	712				712		
	CAD-605	224				224		
	CAD-606	126				126		
	CAD-607	76				76		
SB96	CAD-608	397				397		
	CAD-609	846		662		754	130	17.20%
	CAD-610	851				851		
	CAD-611	550		436		493	81	16.36%
	CAD-612	204				204		
	CAD-613	119				119		
	CAD-614	94				94		
SB97	CAD-615	615				615		
	CAD-616	670				670		
	CAD-617	982				982		
	CAD-618	288				288		
	CAD-619	83				83		
	CAD-620	89				89		
	CAD-621	110				110		

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1		2	3	Mean	Stdev	%RSD
SB98	CAD-622	210				210		
	CAD-623	461				461		
	CAD-624	707				707		
	CAD-625	2413				2413		
	CAD-626	7304				7304		
	CAD-627	1221				1221		
	CAD-628	377				377		
SB99	CAD-629	362				362		
	CAD-630	847				847		
	CAD-631	1142		917		1029	159	15.47%
	CAD-632	8766				8766		
	CAD-633	11608	E	15696		13652	2891	21.17%
	CAD-634	4331				4331		
	CAD-635	1353				1353		
SB100	CAD-636	349				349		
	CAD-637	934				934		
	CAD-638	1313				1313		
	CAD-639	9034				9034		
	CAD-640	14662				14662		
	CAD-641	5460				5460		
	CAD-642	902				902		
SB101	CAD-643	307				307		
	CAD-644	676				676		
	CAD-645	1095				1095		
	CAD-646	4024				4024		
	CAD-647	5960	E	11653		8806	4026	45.71%
	CAD-648	3250				3250		
	CAD-649	464				464		
SB102	CAD-650	368				368		
	CAD-651	771				771		
	CAD-652	1124				1124		
	CAD-653	5799				5799		
	CAD-654	7836	E	14438		11137	4668	41.91%
	CAD-655	11531		14880		13206	2368	17.93%
	CAD-656	1807				1807		
SB103	CAD-657	379				379		
	CAD-658	885				885		
	CAD-659	1370				1370		
	CAD-660	5656				5656		
	CAD-661	6665	E	11550		9107	3454	37.93%
	CAD-662	6016				6016		
	CAD-663	756				756		

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1		2	3	Mean	Stdev	%RSD
SB104REP2	CAD-664	308				308		
	CAD-665	871				871		
	CAD-666	1066				1066		
	CAD-667	5206				5206		
	CAD-668	5460	E	8220		6840	1952	28.54%
	CAD-669	1350				1350		
	CAD-670	139				139		
SB105	CAD-671	138				138		
	CAD-672	160				160		
	CAD-673	482				482		
	CAD-674	755				755		
	CAD-675	4495	E	6558		5527	1459	26.40%
	CAD-676	4698				4698		
	CAD-677	3056				3056		
SB106	CAD-678	146				146		
	CAD-679	229				229		
	CAD-680	517				517		
	CAD-681	622				622		
	CAD-682	5225	E	7669		6447	1728	26.80%
	CAD-683	4863				4863		
	CAD-684	4131		5167		4649	732	15.75%
SB107	CAD-685	189				189		
	CAD-686	195				195		
	CAD-687	339				339		
	CAD-688	605				605		
	CAD-689	1834		1622		1728	150	8.66%
	CAD-690	1647				1647		
	CAD-691	3106		2634		2870	334	11.63%
SB108	CAD-692	203				203		
	CAD-693	342				342		
	CAD-694	727				727		
	CAD-695	508				508		
	CAD-696	64				64		
	CAD-697	24				24		
	CAD-698	9				9		
SB109	CAD-699	193				193		
	CAD-700	439				439		
	CAD-701	276				276		
	CAD-702	605				605		
	CAD-703	575				575		
	CAD-704	89				89		
	CAD-705	6				6		

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1		2	3	Mean	Stdev	%RSD
SB110REP3	CAD-706	179		186		182	5	2.82%
	CAD-707	377		291		334	61	18.33%
	CAD-708	443		491		467	34	7.25%
	CAD-709	27		16		22		
	CAD-710	8		12		10		
	CAD-711	5		9		7		
	CAD-712	5		12		8		
SB111	CAD-713	148				148		
	CAD-714	152				152		
	CAD-715	210				210		
	CAD-716	249				249		
	CAD-717	1089	E	1403		1246	222	17.82%
	CAD-718	350				350		
	CAD-719	1541				1541		
SB112	CAD-720	142				142		
	CAD-721	315				315		
	CAD-722	446				446		
	CAD-723	636				636		
	CAD-724	1423	E	2103		1763	480	27.25%
	CAD-725	508				508		
	CAD-726	111				111		
SB113	CAD-727	175				175		
	CAD-728	200				200		
	CAD-729	368				368		
	CAD-730	597		619		608	16	2.57%
	CAD-731	236				236		
	CAD-732	17				17		
	CAD-733	12				12		
SB114REP1	CAD-734	193				193		
	CAD-735	166				166		
	CAD-736	299				299		
	CAD-737	394				394		
	CAD-738	626				626		
	CAD-739	111		122		117	8	6.73%
	CAD-740	32				32		
SB115	CAD-741	320				320		
	CAD-742	484				484		
	CAD-743	561				561		
	CAD-744	350				350		
	CAD-745	113				113		
	CAD-746	37				37		
	CAD-747	19				19		

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1	2	3	Mean	Stdev	%RSD
SB116	CAD-748	205			205		
	CAD-749	238			238		
	CAD-750	183			183		
	CAD-751	279			279		
	CAD-752	233			233		
	CAD-753	297			297		
	CAD-754	391			391		
SB117	CAD-755	176			176		
	CAD-756	266			266		
	CAD-757	366			366		
	CAD-758	313			313		
	CAD-759	342			342		
	CAD-760	363			363		
	CAD-761	21			21		
SB118	CAD-762	100			100		
	CAD-763	162			162		
	CAD-764	352			352		
	CAD-765	420			420		
	CAD-766	196			196		
	CAD-767	33			33		
	CAD-768	11			11		
SB119	CAD-769	81			81		
	CAD-770	78			78		
	CAD-771	110			110		
	CAD-772	78			78		
	CAD-773	99			99		
	CAD-774	148			148		
	CAD-775	101			101		
SB120	CAD-776	128	135	93	119	5	4.15%
	CAD-777	201			201		
	CAD-778	331			331		
	CAD-779	473			473		
	CAD-780	495	484		489	8	1.64%
	CAD-781	1			1		
	CAD-782	4			4		
SB121	CAD-783	216			216		
	CAD-784	359			359		
	CAD-785	526			526		
	CAD-786	1119	1634		1376	364	26.42%
	CAD-787	836			836		
	CAD-788	204			204		
	CAD-789	66			66		

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1		2	3	Mean	Stdev	%RSD
OR122	CAD-790	250		252		251	2	0.62%
	CAD-791	328				328		
	CAD-792	315				315		
	CAD-793	94		126		110	23	20.70%
	CAD-794							
	CAD-795							
	CAD-796							
OR123	CAD-797	124		159		141	25	17.59%
	CAD-798	128				128		
	CAD-799	33		67		50		
	CAD-800							
	CAD-801							
	CAD-802							
	CAD-803							
SB166	CAD-804	411				411		
	CAD-805	574				574		
	CAD-806	751				751		
	CAD-807	457				457		
	CAD-808	165				165		
	CAD-809	98				98		
	CAD-810	58				58		
SB167	CAD-811	344				344		
	CAD-812	220				220		
	CAD-813	334				334		
	CAD-814	37				37		
	CAD-815	77				77		
	CAD-816	88				88		
	CAD-817	24				24		
SB103DUP	CAD-818	379				379		
	CAD-819	1140				1140		
	CAD-820	1225				1225		
	CAD-821	6590				6590		
	CAD-822	7083	E	11580		9331	3180	34.08%
	CAD-823	3447				3447		
	CAD-824	305				305		
SB89DUP	CAD-825	371				371		
	CAD-826	738				738		
	CAD-827	3285				3285		
	CAD-828	4472	E	5661		5066	840	16.59%
	CAD-829	1062				1062		
	CAD-830	302				302		
	CAD-831	141				141		

Field ID	SAMPLE LABEL	tPCB (µg/Kg) 1		2	3	Mean	Stdev	%RSD
SB115DUP	CAD-832	452				452		
	CAD-833	504				504		
	CAD-834	585				585		
	CAD-835	402				402		
	CAD-836	235				235		
	CAD-837	92				92		
	CAD-838	13				13		
SB112DUP	CAD-839	129				129		
	CAD-840	180				180		
	CAD-841	288				288		
	CAD-842	437				437		
	CAD-843	3217	E	2359		2788	606	21.75%
	CAD-844	325				325		
	CAD-845	59				59		
SB117DUP	CAD-846	145				145		
	CAD-847	185				185		
	CAD-848	286				286		
	CAD-849	281				281		
	CAD-850	344				344		
	CAD-851	36				36		
	CAD-852	23				23		
							AVE	17.52%

Definitions:

Mean: Arithmethic Mean

Stdev*:* Standard Deviation from duplicate assay analyses (n=2 or 3)

% RSD*:* Percent Relative Standard Deviation whereby; [{stdev/mean} * 100]

Label: **SB =** South Basin, **DUP** = Field Duplicate, **R** = Field Resample, **E** = Laboratory Extraction Duplicate

Appendix 2B. Ashtabula RSC Data (ng/g, dry weight)

STATION_ID	SAMPLE_ID	RESULT
T170A	T170-A-KJI	702
T170A	T170-A-NML	9,357
T170A	T170-A-ZY	40.0
T170B	T170-B-LKJ	1,050
T170B	T170-B-ONM	18,734
T170B	T170-B-VU	445
T170A	T170A 1.3-2FT	96.4
T170A	T170A 10-11FT	11,893
T170A	T170A 17-18FT	332
T170A	T170A 2-3FT	61.7
T170A	T170A 3-4FT	186
T170A	T170A 4-5FT	200
T170A	T170A 5-6FT	261
T170A	T170A 6-7FT	310
T170A	T170A 7-8FT	17,108
T170A	T170A 8-9FT	6,938
T170A	T170A 9-10FT	15,718
T170B	T170B 0-1FT	29.3
T170B	T170B 1-2FT	11.6
T170B	T170B 16.1-17.1FT	695
T170B	T170B 2.1-3FT	253
T170B	T170B 3-4FT	352
T170B	T170B 5.5-6FT	339
T170B	T170B 6-7FT	11,031
T170B	T170B 7-8FT	22,642
T170B	T170B 8-9FT	16,834
T170B	T170B 9-10FT	36,545
T171A	T171-A-JIH	742
T171A	T171-A-MLK	2,177
T171A	T171-A-PON	25,275
T171B	T171-B-IHG	1,039
T171B	T171-B-LKJ	52,240
T171B	T171-B-QP	2,488
T171B	T171-B-TS	616
T171B	T171-B-YX	23.7
T171A	T171A 0-1FT	200
T171A	T171A 1-2FT	8.0
T171A	T171A 18.4-19.4FT	317
T171A	T171A 2-3FT	191
T171A	T171A 3-4FT	178
T171A	T171A 4-5FT	277

STATION_ID	SAMPLE_ID	RESULT
T176A	T176A 4.5FT	9,167
T176A	T176A 5-6FT	6,890
T176A	T176A 6-7FT	6,766
T176A	T176A 7-8FT	3,904
T176A	T176A 8-8.77FT	2,846
T176A	T176A 8.77-9.55FT	4,136
T176A	T176A 9.55-9.8FT	184
T176A	T176A 9.8-10.55FT	537
T176B	T176B 0-1FT	7,598
T176B	T176B 1-2FT	4,444
T176B	T176B 2-3FT	5,107
T176B	T176B 3-4FT	8,843
T176B	T176B 4-5FT	7,150
T176B	T176B 5-6FT	11,615
T176B	T176B 6-7FT	7,209
T176B	T176B 7-8FT	9,541
T176B	T176B 8-8.95FT	7,761
T176B	T176B 8.95-9.9FT	5,108
T176B	T176B 9.9-10.9FT	3,072
T177A	T177-A-RQ	10,856
T177A	T177-A-WV	2,750
T177B	T177-B-NML	8,381
T177B	T177-B-QPO	42,008
T177A	T177A 0-1FT	19.1
T177A	T177A 1-1.45FT	488
T177A	T177A 1.45-2FT	2,798
T177A	T177A 3.3-4FT	7,617
T177A	T177A 4-5FT	11,068
T177A	T177A 5-6.15FT	2,593
T177A	T177A 6.7-7.3FT	957
T177A	T177A 7.3-7.65FT	572
T177A	T177A 7.65-8.3FT	213
T177B	T177B 0-1FT	765
T177B	T177B 1-1.4FT	160
T177B	T177B 1.4-2FT	1,668
T177B	T177B 14.1-15.1FT	461
T177B	T177B 2-3FT	1,564
T177B	T177B 3-4FT	2,540
T177B	T177B 4-5FT	5,481
T177B	T177B 5-6FT	6,042
T177B	T177B 6-7FT	7,476

Appendix 2B. Ashtabula RSC Data (ng/g, dry weight)

STATION_ID	SAMPLE_ID	RESULT
T171A	T171A 5-6FT	660
T171A	T171A 6-7FT	963
T171A	T171A 7-8FT	16,733
T171A	T171A 8-9FT	11,635
T171A	T171A 9-10FT	10,617
T171B	T171B 0-1FT	15.9
T171B	T171B 10-11FT	51,437
T171B	T171B 17.2-17.6FT	749
T171B	T171B 17.6-18.2FT	1,617
T171B	T171B 2.3-3FT	338
T171B	T171B 3-4FT	466
T171B	T171B 4-5FT	499
T171B	T171B 8-9FT	7,636
T171B	T171B 9-10FT	24,120
T171B	T171B6.3-6.5FT	1,508
T172A	T172-A-LKJI	931
T172A	T172-A-ON	3,856
T172A	T172-A-RQP	40,824
T172B	T172-B-KJI	1,221
T172B	T172-B-NML	4,092
T172B	T172-B-PO	40,667
T172B	T172-B-XW	198
T172A	T172A 0-1FT	147
T172A	T172A 1-2FT	175
T172A	T172A 13-13.8FT	1,754
T172A	T172A 16.5-17.5FT	692
T172A	T172A 2-3FT	413
T172A	T172A 3-4FT	258
T172A	T172A 4-5FT	20,753
T172A	T172A 5-6FT	6,343
T172A	T172A 6-7FT	31,370
T172A	T172A 7-8FT	470,031
T172B	T172B 0-0.5FT	115
T172B	T172B 0.5-1FT	453
T172B	T172B 14.4-15.4FT	170
T172B	T172B 2.4-3FT	253
T172B	T172B 3-4FT	531
T172B	T172B 4-5FT	1,465
T172B	T172B 5-6FT	2,302
T172B	T172B 6-7FT	37,674
T172B	T172B 7-8FT	13,479

STATION_ID	SAMPLE_ID	RESULT
T177B	T177B 7-8FT	5,298
T178B	T178-B-SRQ	19,550
T178C	T178-C-MLKJ	43,523
T178C	T178-C-PON	64,191
T178C	T178-C-SRQ	43,085
T178A	T178A 0-1FT	15.1
T178A	T178A 1-2FT	11.5
T178A	T178A 2-3FT	36
T178A	T178A 3-4FT	50.7
T178A	T178A 4-5FT	47.2
T178A	T178A 5-6.05FT	135
T178A	T178A 6.05-7.1FT	1,246
T178A	T178A 7.1-8.1FT	1,353
T178B	T178B 0-1FT	143
T178B	T178B 1-2FT	1,873
T178B	T178B 10-10.5FT	116
T178B	T178B 10.5-11FT	191
T178B	T178B 2-3FT	2,118
T178B	T178B 3-4FT	4,790
T178B	T178B 4-5FT	7,446
T178B	T178B 5-6FT	8,216
T178B	T178B 6-7FT	8,175
T178C	T178C 0.5-1FT	701
T178C	T178C 1-2FT	1,252
T178C	T178C 16.6-17.6FT	451
T178C	T178C 2-3FT	1,279
T178C	T178C 3-4FT	1,309
T178C	T178C 4-5FT	3,251
T178C	T178C 5-6FT	5,124
T178C	T178C 6-7FT	4,629
T179A	T179-A-UTSR	0
T179B	T179-B-ON	2,010
T179B	T179-B-RQP	18,102
T179B	T179-B-UTS	44,667
T179C	T179-C-JIH	3,197
T179C	T179-C-MLK	4,028
T179C	T179-C-PON	56,393
T179C	T179-C-SRQ	23,881
T179C	T179-C-UT	1,200
T179A	T179A 0-1FT	55.1
T179A	T179A 1-2FT	23.6

Appendix 2B. Ashtabula RSC Data (ng/g, dry weight)

STATION_ID	SAMPLE_ID	RESULT
T173A	T173-A-JIH	907
T173A	T173-A-MLK	4,150
T173B	T173-B-MLK	3,200
T173B	T173-B-XW	53.7
T173B	T173-B-ZY	200
T173A	T173A 0-1FT	0
T173A	T173A 1-2FT	200
T173A	T173A 10-11FT	58,960
T173A	T173A 11-12FT	52,264
T173A	T173A 12-13FT	35,708
T173A	T173A 18.7-19.7FT	1,012
T173A	T173A 2-3FT	3.99
T173A	T173A 3-4FT	0
T173A	T173A 4-5FT	200
T173A	T173A 5-6FT	66.0
T173A	T173A 6-7FT	573
T173A	T173A 7-8FT	1,957
T173A	T173A 8-9FT	12,453
T173A	T173A 9-10FT	25,437
T173B	T173B 10-11FT	45,788
T173B	T173B 11-12FT	51,419
T173B	T173B 15.3-16.3FT	165
T173B	T173B 3-4FT	254
T173B	T173B 4-5FT	2,899
T173B	T173B 5-6FT	1,163
T173B	T173B 6-7FT	761
T173B	T173B 7-8FT	3,000
T173B	T173B 8-9FT	22,012
T173B	T173B 9-10FT	27,269
T174A	T174-A-NML	767
T174A	T174-A-QPO	7,345
T174B	T174-B-QPO	2,268
T174A	T174A 0-1FT	200
T174A	T174A 1-2FT	7.7
T174A	T174A 14.4-15.4FT	563
T174A	T174A 2-3FT	135
T174A	T174A 3-4FT	393
T174A	T174A 4-5FT	1,080
T174A	T174A 5-6FT	38,538
T174A	T174A 6-7FT	22,746
T174A	T174A 7-8FT	20,457

STATION_ID	SAMPLE_ID	RESULT
T179A	T179A 2-3FT	49.5
T179A	T179A 3-4FT	62.3
T179A	T179A 4-5FT	15.2
T179A	T179A 8.4-9.4FT	176
T179B	T179B 0-1FT	262
T179B	T179B 1-2FT	506
T179B	T179B 12.5-13.5FT	1,201
T179B	T179B 2-3FT	2,511
T179B	T179B 3-4FT	3,680
T179B	T179B 4-5FT	5,325
T179C	T179C 1.15-2FT	814
T179C	T179C 18.5-19.5FT	766
T179C	T179C 2-3FT	947
T179C	T179C 3-4FT	1,008
T179C	T179C 4-5FT	2,200
T179C	T179C 5-6FT	1,476
T180B	T180-B-RQ	214
T180B	T180-B-UTS	1,741
T180C	T180-C-KJI	1,600
T180C	T180-C-ONML	6,256
T180C	T180-C-RQP	73,313
T180C	T180-C-UTS	35,857
T180D	T180-D-IHG	2,006
T180D	T180-D-LKJ	14,676
T180D	T180-D-ONM	55,068
T180D	T180-D-RQP	28,168
T180D	T180-D-UTS	39,960
T180A	T180A 0-1FT	64.3
T180A	T180A 1-2FT	73.4
T180A	T180A 2-3FT	101
T180A	T180A 3-4FT	46.4
T180A	T180A 4-4.8FT	54.3
T180A	T180A 4.8-5.6FT	111
T180A	T180A 5.6-6.6FT	191
T180B	T180B 0-1FT	211
T180B	T180B 1-2FT	345
T180B	T180B 2-3FT	1,213
T180B	T180B 3-4FT	2,458
T180B	T180B 4-5FT	2,776
T180C	T180C 0-1FT	774
T180C	T180C 1-2FT	2,300

Appendix 2B. Ashtabula RSC Data (ng/g, dry weight)

STATION_ID	SAMPLE_ID	RESULT
T174A	T174A 8-9FT	38,576
T174B	T174B 0-1FT	71.1
T174B	T174B 1-2FT	311
T174B	T174B 11.7-12.7FT	197
T174B	T174B 2-3FT	698
T174B	T174B 3-4FT	2,839
T174B	T174B 4-5FT	3,746
T174B	T174B 5-6FT	52,523
T174B	T174B 6-7FT	44,446
T174B	T174B 7-8FT	62,308
T174B	T174B 8-9FT	47,431
T175A	T175-A-ON	1,160
T175A	T175-A-ZY	73.4
T175A	T175A 1.5-2FT	9,917
T175A	T175A 12.1-12.5FT	476
T175A	T175A 12.5-13.1FT	270
T175A	T175A 2-3FT	24,096
T175A	T175A 3-4FT	12,302
T175A	T175A 4-5FT	26,056
T175A	T175A 5-6FT	54,799
T175A	T175A 6-7FT	36,434
T175A	T175A 7-8FT	63,356
T175A	T175A 8-9FT	48,132
T175A	T175A 9-10FT	1,751
T175B	T175B 0-1FT	110
T175B	T175B 1-2FT	1,403
T175B	T175B 10.7-11.3FT	699
T175B	T175B 11.3-11.7FT	81.0
T175B	T175B 2-3FT	5,785
T175B	T175B 3-4FT	5,084
T175B	T175B 4-5FT	3,569
T175B	T175B 5-6FT	9,904
T175B	T175B 6-7FT	8,631
T175B	T175B 7-8FT	6,688
T175B	T175B 8-9FT	9,236
T175B	T175B 9-9.85FT	8,828
T175B	T175B 9.85-10.7FT	3,470
T176A	T176A 0-1FT	3,526
T176A	T176A 1-2FT	5,592
T176A	T176A 2-3FT	4,547
T176A	T176A 3-4FT	6,034

STATION_ID	SAMPLE_ID	RESULT
T180C	T180C 16.6-17.6FT	596
T180C	T180C 2-3FT	2,324
T180C	T180C 3-4FT	3,525
T180C	T180C 4-5FT	5,073
T180D	T180D 0-1FT	40.0
T180D	T180D 1-2FT	102
T180D	T180D 2-3FT	632
T180D	T180D 20.3-21.3FT	507
T180D	T180D 3-4FT	2,472
T180D	T180D 4-5FT	1,425
T181C	T181-C-RQP	11,949
T181C	T181-C-TS	13,586
T181D	T181-D-KJIH	0
T181D	T181-D-NML	801
T181D	T181-D-QPO	7,881,167
T181D	T181-D-TSR	10,143,844
T181A	T181A 0.5-1FT	38.7
T181A	T181A 1-2FT	200
T181A	T181A 2-3.2FT	91.4
T181A	T181A 3.2-4.2FT	190
T181B	T181B 0-1FT	60.7
T181B	T181B 1-2FT	239
T181B	T181B 2-3FT	360
T181B	T181B 3-4FT	2,717
T181B	T181B 4-5.2FT	4,556
T181B	T181B 5.2-6.4FT	3,858
T181B	T181B 6.4-7.4FT	1,057
T181C	T181C 0.4-1FT	1,616
T181C	T181C 1-2FT	2,845
T181C	T181C 10.8-11.8FT	541
T181C	T181C 2-3FT	6,982
T181C	T181C 3-4FT	7,722
T181C	T181C 4-5FT	9,245
T181C	T181C 5-6FT	21,407
T181D	T181D 0-1FT	2,503
T181D	T181D 1-2FT	7,193
T181D	T181D 18.5-19.5FT	1,574
T181D	T181D 2-3FT	6,234
T181D	T181D 3-4FT	7,911
T181D	T181D 4-5FT	15,995
T181D	T181D 5-6FT	30,067

Appendix 3 ACF Data

Hunters Point Shipyard 112 Samples 44 Congeners

Ashtabula Dredge Cores 345 Samples 117 Congeners

HUNTERS POINT SEDIMENT SAMPLES

112 Samples, 44 PCB Congeners

(ng/g, dry weight)

STATION_ID	OR-123	OR-123	SB-075	SB-075	SB-075	SB-075	SB-079	SB-079	SB-079
FIELD SAMPLE_ID	OR-123 0-5	OR-123 15-3(	SB-075 0-5	SB-075 30-6(	SB-075 90-12(	SB-075 150-18	SB-079 0-5	SB-079 30-6(	SB-079 90-12(
SAMPLE DEPTH_TOP	0	15	0	30	90	150	0	30	90
SAMPLE DEPTH_BOT	5	30	5	60	120	180	5	60	120
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.05	0.00	0.53	1.63	0.48	0.10	0.00	0.00	0.00
Cl3(18)	0.00	0.00	1.76	2.99	1.04	0.40	0.00	0.00	0.59
Cl3(21)/Cl3(33)/Cl3(20)	0.00	0.00	0.87	1.69	1.22	0.00	0.00	0.00	0.00
Cl3(28)	0.00	0.00	1.11	2.51	1.24	0.29	0.00	0.07	0.66
Cl3(31)	0.00	0.00	3.63	4.37	1.38	0.30	0.00	0.00	3.16
Cl4(44)	0.23	0.11	10.82	5.89	3.33	0.77	0.73	0.38	0.00
Cl4(49)	0.45	0.23	30.65	32.51	5.76	2.24	0.68	0.63	26.74
Cl4(52)	0.65	0.24	49.78	33.73	9.56	4.41	2.45	1.98	12.91
Cl4(56)	0.17	0.05	2.79	2.74	1.28	0.26	0.27	0.00	0.69
Cl4(60)	0.17	0.06	0.75	0.37	1.26	0.57	0.00	0.82	0.00
Cl4(66)	0.49	0.15	5.12	5.95	3.53	0.83	0.54	0.16	2.47
Cl4(70)	0.53	0.23	16.98	8.50	8.27	1.91	0.62	0.33	2.14
Cl4(74)	0.14	0.03	3.78	3.07	2.42	0.46	0.23	0.00	0.83
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	0.81	0.30	22.44	11.46	8.61	1.40	3.14	1.13	5.31
Cl5(110)	3.56	1.32	93.57	54.55	22.68	8.67	20.99	13.51	44.71
Cl5(118)	2.53	0.89	41.79	24.86	15.45	6.33	5.48	5.05	15.52
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	0.86	0.34	29.30	14.50	8.09	2.19	5.59	4.56	10.76
Cl5(90)/Cl5(101)	4.20	1.55	125.30	101.79	21.71	14.28	36.37	18.50	166.65
Cl5(95)/Cl5(88)	2.95	1.03	113.44	79.10	11.33	9.55	34.45	20.98	122.67
Cl5(97)	0.67	0.35	16.62	10.24	6.16	1.59	1.88	1.80	5.01
Cl5(99)	1.81	0.71	51.40	59.84	11.15	5.52	2.09	2.51	115.33
Cl6(128)	1.13	0.51	23.83	14.80	4.90	2.68	8.32	6.55	19.06
Cl6(129)/Cl6(158)	1.31	0.34	27.18	18.33	3.74	3.25	16.39	9.27	27.79
Cl6(132)/Cl6(168)/Cl6(153)	20.10	6.98	416.91	288.41	39.46	43.99	184.77	99.85	518.52
Cl6(138)	7.32	2.99	188.39	108.51	19.71	18.48	90.30	44.64	223.34
Cl6(141)	0.00	0.00	4.28	0.00	1.31	0.00	0.67	0.00	0.65
Cl6(149)	9.22	4.32	2.47	1.96	23.64	29.68	0.85	75.59	1.50
Cl6(151)	4.04	1.29	95.59	58.56	7.82	8.55	48.09	24.51	109.36
Cl6(156)	0.77	0.30	26.20	12.05	3.37	2.38	9.12	3.77	18.54
Cl7(170)	6.82	2.48	191.23	81.75	9.17	14.99	87.18	37.54	201.12
Cl7(174)	5.30	2.25	175.19	87.57	11.34	14.07	86.21	49.35	193.28
Cl7(177)	4.17	1.64	98.05	51.98	6.96	8.42	51.45	27.90	119.93
Cl7(180)	11.90	5.97	352.03	149.71	21.17	36.18	175.86	98.89	373.43
Cl7(183)	4.00	1.35	76.35	45.56	7.32	11.54	40.12	23.72	87.90
Cl7(187)	8.44	2.89	162.73	83.15	12.68	17.17	84.78	44.46	186.31
Cl8(194)	4.29	1.42	82.35	36.69	6.28	9.00	39.35	19.78	98.75
Cl8(195)	1.28	0.45	35.18	15.10	2.27	2.81	17.07	11.66	34.77
Cl8(201)/Cl8(204)	0.46	0.21	9.59	4.51	0.74	1.10	4.74	2.83	9.29
Cl8(203)	2.40	0.62	47.10	14.25	3.11	4.85	16.90	24.97	36.48
Cl9(206)	2.10	0.29	14.65	7.57	2.24	4.26	6.39	4.77	10.63
Cl10(209)	0.38	0.12	0.80	4.07	1.88	7.58	0.77	1.16	1.13
Sum 44 congeners	116	44	2,653	1,547	335	303	1,085	684	2,808

STATION_ID	SB-087	SB-087	SB-087	SB-087	SB-092	SB-092	SB-092	SB-092	SB-092
FIELD SAMPLE_ID	SB-087 0-5	SB-087 15-3(	SB-087 45-6(	SB-087 75-9(	SB-092 0-5	SB-092 5-15	SB-092 15-3(	SB-092 30-4(	SB-092 45-6(
SAMPLE DEPTH_TOP	0	15	45	75	0	5	15	30	45
SAMPLE DEPTH_BOT	5	30	60	90	5	15	30	45	60
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.86	2.97	0.89	0.11	0.30	0.58	0.99	1.20	0.50
Cl3(18)	0.74	6.68	2.17	0.76	0.00	0.33	0.68	2.50	1.17
Cl3(21)/Cl3(33)/Cl3(20)	1.52	9.06	2.35	0.00	0.38	0.68	1.63	4.77	1.88
Cl3(28)	2.14	9.62	2.18	0.00	0.52	0.97	1.97	4.40	1.89
Cl3(31)	1.42	12.73	3.26	0.96	0.47	0.72	1.38	4.37	2.29
Cl4(44)	6.19	107.93	14.97	2.34	1.29	2.30	4.59	25.68	16.35
Cl4(49)	7.43	75.05	10.76	3.19	1.45	3.15	7.40	23.44	12.38
Cl4(52)	14.85	237.14	33.99	6.82	2.48	5.10	11.38	50.84	37.13
Cl4(56)	2.67	42.81	4.96	0.88	0.39	1.12	2.33	8.74	5.87
Cl4(60)	2.13	8.66	4.38	0.77	0.41	0.92	2.00	1.64	5.53
Cl4(66)	8.82	54.41	12.23	2.86	1.83	3.91	8.31	22.04	15.81
Cl4(70)	15.29	172.50	28.03	6.31	2.49	5.12	10.61	49.45	31.92
Cl4(74)	4.02	48.69	9.33	2.12	0.93	1.47	3.47	13.80	10.28
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	16.91	172.60	31.28	6.91	3.17	6.63	12.95	52.01	33.09
Cl5(110)	44.52	573.61	100.19	11.86	9.50	17.52	38.33	195.95	121.93
Cl5(118)	31.30	351.02	71.43	16.87	9.40	12.34	25.23	103.17	86.53
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	15.33	249.87	38.32	6.24	2.80	6.73	13.88	68.24	46.49
Cl5(90)/Cl5(101)	38.28	552.85	88.95	15.66	9.74	17.51	40.04	217.37	110.56
Cl5(95)/Cl5(88)	25.38	410.80	60.77	10.16	5.75	14.39	25.30	173.91	77.40
Cl5(97)	10.37	138.89	25.46	4.44	1.92	5.32	9.20	40.84	27.50
Cl5(99)	16.39	213.16	28.78	6.89	4.67	11.34	16.45	75.11	34.67
Cl6(128)	11.60	139.66	18.73	3.43	2.81	6.21	12.00	40.72	25.24
Cl6(129)/Cl6(158)	9.11	71.66	18.66	3.13	2.51	4.91	10.04	41.05	22.87
Cl6(132)/Cl6(168)/Cl6(153)	95.42	571.17	182.01	32.29	36.89	55.14	120.63	483.22	274.63
Cl6(138)	48.50	425.44	97.53	14.03	16.88	29.80	55.24	278.62	145.78
Cl6(141)	2.44	34.07	5.59	0.88	0.00	1.09	2.30	9.37	6.31
Cl6(149)	57.71	13.80	116.07	22.10	19.81	34.14	73.22	5.17	168.38
Cl6(151)	17.94	111.24	32.25	8.54	6.05	11.60	23.25	114.81	48.45
Cl6(156)	7.06	61.77	15.16	2.54	2.05	4.09	8.02	33.46	16.35
Cl7(170)	24.97	154.21	60.54	8.23	13.18	21.32	35.79	177.19	87.58
Cl7(174)	24.27	116.13	49.36	13.92	10.66	18.09	36.93	166.94	73.93
Cl7(177)	19.63	94.41	29.59	8.40	7.70	14.51	21.83	100.45	45.02
Cl7(180)	57.69	244.62	120.39	29.66	20.06	47.99	82.28	313.39	188.98
Cl7(183)	15.72	65.72	29.55	10.28	6.64	11.58	23.39	87.68	46.46
Cl7(187)	31.21	136.09	48.07	16.33	13.37	22.10	46.92	166.68	78.23
Cl8(194)	15.40	62.63	26.17	11.85	7.20	12.28	16.85	70.81	29.53
Cl8(195)	5.94	25.01	9.18	3.71	2.50	4.17	8.41	30.61	13.77
Cl8(201)/Cl8(204)	1.75	6.78	2.65	1.29	0.69	1.35	2.71	9.00	3.86
Cl8(203)	9.00	29.07	13.15	5.59	3.47	6.08	11.78	37.02	14.03
Cl9(206)	3.37	12.30	7.79	4.92	1.51	3.14	5.63	12.08	9.21
Cl10(209)	1.23	12.22	7.28	4.14	0.71	0.93	1.59	4.46	4.99
Sum 44 congeners	727	5,839	1,464	311	235	429	837	3,322	1,985

STATION_ID	SB-092	SB-092	SB-100	SB-100	SB-100	SB-100	SB-104	SB-104	SB-104
FIELD SAMPLE_ID	SB-092 60-75	SB-092 75-90	SB-100 0-5	SB-100 15-30	SB-100 45-60	SB-100 75-90	SB-104 0-5	SB-104 15-30	SB-104 45-60
SAMPLE DEPTH_TOP	60	75	0	15	45	75	0	15	45
SAMPLE DEPTH_BOT	75	90	5	30	60	90	5	30	60
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.22	0.08	1.41	4.48	4.58	0.30	0.94	1.81	4.39
Cl3(18)	0.45	0.00	1.05	11.60	9.55	1.58	0.84	4.65	9.66
Cl3(21)/Cl3(33)/Cl3(20)	0.92	0.00	1.46	12.38	14.35	1.37	1.05	6.25	11.69
Cl3(28)	0.81	0.00	2.42	15.93	14.23	1.13	1.88	7.58	12.79
Cl3(31)	1.03	0.00	2.19	24.39	14.94	2.22	1.60	7.89	15.57
Cl4(44)	5.63	0.80	4.78	53.06	133.38	8.97	3.25	14.03	105.30
Cl4(49)	4.74	1.27	6.86	216.70	210.83	13.07	4.20	21.04	83.62
Cl4(52)	13.22	2.04	12.31	226.13	355.18	26.42	7.87	32.39	286.35
Cl4(56)	2.17	0.42	2.13	22.28	22.35	2.97	1.53	6.10	27.25
Cl4(60)	1.71	0.21	2.01	2.98	4.56	2.03	1.28	2.01	8.29
Cl4(66)	5.38	0.87	6.73	89.93	125.46	9.60	4.30	14.72	61.36
Cl4(70)	13.56	1.99	11.40	109.79	262.05	21.97	6.59	26.49	183.26
Cl4(74)	3.52	0.58	3.61	32.91	70.13	4.68	2.34	8.48	46.17
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	16.32	2.07	13.83	95.42	232.40	20.17	7.71	23.27	162.80
Cl5(110)	38.89	7.18	33.97	686.98	747.24	50.97	24.10	99.52	596.14
Cl5(118)	27.24	5.96	28.10	385.54	562.98	39.76	14.72	53.73	336.58
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	14.58	1.83	9.87	107.84	255.83	17.24	8.21	29.24	225.26
Cl5(90)/Cl5(101)	32.48	6.25	34.68	1511.53	972.80	44.95	21.01	118.67	540.97
Cl5(95)/Cl5(88)	24.04	3.91	20.88	1022.42	670.66	32.81	17.28	79.81	484.80
Cl5(97)	8.45	1.73	7.92	107.52	176.84	13.43	6.08	20.58	151.46
Cl5(99)	14.84	3.14	19.26	1509.85	493.11	18.26	12.99	59.71	230.09
Cl6(128)	9.80	1.51	9.65	96.36	135.71	11.17	6.46	18.37	97.68
Cl6(129)/Cl6(158)	9.46	1.02	8.54	188.63	128.77	9.28	5.35	23.97	99.39
Cl6(132)/Cl6(168)/Cl6(153)	77.49	14.77	94.98	3837.05	1522.72	83.13	62.14	257.37	726.15
Cl6(138)	41.12	7.90	44.39	563.93	734.04	45.26	27.23	111.90	481.61
Cl6(141)	1.97	0.00	2.15	53.29	35.58	2.55	1.25	5.00	29.22
Cl6(149)	48.26	9.63	54.75	7.84	13.30	51.05	37.10	2.66	12.11
Cl6(151)	13.89	2.89	16.22	656.34	318.10	17.04	14.73	52.85	166.54
Cl6(156)	6.98	1.08	7.13	110.37	96.29	7.19	4.60	14.75	57.77
Cl7(170)	22.40	5.10	28.80	1071.29	451.83	20.62	19.22	75.47	196.18
Cl7(174)	25.39	4.34	24.48	505.06	403.37	20.58	18.47	66.18	209.93
Cl7(177)	13.86	2.54	18.02	389.83	246.17	13.87	14.61	44.28	107.54
Cl7(180)	52.00	11.81	62.09	2162.58	831.91	49.49	40.47	133.84	366.25
Cl7(183)	13.86	3.28	16.13	446.67	201.99	16.03	13.80	35.90	101.58
Cl7(187)	24.48	6.21	37.65	1255.84	437.29	22.56	23.30	81.54	193.02
Cl8(194)	13.93	3.11	11.19	601.67	195.49	12.21	11.88	36.71	121.76
Cl8(195)	4.52	1.20	5.52	173.86	71.88	4.25	4.01	13.21	33.02
Cl8(201)/Cl8(204)	1.30	0.50	1.84	41.95	19.86	1.34	1.36	4.41	8.99
Cl8(203)	6.79	2.97	8.89	260.96	105.14	7.13	5.87	16.62	37.52
Cl9(206)	4.15	1.52	4.31	70.24	38.14	3.70	2.63	8.83	16.47
Cl10(209)	4.86	1.95	1.03	5.75	15.79	4.23	0.79	2.59	7.35
Sum 44 congeners	627	124	685	18,749	11,357	737	465	1,644	6,654

STATION_ID	SB-104	SB-105	SB-105	SB-105	SB-105	SB-106	SB-106	SB-106	SB-106
FIELD SAMPLE_ID	SB-104 75-90	SB-105 0-5	SB-105 15-30	SB-105 45-60	SB-105 75-90	SB-106 0-5	SB-106 5-15	SB-106 15-30	SB-106 30-45
SAMPLE DEPTH_TOP	75	0	15	45	75	0	5	15	30
SAMPLE DEPTH_BOT	90	5	30	60	90	5	15	30	45
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.12	0.61	1.37	6.11	1.49	0.00	0.27	0.51	1.28
Cl3(18)	0.00	0.59	1.38	15.60	4.59	0.00	0.37	0.73	1.30
Cl3(21)/Cl3(33)/Cl3(20)	0.00	0.68	2.06	16.70	4.38	0.17	0.37	1.03	2.02
Cl3(28)	0.00	1.43	3.16	22.38	5.25	0.54	0.58	1.31	2.76
Cl3(31)	0.00	1.26	2.39	23.95	6.32	0.46	0.39	0.95	2.51
Cl4(44)	0.68	1.10	4.17	46.02	32.02	0.66	0.86	2.30	5.26
Cl4(49)	1.22	1.53	5.47	47.05	47.30	0.69	1.05	3.06	6.87
Cl4(52)	1.51	2.51	8.03	102.97	75.20	1.55	1.80	5.00	10.26
Cl4(56)	0.00	0.64	2.39	20.58	8.24	0.24	0.38	1.14	2.66
Cl4(60)	0.22	0.53	1.79	5.50	1.53	0.17	0.40	1.15	1.88
Cl4(66)	1.01	2.11	6.83	46.98	30.87	1.01	1.18	3.67	7.49
Cl4(70)	1.32	2.60	8.36	82.90	64.52	1.31	1.64	4.55	10.01
Cl4(74)	0.41	1.06	2.99	27.43	18.22	0.00	0.47	1.44	3.52
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	1.17	2.81	8.93	70.39	56.14	1.45	1.67	5.29	10.49
Cl5(110)	5.08	7.89	26.08	309.96	179.65	5.51	7.21	23.73	36.51
Cl5(118)	3.65	7.42	17.49	157.36	121.40	4.35	5.84	18.60	26.43
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	1.04	2.42	8.78	90.14	63.36	1.72	2.09	6.72	12.93
Cl5(90)/Cl5(101)	0.42	7.88	25.56	396.57	236.62	5.40	7.59	23.42	43.89
Cl5(95)/Cl5(88)	0.44	4.65	17.41	339.41	179.57	3.60	4.46	14.80	28.47
Cl5(97)	1.27	1.77	6.96	57.00	45.29	1.38	1.57	5.30	9.26
Cl5(99)	2.52	3.95	14.98	115.54	119.86	2.23	3.17	10.74	18.14
Cl6(128)	1.00	2.39	8.30	67.79	41.78	1.84	2.18	5.27	9.29
Cl6(129)/Cl6(158)	0.95	1.74	6.71	71.55	48.98	1.70	1.44	5.35	7.96
Cl6(132)/Cl6(168)/Cl6(153)	0.90	27.71	80.21	1111.51	437.01	18.94	27.30	59.11	95.51
Cl6(138)	5.24	13.38	39.84	524.68	223.19	8.73	12.54	30.40	45.98
Cl6(141)	0.00	0.45	1.57	17.23	11.69	0.00	0.00	1.45	2.03
Cl6(149)	8.08	15.14	49.32	7.43	6.07	11.78	15.70	44.98	73.25
Cl6(151)	2.43	4.50	14.98	297.92	94.57	4.17	4.69	16.24	19.81
Cl6(156)	0.69	1.61	5.61	64.88	36.85	1.25	1.18	3.79	6.51
Cl7(170)	3.72	9.33	23.29	365.56	120.11	6.40	8.51	22.77	34.68
Cl7(174)	3.55	6.85	22.48	472.05	137.78	6.02	7.66	19.54	27.55
Cl7(177)	2.09	5.84	16.41	269.43	83.25	3.53	5.60	15.75	27.27
Cl7(180)	9.62	13.97	55.26	821.91	253.52	14.96	20.36	46.02	71.53
Cl7(183)	2.64	4.94	14.47	216.47	78.49	3.65	4.77	13.66	22.09
Cl7(187)	4.85	10.76	31.81	479.00	121.09	7.12	10.52	26.29	46.00
Cl8(194)	2.75	5.05	13.69	226.35	67.01	0.00	4.44	12.75	33.32
Cl8(195)	0.78	1.69	5.54	104.94	31.70	0.00	1.53	4.41	6.65
Cl8(201)/Cl8(204)	0.00	0.56	1.87	25.97	8.02	0.00	0.59	1.41	2.26
Cl8(203)	1.37	3.91	7.50	105.14	32.74	3.46	4.06	11.26	8.88
Cl9(206)	1.46	1.29	4.50	35.65	13.49	1.03	1.34	3.06	6.18
Cl10(209)	1.56	0.46	1.18	9.50	8.53	0.70	0.53	0.95	1.96
Sum 44 congeners	76	187	581	7,296	3,158	128	178	480	793

STATION_ID	SB-106	SB-106	SB-106	SB-108	SB-108	SB-108	SB-108	SB-108	SB-120
FIELD SAMPLE_ID	SB-106 45-60	SB-106 60-75	SB-106 75-90	SB-108 0-5	SB-108 5-15	SB-108 15-30	SB-108 30-45	SB-108 45-60	SB-120 0-5
SAMPLE DEPTH_TOP	45	60	75	0	5	15	30	45	0
SAMPLE DEPTH_BOT	60	75	90	5	15	30	45	60	5
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	3.32	3.12	1.34	0.20	0.25	0.83	0.52	0.00	0.13
Cl3(18)	9.43	7.12	4.40	0.00	0.27	0.69	0.86	0.00	0.00
Cl3(21)/Cl3(33)/Cl3(20)	9.13	8.08	5.68	0.32	0.39	1.72	1.91	0.00	0.00
Cl3(28)	12.42	9.13	6.14	0.42	0.61	1.63	1.44	0.00	0.30
Cl3(31)	13.96	10.37	5.40	0.30	0.43	0.99	1.75	0.00	0.00
Cl4(44)	30.03	51.52	36.77	0.68	1.50	5.70	8.03	0.19	0.30
Cl4(49)	33.47	39.50	37.87	0.89	1.81	8.10	7.94	0.26	0.44
Cl4(52)	72.74	115.65	92.86	1.75	3.48	13.67	21.51	0.51	0.72
Cl4(56)	13.63	16.09	10.67	0.00	0.47	2.68	2.99	0.10	0.07
Cl4(60)	2.54	4.61	2.35	0.39	0.51	2.33	2.46	0.00	0.00
Cl4(66)	29.21	35.70	27.55	1.16	1.90	8.21	8.67	0.22	0.53
Cl4(70)	55.38	77.76	66.25	1.49	2.72	12.24	17.79	0.37	0.68
Cl4(74)	16.45	24.99	17.98	0.00	0.79	3.37	4.68	0.13	0.17
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	52.34	73.81	66.58	2.13	3.56	13.30	14.21	0.53	0.95
Cl5(110)	274.97	277.38	294.54	7.07	14.98	49.55	62.29	2.23	2.83
Cl5(118)	132.80	146.62	143.19	6.26	11.11	31.68	42.34	1.05	2.31
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00
Cl5(87)	74.20	104.06	93.07	2.11	3.86	17.39	20.02	0.64	0.65
Cl5(90)/Cl5(101)	411.05	253.58	351.80	7.40	14.27	52.58	58.24	2.93	2.44
Cl5(95)/Cl5(88)	360.55	218.45	308.18	3.88	9.63	38.43	33.34	2.40	1.60
Cl5(97)	40.13	62.99	52.99	1.60	2.96	13.90	18.05	0.00	0.70
Cl5(99)	82.05	92.83	99.38	3.08	6.47	21.13	18.59	0.67	1.42
Cl6(128)	67.72	57.58	59.22	2.40	3.95	13.72	14.45	0.54	0.79
Cl6(129)/Cl6(158)	95.56	59.82	66.93	2.34	3.77	12.17	11.52	0.70	0.46
Cl6(132)/Cl6(168)/Cl6(153)	1294.51	282.64	837.66	28.95	18.98	128.43	123.27	9.67	7.91
Cl6(138)	588.79	234.38	433.92	13.92	11.86	72.05	64.54	4.39	4.18
Cl6(141)	15.37	16.34	13.50	0.00	0.00	2.39	3.47	0.28	0.00
Cl6(149)	5.34	7.95	6.09	16.27	15.02	90.20	81.68	0.19	5.15
Cl6(151)	397.70	78.85	193.26	4.75	9.58	30.12	26.67	2.15	1.63
Cl6(156)	67.72	41.61	55.15	1.45	2.62	9.65	10.22	0.54	0.46
Cl7(170)	520.36	102.15	269.68	12.72	11.11	42.67	44.85	3.52	3.46
Cl7(174)	609.82	106.42	289.43	9.76	7.26	42.15	40.29	3.23	2.56
Cl7(177)	371.64	73.37	172.89	7.40	11.68	25.78	30.78	1.99	2.00
Cl7(180)	1050.66	208.48	546.22	25.72	15.36	81.42	84.01	6.84	6.59
Cl7(183)	271.68	65.66	149.39	6.03	9.92	30.57	22.56	1.62	1.68
Cl7(187)	655.38	93.87	254.84	11.94	9.72	54.23	42.79	3.11	3.40
Cl8(194)	171.30	53.08	134.43	7.58	9.84	22.80	37.40	1.65	1.47
Cl8(195)	122.06	22.05	50.13	2.80	3.28	9.45	6.89	0.65	0.00
Cl8(201)/Cl8(204)	34.85	6.75	12.94	0.74	1.17	3.02	2.24	0.20	0.00
Cl8(203)	140.49	27.30	59.86	5.30	4.58	19.94	10.59	1.85	1.39
Cl9(206)	40.92	11.55	19.47	1.92	2.21	4.18	4.32	0.34	0.31
Cl10(209)	5.79	5.47	5.19	0.69	0.87	2.34	3.34	0.43	0.34
Sum 44 congeners	8,257	3,189	5,355	204	235	997	1,014	56	60

STATION_ID	SB-120	SB-081	SB-081	SB-081	SB-081	SB-081	SB-081	SB-081	SB-081
FIELD SAMPLE_ID	SB-120 30-45	SB-081 0-2	SB-081 2-4	SB-081 4-6	SB-081 6-8	SB-081 8-10	SB-081 10-12	SB-081 12-14	SB-081 14-16
SAMPLE DEPTH_TOP	30	0	2	4	6	8	10	12	14
SAMPLE DEPTH_BOT	45	2	4	6	8	10	12	14	16
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.92	0.56	0.67	0.00	1.03	1.07	1.01	1.01	1.19
Cl3(18)	0.47	1.21	0.00	0.00	0.00	0.95	0.00	0.87	1.78
Cl3(21)/Cl3(33)/Cl3(20)	0.84	0.78	0.90	0.80	0.98	1.06	1.59	1.44	1.92
Cl3(28)	1.22	1.62	1.42	1.69	1.58	2.03	2.52	2.01	3.25
Cl3(31)	0.63	1.28	1.31	1.60	1.87	2.09	2.76	1.88	2.40
Cl4(44)	2.19	3.56	3.98	4.19	4.90	3.85	5.58	6.24	7.09
Cl4(49)	4.57	3.22	4.96	4.55	5.51	6.59	9.37	10.88	13.19
Cl4(52)	4.71	8.21	8.69	8.50	11.96	10.04	14.17	16.58	18.22
Cl4(56)	1.13	1.96	0.98	0.78	2.26	1.17	1.30	3.19	3.60
Cl4(60)	0.82	2.03	1.72	1.46	2.23	2.26	2.56	3.36	3.52
Cl4(66)	4.23	4.36	3.25	4.08	4.65	4.52	7.31	8.55	9.18
Cl4(70)	3.99	5.86	6.83	6.24	9.17	8.19	10.05	12.54	14.39
Cl4(74)	1.30	2.06	2.24	2.00	2.58	2.09	3.47	3.32	4.72
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	4.24	6.80	6.89	6.79	9.55	8.43	11.31	13.24	14.60
Cl5(110)	17.44	27.50	30.35	30.22	41.57	44.12	59.91	74.66	86.27
Cl5(118)	15.75	19.36	20.39	20.69	29.20	30.47	36.94	45.75	53.16
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	4.31	9.96	11.01	10.21	12.90	11.27	16.66	20.18	22.12
Cl5(90)/Cl5(101)	14.92	31.68	36.28	36.79	49.12	55.61	75.02	92.55	114.42
Cl5(95)/Cl5(88)	13.33	18.54	22.32	22.15	29.37	32.37	47.22	57.59	66.95
Cl5(97)	4.58	5.30	6.33	4.74	6.74	7.53	10.76	12.86	14.71
Cl5(99)	12.08	13.96	11.19	15.08	18.11	19.92	29.14	32.69	44.26
Cl6(128)	4.84	9.22	9.21	9.58	12.55	13.03	16.18	19.97	22.62
Cl6(129)/Cl6(158)	3.53	6.86	8.69	8.48	9.70	11.19	15.15	18.28	22.74
Cl6(132)/Cl6(168)/Cl6(153)	45.72	99.98	112.98	121.45	159.24	187.14	254.65	333.09	402.59
Cl6(138)	20.08	56.87	67.78	68.09	83.80	96.51	133.62	162.21	197.80
Cl6(141)	0.72	13.29	15.22	15.50	20.04	22.42	29.42	38.19	44.68
Cl6(149)	31.53	60.36	71.18	73.77	96.12	110.83	155.78	200.34	205.75
Cl6(151)	11.08	20.58	24.71	27.41	34.08	40.66	53.29	69.06	83.00
Cl6(156)	2.75	5.85	5.99	6.41	7.74	8.22	11.30	13.58	17.12
Cl7(170)	16.15	51.93	56.62	63.39	71.90	85.82	109.31	135.96	173.17
Cl7(174)	14.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl7(177)	11.58	27.38	30.46	32.55	36.73	45.25	60.27	72.94	93.78
Cl7(180)	32.96	114.92	125.48	142.89	162.46	186.54	249.92	202.67	270.82
Cl7(183)	10.35	23.74	28.47	30.05	34.31	39.20	54.90	66.25	80.18
Cl7(187)	18.51	46.64	55.38	59.42	67.34	80.33	109.79	137.92	168.84
Cl8(194)	7.99	27.25	20.84	29.47	30.35	33.76	44.81	55.40	71.05
Cl8(195)	2.98	10.26	9.77	11.50	13.56	15.23	19.29	20.46	27.54
Cl8(201)/Cl8(204)	1.16	2.86	3.91	3.44	4.22	4.95	6.06	7.96	8.66
Cl8(203)	4.00	26.95	13.56	20.07	16.66	18.19	25.75	30.69	35.42
Cl9(206)	1.60	4.83	7.11	5.98	5.09	6.82	7.74	10.89	11.11
Cl10(209)	1.10	1.71	54.23	2.05	1.06	1.22	2.01	2.21	2.73
Sum 44 congeners	356	781	903	914	1,112	1,263	1,708	2,019	2,441

STATION_ID	SB-081	SB-081	SB-081	SB-081	SB-081	SB-081	SB-081	SB-094	SB-094
FIELD SAMPLE_ID	SB-081 16-18	SB-081 18-20	SB-081 20-25	SB-081 25-30	SB-081 30-40	SB-081 40-50	SB-081 50-60	SB-094 0-2	SB-094 2-4
SAMPLE DEPTH_TOP	16	18	20	25	30	40	50	0	2
SAMPLE DEPTH_BOT	18	20	25	30	40	50	60	2	4
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	1.61	3.12	3.15	3.07	0.00	0.00	0.45	0.26	0.23
Cl3(18)	1.73	3.26	4.05	5.51	9.08	0.00	1.43	0.00	0.38
Cl3(21)/Cl3(33)/Cl3(20)	1.51	3.16	3.51	4.00	7.02	0.00	3.43	0.40	0.35
Cl3(28)	3.32	5.39	6.81	8.67	10.21	0.00	2.72	0.98	0.55
Cl3(31)	2.75	5.15	6.70	7.78	11.49	6.38	2.94	0.61	0.55
Cl4(44)	9.41	23.74	40.46	61.26	70.77	25.04	13.23	1.59	1.33
Cl4(49)	17.06	33.07	35.56	42.87	45.46	16.60	8.33	1.58	1.87
Cl4(52)	26.41	62.76	101.68	152.87	181.77	56.76	29.64	3.20	3.37
Cl4(56)	4.10	10.63	14.81	19.49	24.75	9.34	6.53	0.63	0.50
Cl4(60)	4.98	9.53	13.04	16.73	19.41	8.28	5.21	0.66	0.54
Cl4(66)	11.82	23.79	31.38	38.64	34.27	18.18	10.66	1.27	1.29
Cl4(70)	19.79	51.19	82.74	127.73	127.12	46.02	38.51	2.94	2.64
Cl4(74)	5.86	14.51	21.92	32.40	31.09	11.14	9.72	1.20	0.80
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	3.03	0.00	0.00
Cl5(105)	20.54	56.81	90.17	140.40	111.54	38.45	52.82	2.72	2.66
Cl5(110)	112.46	163.58	265.66	320.17	453.11	139.66	93.03	10.30	11.37
Cl5(118)	73.21	175.09	166.81	265.19	306.90	103.18	68.41	8.89	8.94
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	27.88	78.97	131.18	187.41	175.57	53.65	53.89	3.40	3.14
Cl5(90)/Cl5(101)	148.20	181.93	237.82	288.16	399.59	132.66	79.49	11.70	13.41
Cl5(95)/Cl5(88)	84.98	137.92	180.02	234.48	261.72	81.59	47.73	6.52	7.56
Cl5(97)	17.96	46.68	71.64	119.69	107.69	27.58	24.06	1.73	2.22
Cl5(99)	56.56	95.83	87.63	152.00	150.66	48.51	33.96	5.02	5.18
Cl6(128)	31.67	53.24	70.78	82.59	75.45	27.21	23.31	3.21	3.35
Cl6(129)/Cl6(158)	29.18	48.02	55.53	61.96	46.07	20.98	16.54	2.39	2.95
Cl6(132)/Cl6(168)/Cl6(153)	331.32	445.77	462.27	413.03	504.90	203.79	205.61	36.97	44.10
Cl6(138)	181.88	309.29	321.67	314.39	378.89	138.98	87.04	19.98	23.77
Cl6(141)	58.81	81.54	100.39	84.31	72.74	34.24	24.32	4.22	5.20
Cl6(149)	234.00	334.91	355.09	277.81	335.90	129.25	86.49	20.53	25.31
Cl6(151)	103.17	154.10	147.08	116.71	100.99	45.51	35.51	7.07	8.76
Cl6(156)	21.52	36.19	43.74	49.42	43.78	16.20	19.45	2.03	2.13
Cl7(170)	164.72	213.02	169.03	193.37	142.38	59.31	61.62	15.42	18.35
Cl7(174)	0.00	0.00	0.00	0.00	0.00	0.00	41.77	0.00	0.00
Cl7(177)	111.06	147.18	134.92	99.72	80.23	40.59	29.01	7.99	10.24
Cl7(180)	303.96	399.58	377.67	276.08	299.98	133.04	89.59	37.67	42.02
Cl7(183)	103.47	138.18	131.76	96.37	75.96	38.00	28.03	7.72	9.47
Cl7(187)	166.49	193.67	191.52	176.72	136.40	62.38	46.98	16.26	18.48
Cl8(194)	76.93	106.45	92.45	70.90	43.89	25.31	19.55	7.49	7.20
Cl8(195)	27.93	38.75	30.74	23.63	25.38	0.00	7.96	2.93	3.48
Cl8(201)/Cl8(204)	10.07	13.84	12.36	9.03	0.00	0.00	2.41	1.21	1.45
Cl8(203)	41.51	58.93	53.04	39.23	43.48	25.50	11.17	7.46	5.18
Cl9(206)	12.19	17.85	14.36	13.62	12.54	8.90	5.53	1.92	1.60
Cl10(209)	3.03	6.65	5.99	7.20	7.52	11.26	7.10	0.96	0.80
Sum 44 congeners	2,665	3,983	4,367	4,635	4,966	1,843	1,438	269	303

STATION_ID	SB-094	SB-094	SB-094	SB-094	SB-094	SB-094	SB-094	SB-094	SB-094
FIELD SAMPLE_ID	SB-094 4-6	SB-094 6-8	SB-094 8-10	SB-094 10-12	SB-094 12-14	SB-094 14-16	SB-094 16-18	SB-094 18-20	SB-094 20-25
SAMPLE DEPTH_TOP	4	6	8	10	12	14	16	18	20
SAMPLE DEPTH_BOT	6	8	10	12	14	16	18	20	25
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.39	0.71	0.00	0.00	0.81	1.15	1.19	1.27	1.44
Cl3(18)	0.00	0.68	0.00	0.00	0.00	0.85	1.16	0.80	1.52
Cl3(21)/Cl3(33)/Cl3(20)	0.75	0.75	0.00	0.00	1.25	2.00	1.93	1.68	1.71
Cl3(28)	1.01	1.21	0.00	0.00	2.18	3.03	3.44	3.51	2.76
Cl3(31)	0.63	1.19	0.00	1.22	0.91	2.13	2.14	1.98	2.97
Cl4(44)	1.71	1.87	3.49	4.47	3.11	5.43	5.11	5.19	7.39
Cl4(49)	2.60	2.85	4.24	5.24	6.70	9.87	9.65	9.95	13.38
Cl4(52)	3.95	4.49	6.82	7.99	8.11	11.88	11.64	11.15	18.18
Cl4(56)	1.00	1.17	0.00	0.00	2.43	3.14	3.50	3.09	3.88
Cl4(60)	0.98	1.08	2.53	2.43	3.14	2.96	0.00	0.00	3.22
Cl4(66)	2.32	2.69	3.43	4.90	5.14	7.87	7.58	8.57	9.94
Cl4(70)	3.75	4.30	4.97	8.58	8.85	10.37	9.80	10.46	15.14
Cl4(74)	1.18	1.54	2.27	2.82	3.25	4.02	4.13	2.84	4.58
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	4.64	4.60	5.66	11.51	9.70	11.05	11.38	11.80	15.85
Cl5(110)	16.80	20.32	25.07	35.30	42.78	58.76	59.37	58.35	81.87
Cl5(118)	15.25	16.03	19.15	25.66	32.12	41.07	39.71	40.32	53.49
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	4.51	5.90	8.09	10.47	13.07	14.34	11.99	15.03	19.00
Cl5(90)/Cl5(101)	17.42	22.24	25.79	36.59	47.46	65.19	68.89	68.33	91.59
Cl5(95)/Cl5(88)	10.73	13.69	16.82	24.56	30.67	42.66	42.71	42.10	59.32
Cl5(97)	3.66	4.34	6.88	6.59	9.90	10.37	12.91	12.90	16.66
Cl5(99)	7.92	9.29	10.92	18.63	19.07	27.26	29.56	27.80	36.27
Cl6(128)	5.12	6.06	8.15	9.72	10.09	14.68	15.24	15.95	22.35
Cl6(129)/Cl6(158)	4.11	5.08	6.52	8.04	9.59	12.66	12.73	13.10	16.97
Cl6(132)/Cl6(168)/Cl6(153)	59.79	73.57	75.39	122.42	158.99	218.01	212.48	205.37	252.19
Cl6(138)	32.24	38.96	46.01	64.59	75.83	107.38	105.45	105.03	136.97
Cl6(141)	8.15	9.81	11.60	17.51	19.82	25.76	23.43	23.30	30.69
Cl6(149)	36.52	46.78	52.30	81.55	103.82	145.87	146.53	139.05	176.11
Cl6(151)	11.90	16.32	18.02	27.98	34.11	50.45	49.89	45.83	59.48
Cl6(156)	3.52	3.70	6.02	7.60	6.52	9.90	9.84	9.23	14.13
Cl7(170)	25.69	29.75	37.66	50.63	59.71	84.67	83.73	81.92	93.63
Cl7(174)	21.43	26.04	28.97	43.24	51.66	73.30	69.13	67.24	78.58
Cl7(177)	13.66	17.63	20.45	27.64	35.85	50.63	50.78	46.53	56.38
Cl7(180)	58.05	67.88	67.41	107.86	123.48	177.47	172.69	172.29	199.90
Cl7(183)	12.42	15.14	17.79	27.75	29.71	42.23	41.23	40.89	49.81
Cl7(187)	25.41	31.13	34.12	52.28	63.89	88.93	88.81	84.14	102.63
Cl8(194)	9.70	9.23	18.16	29.24	22.88	33.36	31.60	29.15	36.70
Cl8(195)	5.83	4.66	15.10	11.29	13.32	16.94	11.29	14.55	15.02
Cl8(201)/Cl8(204)	2.10	1.61	0.00	3.72	4.24	4.48	4.73	4.79	4.64
Cl8(203)	5.71	6.22	8.55	12.85	16.47	17.26	20.35	14.31	17.64
Cl9(206)	2.29	2.29	0.00	0.00	5.30	7.25	5.91	7.70	6.81
Cl10(209)	1.13	0.88	0.00	0.00	3.94	3.03	8.47	2.48	3.32
Sum 44 congeners	446	534	618	913	1,100	1,520	1,502	1,460	1,834

STATION_ID	SB-094	SB-094	SB-094	SB-094	SB-094	SB-094	SB-094	SB-094	SB-094
FIELD SAMPLE_ID	SB-094 25-3(	SB-094 30-4(	SB-094 40-5(	SB-094 50-6(	SB-094 0-2	SB-094 8-10	SB-094 18-2(	SB-094 25-3(	SB-094 30-4(
SAMPLE DEPTH_TOP	25	30	40	50	0	8	18	25	30
SAMPLE DEPTH_BOT	30	40	50	60	2	10	20	30	40
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	1.74	1.63	0.00	0.00	0.27	0.66	1.05	1.61	1.52
Cl3(18)	1.83	5.01	0.00	0.00	0.00	0.00	0.70	1.22	2.82
Cl3(21)/Cl3(33)/Cl3(20)	2.82	3.84	0.00	0.00	0.00	0.70	0.97	2.25	4.71
Cl3(28)	3.57	3.58	0.00	0.00	0.65	1.54	1.75	3.93	3.13
Cl3(31)	3.10	9.86	0.00	1.87	0.00	0.84	1.01	3.17	6.20
Cl4(44)	15.96	36.79	16.85	6.99	1.61	2.80	4.28	9.04	29.52
Cl4(49)	21.26	27.11	11.37	5.77	1.95	4.63	5.99	13.80	23.38
Cl4(52)	37.23	84.00	40.14	16.28	3.41	6.56	9.60	22.40	68.05
Cl4(56)	6.06	16.13	6.44	4.50	0.00	0.00	0.00	4.00	10.86
Cl4(60)	5.83	11.07	6.03	0.00	1.17	0.92	2.03	4.67	10.90
Cl4(66)	17.00	24.01	8.84	6.82	1.94	2.51	6.01	9.83	21.09
Cl4(70)	33.84	83.48	39.09	22.45	3.07	5.53	7.41	18.06	65.80
Cl4(74)	9.69	23.83	11.14	5.66	1.16	1.43	2.60	5.50	18.06
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	31.83	80.62	39.66	30.12	4.47	7.71	8.22	17.40	78.22
Cl5(110)	138.63	291.12	130.59	84.80	11.58	26.14	44.57	89.26	249.05
Cl5(118)	99.40	211.08	100.87	80.01	10.20	21.26	26.64	60.61	188.20
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	40.36	114.64	52.37	32.28	3.49	9.08	12.73	25.16	94.05
Cl5(90)/Cl5(101)	128.86	282.12	114.01	69.49	12.59	27.47	55.11	96.58	217.39
Cl5(95)/Cl5(88)	84.79	159.72	73.62	31.05	7.65	17.14	37.98	63.10	134.32
Cl5(97)	30.85	64.89	27.64	19.71	2.94	4.36	8.89	18.42	55.43
Cl5(99)	50.57	88.13	37.07	25.63	5.11	11.48	17.95	35.94	69.49
Cl6(128)	26.54	56.50	25.45	15.50	3.68	7.67	13.24	18.92	48.14
Cl6(129)/Cl6(158)	19.85	42.28	18.86	10.19	3.09	5.78	12.24	17.61	34.44
Cl6(132)/Cl6(168)/Cl6(153)	262.03	392.06	208.77	118.58	33.70	81.14	151.49	215.51	422.82
Cl6(138)	157.87	322.56	135.88	65.32	21.70	44.44	100.42	134.99	272.21
Cl6(141)	34.92	83.24	39.96	22.11	5.06	11.11	26.07	32.41	71.19
Cl6(149)	176.61	340.75	142.10	74.07	23.06	51.74	126.33	170.23	281.97
Cl6(151)	57.10	103.87	42.04	19.36	8.65	18.71	43.05	58.51	84.74
Cl6(156)	16.48	38.97	20.37	10.88	2.51	4.70	10.21	13.76	33.97
Cl7(170)	90.28	164.88	75.69	31.96	17.19	36.87	85.94	86.75	154.52
Cl7(174)	74.91	153.45	63.26	27.06	13.94	29.15	75.35	77.16	121.95
Cl7(177)	51.52	91.14	37.55	16.81	9.41	20.39	47.93	49.48	75.01
Cl7(180)	194.80	346.50	147.92	67.49	35.28	77.49	176.18	193.31	308.77
Cl7(183)	45.50	82.08	36.62	16.07	7.85	17.36	39.40	45.22	68.82
Cl7(187)	90.82	156.49	63.81	28.66	16.54	34.39	84.17	95.56	130.72
Cl8(194)	32.33	47.39	28.65	15.83	9.23	15.49	35.09	32.45	51.72
Cl8(195)	14.60	27.03	15.22	5.19	2.62	9.10	14.46	12.84	26.48
Cl8(201)/Cl8(204)	5.38	8.52	6.98	1.95	1.15	3.25	4.59	5.15	5.75
Cl8(203)	20.24	39.43	15.61	7.26	3.19	9.75	14.93	16.58	20.69
Cl9(206)	6.88	11.67	6.90	5.56	2.19	3.20	6.42	6.14	11.22
Cl10(209)	41.77	7.94	7.85	6.80	0.58	0.00	1.85	3.01	11.76
Sum 44 congeners	2,186	4,139	1,855	1,010	294	634	1,325	1,792	3,589

STATION_ID	SB-094	SB-110	SB-110	SB-110	SB-110	SB-110	SB-110	SB-110	SB-110
FIELD SAMPLE_ID	SB-094 40-50	SB-110 0-2	SB-110 2-4	SB-110 4-6	SB-110 6-8	SB-110 8-10	SB-110 10-12	SB-110 12-14	SB-110 14-16
SAMPLE DEPTH_TOP	40	0	2	4	6	8	10	12	14
SAMPLE DEPTH_BOT	50	2	4	6	8	10	12	14	16
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.00	0.22	0.16	0.25	0.27	0.33	0.50	0.42	0.70
Cl3(18)	0.00	0.00	0.00	0.17	0.28	0.23	0.36	0.38	0.00
Cl3(21)/Cl3(33)/Cl3(20)	0.00	0.00	0.00	0.24	0.33	0.37	0.53	0.55	0.00
Cl3(28)	0.00	0.52	0.68	0.57	0.86	0.64	1.08	1.15	2.17
Cl3(31)	0.00	0.41	0.50	0.42	0.45	0.48	0.61	0.63	0.00
Cl4(44)	13.10	0.74	0.63	0.83	1.15	1.28	1.60	1.80	1.76
Cl4(49)	8.60	1.00	1.05	1.34	1.82	2.17	2.81	3.13	3.63
Cl4(52)	26.57	2.06	1.75	1.89	2.56	2.85	4.30	4.04	4.54
Cl4(56)	5.12	0.00	0.00	0.49	0.58	0.93	0.84	0.98	0.00
Cl4(60)	6.00	0.00	0.00	0.45	0.66	0.87	1.13	1.21	0.00
Cl4(66)	6.79	0.82	1.02	1.54	1.94	2.41	2.94	3.74	3.64
Cl4(70)	29.13	1.58	1.32	1.69	2.41	2.72	3.56	4.00	3.55
Cl4(74)	7.04	0.57	0.00	0.66	0.78	0.91	1.34	1.27	0.00
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	28.84	2.01	2.06	2.16	2.99	3.61	4.20	5.61	4.98
Cl5(110)	90.15	7.74	6.46	9.13	12.50	15.06	19.85	24.44	22.32
Cl5(118)	69.59	6.83	6.05	7.65	10.44	12.31	15.33	19.71	15.04
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	37.18	2.00	1.86	2.25	3.04	3.98	4.55	5.40	5.28
Cl5(90)/Cl5(101)	80.76	5.81	6.47	7.51	11.09	13.59	18.59	19.93	24.14
Cl5(95)/Cl5(88)	51.93	4.74	4.57	5.34	8.05	8.87	12.40	14.35	15.49
Cl5(97)	19.55	1.58	1.57	1.89	2.39	2.94	3.95	4.19	4.65
Cl5(99)	26.16	3.92	3.69	4.71	6.31	7.57	9.27	11.99	10.46
Cl6(128)	17.99	2.22	2.23	2.65	3.81	4.49	4.96	6.27	7.51
Cl6(129)/Cl6(158)	14.48	1.71	1.79	2.12	2.71	3.22	3.97	4.92	6.21
Cl6(132)/Cl6(168)/Cl6(153)	116.07	32.47	30.82	38.45	52.59	59.53	75.96	104.39	91.58
Cl6(138)	97.43	13.12	13.57	16.66	22.93	25.92	33.70	40.66	43.14
Cl6(141)	25.59	4.21	3.95	4.83	6.73	7.29	9.48	13.54	14.02
Cl6(149)	101.13	18.72	18.31	22.12	30.49	34.86	45.57	50.47	60.18
Cl6(151)	30.26	6.18	6.16	7.24	10.12	11.41	15.05	20.25	22.25
Cl6(156)	17.86	1.68	1.34	1.85	2.16	2.67	3.29	3.99	3.59
Cl7(170)	56.10	11.78	12.00	15.65	19.90	20.65	25.73	33.61	40.56
Cl7(174)	45.69	10.05	10.24	13.50	16.33	16.99	22.56	27.65	35.06
Cl7(177)	27.03	6.82	6.80	8.78	11.31	11.79	15.96	18.74	22.18
Cl7(180)	103.53	27.99	27.36	37.10	36.98	44.86	56.70	62.89	77.70
Cl7(183)	26.02	5.47	5.70	7.41	9.85	9.90	12.49	15.77	20.07
Cl7(187)	45.08	10.92	11.95	14.93	19.47	20.66	26.72	32.94	37.20
Cl8(194)	17.25	6.23	6.96	7.10	9.26	9.47	10.63	12.35	20.76
Cl8(195)	0.00	3.21	1.56	2.90	3.25	3.38	4.33	4.80	10.85
Cl8(201)/Cl8(204)	0.00	0.87	0.75	1.02	1.07	1.10	1.58	1.87	3.15
Cl8(203)	12.69	1.95	2.02	3.68	3.67	4.74	5.09	6.51	6.28
Cl9(206)	6.56	1.14	1.13	1.31	1.88	1.76	2.03	2.83	4.87
Cl10(209)	0.00	0.60	0.43	0.38	1.09	0.84	0.71	1.05	0.00
Sum 44 congeners	1,267	210	205	261	337	380	486	594	650

STATION_ID	SB-110	SB-110	SB-110	SB-110	SB-110	SB-110	SB-110	SB-114	SB-114
FIELD SAMPLE_ID	SB-110 16-18	SB-110 18-20	SB-110 20-25	SB-110 25-30	SB-110 30-40	SB-110 40-50	SB-110 50-60	SB-114 0-2	SB-114 2-4
SAMPLE DEPTH_TOP	16	18	20	25	30	40	50	0	2
SAMPLE DEPTH_BOT	18	20	25	30	40	50	60	2	4
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.00	0.00	0.72	1.05	2.13	1.10	0.23	0.00	0.23
Cl3(18)	0.00	0.00	0.00	0.00	1.92	0.00	0.19	0.00	0.00
Cl3(21)/Cl3(33)/Cl3(20)	0.00	0.00	0.00	0.00	2.70	1.64	0.31	0.00	0.00
Cl3(28)	1.72	2.46	2.01	1.96	3.56	0.00	0.35	0.00	0.60
Cl3(31)	0.00	0.00	1.76	1.98	4.23	2.09	0.00	0.00	0.00
Cl4(44)	1.90	1.91	2.96	3.76	10.36	3.55	0.62	0.43	0.47
Cl4(49)	4.19	4.43	4.33	7.42	14.71	5.83	1.28	1.08	0.76
Cl4(52)	4.35	5.55	6.31	7.28	27.62	9.25	1.69	1.57	1.01
Cl4(56)	0.00	0.00	0.00	0.00	4.63	0.00	0.00	0.00	0.00
Cl4(60)	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl4(66)	3.26	4.09	4.60	6.12	13.30	4.56	0.83	0.91	1.02
Cl4(70)	3.75	4.93	4.89	7.12	20.77	6.78	0.97	1.21	1.46
Cl4(74)	0.00	0.00	1.96	2.29	7.01	0.00	0.40	0.00	0.00
Cl4(77)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(105)	4.45	6.17	5.20	5.50	17.87	7.75	1.17	1.18	1.02
Cl5(110)	21.67	25.38	28.98	36.43	88.60	32.69	5.88	4.40	5.14
Cl5(118)	17.16	21.46	20.76	24.01	62.85	24.31	3.71	4.21	4.41
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	5.18	7.39	5.97	8.00	24.03	10.23	1.33	0.97	1.45
Cl5(90)/Cl5(101)	24.39	28.62	31.14	39.80	89.12	33.16	6.52	4.23	5.62
Cl5(95)/Cl5(88)	16.00	18.68	19.73	26.98	58.22	22.62	4.10	2.87	3.55
Cl5(97)	4.98	5.45	6.25	8.79	19.68	8.63	1.28	1.32	1.38
Cl5(99)	13.32	14.34	15.46	20.86	37.06	13.53	3.82	2.51	3.00
Cl6(128)	6.06	8.40	8.95	10.45	20.79	7.21	1.23	1.48	1.72
Cl6(129)/Cl6(158)	6.19	7.20	6.10	7.88	13.71	5.46	1.00	1.15	1.37
Cl6(132)/Cl6(168)/Cl6(153)	97.89	126.45	109.91	131.49	223.33	81.52	20.10	15.85	17.67
Cl6(138)	43.98	55.64	51.16	61.62	111.06	41.97	8.30	7.55	9.43
Cl6(141)	12.62	17.36	14.60	15.99	28.91	12.32	2.21	1.78	2.99
Cl6(149)	59.56	75.11	70.32	86.35	142.94	54.52	12.44	9.71	12.57
Cl6(151)	19.67	24.50	23.93	29.47	47.73	19.11	3.93	4.16	4.53
Cl6(156)	4.89	5.15	5.36	7.12	11.59	5.20	0.91	1.51	1.18
Cl7(170)	40.46	53.96	43.92	51.39	74.92	28.37	6.25	6.49	7.52
Cl7(174)	33.95	44.06	38.45	46.36	65.64	25.86	5.35	6.68	7.45
Cl7(177)	23.06	29.64	25.76	30.50	40.88	16.55	3.42	4.05	5.60
Cl7(180)	82.00	106.73	91.40	122.28	174.73	60.66	14.18	13.90	17.39
Cl7(183)	18.79	25.61	21.39	25.17	36.46	16.72	3.16	3.00	3.86
Cl7(187)	37.29	50.98	44.06	51.47	72.29	30.20	6.04	7.26	8.13
Cl8(194)	18.04	28.83	13.56	23.57	33.15	13.46	2.40	1.86	6.26
Cl8(195)	10.48	11.35	8.31	9.99	16.59	7.94	1.30	2.54	3.18
Cl8(201)/Cl8(204)	2.29	2.88	3.48	0.00	4.95	2.43	0.52	0.00	0.00
Cl8(203)	9.56	26.83	10.82	12.31	18.18	6.40	1.36	2.21	3.38
Cl9(206)	3.92	5.32	4.28	5.16	11.81	2.15	0.71	0.00	0.00
Cl10(209)	7.67	4.96	4.56	2.18	4.63	1.87	0.89	0.00	0.00
Sum 44 congeners	665	864	763	940	1,665	628	130	118	145

STATION_ID	SB-114	SB-114	SB-114	SB-114	SB-114	SB-114	SB-114	SB-114	SB-114
FIELD SAMPLE_ID	SB-114 4-6	SB-114 6-8	SB-114 8-10	SB-114 10-12	SB-114 12-14	SB-114 14-16	SB-114 16-18	SB-114 18-20	SB-114 20-25
SAMPLE DEPTH_TOP	4	6	8	10	12	14	16	18	20
SAMPLE DEPTH_BOT	6	8	10	12	14	16	18	20	25
DEPTH_UNIT	CM	CM	CM	CM	CM	CM	CM	CM	CM
Cl2(08)	0.41	0.00	0.26	0.25	0.20	0.20	0.23	0.33	0.09
Cl3(18)	0.50	0.00	0.16	0.25	0.20	0.13	0.16	0.00	0.00
Cl3(21)/Cl3(33)/Cl3(20)	0.31	0.00	0.18	0.27	0.26	0.19	0.23	0.37	0.12
Cl3(28)	0.96	0.00	0.56	0.53	0.57	0.45	0.52	0.68	0.17
Cl3(31)	0.00	0.00	0.27	0.31	0.23	0.38	0.31	0.33	0.00
Cl4(44)	0.98	0.78	0.77	0.59	0.83	0.87	0.90	0.86	0.26
Cl4(49)	1.01	1.30	1.10	0.99	1.09	1.12	1.21	1.44	0.29
Cl4(52)	1.78	1.62	1.82	1.30	1.85	1.54	2.19	1.88	0.38
Cl4(56)	0.00	0.00	0.46	0.40	0.35	0.44	0.42	0.56	0.00
Cl4(60)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl4(66)	1.32	1.34	0.96	0.92	0.94	1.16	1.29	1.31	0.28
Cl4(70)	1.44	1.65	1.45	1.15	1.39	1.60	1.60	1.85	0.37
Cl4(74)	0.00	0.00	0.51	0.49	0.48	0.68	0.57	0.65	0.00
Cl4(77)	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00
Cl5(105)	0.00	1.25	1.47	1.52	1.54	1.99	2.39	1.60	0.36
Cl5(110)	5.47	4.79	6.71	6.30	6.72	8.45	9.55	8.83	1.48
Cl5(118)	3.62	4.77	5.47	5.38	5.69	7.09	8.23	7.06	1.39
Cl5(126)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cl5(87)	0.00	0.00	1.60	1.59	1.60	2.12	2.41	2.15	0.41
Cl5(90)/Cl5(101)	5.09	5.50	7.12	7.27	6.94	8.99	8.71	9.06	1.61
Cl5(95)/Cl5(88)	3.94	4.00	4.44	4.16	4.29	5.29	5.46	5.58	1.00
Cl5(97)	1.40	1.47	1.43	1.28	1.46	1.69	2.00	1.94	0.34
Cl5(99)	2.51	3.06	3.54	3.32	3.33	4.08	4.43	5.02	0.92
Cl6(128)	1.94	1.81	2.06	2.05	1.95	2.61	2.59	2.80	0.53
Cl6(129)/Cl6(158)	1.69	2.23	1.39	9.73	1.57	1.91	1.81	2.04	0.37
Cl6(132)/Cl6(168)/Cl6(153)	15.95	18.18	25.07	28.77	26.24	34.21	35.10	36.39	5.57
Cl6(138)	8.62	9.50	11.58	12.42	12.02	15.56	15.41	16.02	2.73
Cl6(141)	2.13	1.99	2.98	3.72	3.44	4.83	4.42	4.14	0.83
Cl6(149)	11.77	12.29	15.30	17.15	15.39	14.92	13.28	21.13	3.42
Cl6(151)	3.74	4.61	5.18	5.89	5.18	6.48	6.53	7.27	1.19
Cl6(156)	0.00	1.52	1.17	1.30	1.23	1.70	1.71	1.50	0.35
Cl7(170)	6.87	7.47	10.50	11.87	10.47	14.48	13.22	12.57	2.60
Cl7(174)	6.16	7.29	9.07	10.32	8.99	11.60	10.75	11.54	2.30
Cl7(177)	5.04	5.25	5.74	6.46	5.60	7.88	7.22	7.57	1.41
Cl7(180)	13.87	17.11	24.18	20.64	19.87	24.08	18.55	29.52	5.39
Cl7(183)	4.04	4.43	4.83	5.34	4.82	6.50	5.87	6.44	1.22
Cl7(187)	7.70	9.15	9.84	10.87	9.67	12.74	12.09	12.95	2.40
Cl8(194)	4.91	5.99	4.25	4.60	4.38	6.15	5.21	6.33	1.15
Cl8(195)	3.36	0.00	2.44	2.57	1.92	2.53	2.67	2.02	0.89
Cl8(201)/Cl8(204)	0.00	0.00	0.72	0.85	0.53	0.91	0.64	0.80	0.00
Cl8(203)	2.45	4.09	2.43	2.83	2.08	2.68	3.17	2.85	0.75
Cl9(206)	0.00	1.09	1.29	1.42	1.04	1.50	1.41	1.34	0.36
Cl10(209)	0.00	0.00	1.17	0.45	0.40	0.61	0.60	0.69	0.23
Sum 44 congeners	131	146	181	198	177	222	215	237	43

STATION_ID	SB-114	SB-114	SB-114	SB-114
FIELD SAMPLE_ID	SB-114 25-3(	SB-114 30-4(	SB-114 40-5(	SB-114 50-6(
SAMPLE DEPTH_TOP	25	30	40	50
SAMPLE DEPTH_BOT	30	40	50	60
DEPTH_UNIT	CM	CM	CM	CM
Cl2(08)	0.07	0.76	1.25	1.07
Cl3(18)	0.00	0.57	0.69	0.63
Cl3(21)/Cl3(33)/Cl3(20)	0.00	0.88	1.44	1.01
Cl3(28)	0.22	1.47	1.95	0.98
Cl3(31)	0.13	0.88	0.96	0.61
Cl4(44)	0.21	2.40	3.87	2.51
Cl4(49)	0.33	5.53	10.13	6.28
Cl4(52)	0.39	5.96	10.48	6.81
Cl4(56)	0.00	1.27	1.97	1.16
Cl4(60)	0.00	0.00	0.00	0.00
Cl4(66)	0.31	4.33	7.66	4.63
Cl4(70)	0.45	4.52	7.36	4.65
Cl4(74)	0.00	1.43	2.40	1.57
Cl4(77)	0.00	0.00	0.00	0.00
Cl5(105)	0.39	4.24	7.74	4.57
Cl5(110)	1.75	19.41	32.03	18.95
Cl5(118)	1.49	18.40	22.33	18.50
Cl5(126)	0.00	0.00	0.00	0.00
Cl5(87)	0.40	4.70	7.40	4.79
Cl5(90)/Cl5(101)	1.66	24.38	37.14	19.56
Cl5(95)/Cl5(88)	1.06	17.59	27.45	16.36
Cl5(97)	0.30	5.33	9.19	5.76
Cl5(99)	0.97	16.88	22.33	16.14
Cl6(128)	0.59	6.52	8.97	4.88
Cl6(129)/Cl6(158)	0.37	5.11	6.62	3.50
Cl6(132)/Cl6(168)/Cl6(153)	5.90	70.60	95.57	46.49
Cl6(138)	2.78	35.91	42.73	23.73
Cl6(141)	0.73	11.16	13.51	6.96
Cl6(149)	3.75	47.57	62.12	31.93
Cl6(151)	1.34	20.99	20.17	12.88
Cl6(156)	0.40	3.94	5.76	3.01
Cl7(170)	2.35	30.32	31.66	15.91
Cl7(174)	2.19	27.51	26.63	15.95
Cl7(177)	1.35	21.14	19.50	11.30
Cl7(180)	5.31	59.55	63.28	34.31
Cl7(183)	1.10	17.65	15.70	10.03
Cl7(187)	2.45	31.55	34.42	18.01
Cl8(194)	1.23	12.86	12.73	7.06
Cl8(195)	0.68	4.78	5.44	2.69
Cl8(201)/Cl8(204)	0.27	2.15	2.17	1.14
Cl8(203)	0.73	5.50	7.09	3.71
Cl9(206)	0.30	2.45	3.53	1.72
Cl10(209)	0.13	0.76	2.77	1.22
Sum 44 congeners	44	559	696	393

ASHTABULA PHASE I CORE SEGMENTS and GLNPO SURFACE SEDIMENTS
345 Samples, 117 PCB Congeners
(ng/g, dry weight)

STATION_ID	T170A	T170A	T170A	T170A	T170A	T170A	T170A	T170A	T170A	T170A
FIELD SAMPLE_ID	T170-A-ZY	⁻170A 1.3-2F⁻	T170A 2-3FT	T170A 3-4FT	T170A 4-5FT	T170A 5-6FT	T170A 6-7FT	T170A 7-8FT	T170A 8-9FT	⁻170A 9-10F⁻
SAMPLE DEPTH (from bottom)	0-1.3	1.3-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	0.73	11.85	14.65	19.21	26.18	33.92	31.38	37.17	53.22	114.44
Cl1(1)	0.04	0.06	0.06	0.07	0.07	0.07	0.07	9.43	9.20	26.24
Cl1(3)	0.02	0.03	0.03	0.03	0.03	0.03	0.03	5.94	7.52	18.03
Cl2(4)/(10)	0.08	0.10	0.11	0.12	0.12	0.12	0.12	31.19	47.09	124.56
Cl2(5)	0.07	0.10	0.10	0.11	0.11	0.11	0.11	2.45	0.17	4.49
Cl2(6)	0.06	0.07	0.08	0.08	0.09	0.09	3.67	251.21	172.54	319.84
Cl2(7)	0.04	0.05	0.05	0.06	0.06	0.06	0.06	3.08	4.48	10.36
Cl2(8)	0.07	0.09	0.09	0.10	0.10	0.10	6.12	96.18	125.49	410.87
Cl2(9)	0.05	0.07	0.07	0.08	0.08	0.08	0.08	5.53	6.32	16.56
Cl2(13)	0.05	0.07	0.07	0.08	0.08	0.08	0.08	65.92	53.15	82.11
Cl2(15)	0.09	0.12	0.12	0.13	0.14	0.14	0.14	40.04	46.92	127.31
Cl3(16)	0.51	0.09	0.09	0.10	0.10	2.91	15.22	307.66	375.34	1312.36
Cl3(17)	0.57	0.05	1.13	1.81	1.41	2.55	18.48	354.58	404.08	1373.20
Cl3(18)	1.30	0.07	2.54	4.16	2.21	4.33	39.62	1259.86	1449.35	4126.10
Cl3(19)	0.06	0.08	0.09	0.09	0.09	0.09	1.97	38.02	83.47	207.00
Cl3(22)	0.61	0.07	0.07	0.08	0.08	0.08	19.94	399.02	560.43	1687.55
Cl3(24)	0.04	0.05	0.05	0.06	0.06	0.06	0.06	2.91	5.07	10.14
Cl3(25)	0.76	1.80	2.29	2.93	2.30	3.73	16.97	965.70	680.95	1110.26
Cl3(26)	0.82	1.80	2.94	2.18	1.83	3.57	18.59	999.73	633.92	1281.84
Cl3(27)	0.03	0.04	0.05	0.05	0.05	0.05	1.58	27.88	43.15	123.64
Cl3(28)	1.58	2.49	3.74	3.69	3.96	4.98	55.93	1394.49	1877.92	4202.40
Cl3(31)	2.04	2.68	4.28	5.20	4.49	6.49	62.59	1858.40	2117.27	5481.79
Cl3(32)	0.30	0.04	0.04	0.04	0.04	0.04	9.73	210.81	289.83	935.15
Cl3(33)/(20)	0.90	3.17	3.57	3.95	3.50	4.11	31.83	531.51	814.14	2363.54
Cl3(37)	0.06	0.08	0.09	0.09	0.09	0.09	10.54	145.07	254.82	848.51
Cl4(40)	0.32	0.10	0.10	0.11	0.11	0.11	14.70	332.88	398.67	1397.43
Cl4(41)	0.18	0.05	0.05	0.06	0.06	0.06	28.74	69.16	152.19	681.25
Cl4(42)/(59)	0.80	0.07	2.42	4.20	0.08	4.38	28.17	719.52	952.50	2739.99
Cl4(43)	0.04	0.06	0.06	0.07	0.07	0.07	5.03	96.81	122.78	333.99
Cl4(44)	2.28	6.01	8.40	13.87	14.86	14.32	78.98	1947.69	2446.96	6502.43
Cl4(45)	0.46	0.05	0.05	0.06	0.06	0.06	14.27	274.14	409.96	1367.15
Cl4(46)	0.07	0.09	0.09	0.10	0.10	0.10	6.06	146.39	178.93	592.15
Cl4(47)	0.57	1.07	1.54	3.31	3.72	2.76	23.97	447.16	565.93	1645.43
Cl4(48)	0.36	0.07	0.07	0.08	0.08	0.08	13.83	194.19	342.25	1522.20
Cl4(49)	1.70	3.85	5.17	9.79	8.46	9.11	60.38	1643.91	1873.26	4661.39
Cl4(51)	0.06	0.08	0.09	0.09	0.09	0.09	3.94	87.62	116.70	356.54
Cl4(52)	2.18	3.78	5.89	10.18	8.45	10.64	79.66	2241.04	2716.39	6504.18
Cl4(53)	0.35	0.04	0.63	0.05	0.05	1.70	12.28	313.72	401.85	1281.02
Cl4(54)	0.04	0.05	0.05	0.06	0.06	0.06	0.06	3.75	5.09	17.51
Cl4(56)	0.83	0.09	0.09	0.10	1.65	2.70	33.38	516.66	871.92	2657.44
Cl4(60)	0.26	0.08	0.09	0.09	1.30	1.54	4.35	66.33	181.59	1018.72
Cl4(64)	1.12	1.16	2.19	2.86	2.39	3.90	33.59	857.19	1090.12	3420.96
Cl4(66)	1.46	3.19	3.97	7.27	6.37	7.57	68.56	830.52	1648.44	4462.84
Cl4(70)	1.91	3.63	5.12	8.50	7.75	9.16	79.88	1396.38	2315.71	6012.46
Cl4(71)	0.65	0.76	1.55	1.57	0.08	2.19	24.76	511.78	645.59	2069.39
Cl4(74)	0.83	0.04	1.63	3.01	1.93	3.05	33.26	367.12	803.65	2783.11
Cl4(77)	0.12	0.16	0.16	0.18	0.18	0.18	6.03	64.86	122.26	471.80
Cl4(81)	0.04	0.05	0.05	0.06	0.06	0.06	0.06	1.38	1.99	9.61
Cl5(82)	0.04	0.06	0.06	0.07	0.07	0.07	7.26	118.42	215.07	618.09
Cl5(83)/(119)	0.21	0.08	1.17	2.46	2.18	2.31	6.81	101.41	161.73	364.56
Cl5(84)	0.46	0.92	1.33	2.53	2.35	2.60	17.24	357.73	460.78	1330.57
Cl5(85)	0.21	0.05	0.05	0.89	0.84	0.64	6.48	148.86	250.48	753.38
Cl5(87)	0.37	0.79	1.10	2.12	1.83	2.94	13.21	200.03	433.35	1429.57
Cl5(91)	0.24	0.62	0.81	1.42	1.43	1.23	8.36	183.18	255.21	675.46
Cl5(92)	0.05	0.85	1.27	3.29	3.15	2.46	8.95	138.58	168.39	385.39
Cl5(95)	0.68	1.96	3.11	7.06	5.91	6.80	33.18	593.56	699.69	2149.92
Cl5(97)	0.40	0.83	0.04	2.54	2.70	2.84	14.08	173.70	313.90	1149.24
Cl5(99)	0.35	1.72	2.28	5.35	5.54	6.27	17.35	188.83	363.50	1150.67
Cl5(100)	0.04	0.05	0.05	0.29	0.42	0.06	0.49	4.12	5.39	15.92

STATION_ID	T170A	T170A	T170A	T170A	T170A	T170A	T170A	T170A	T170A	T170A
FIELD SAMPLE_ID	T170-A-ZY	T170A 1.3-2FT	T170A 2-3FT	T170A 3-4FT	T170A 4-5FT	T170A 5-6FT	T170A 6-7FT	T170A 7-8FT	T170A 8-9FT	T170A 9-10FT
SAMPLE DEPTH (from bottom)	0-1.3	1.3-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	0.45	1.86	3.29	8.01	7.30	7.43	27.76	327.63	588.35	1616.91
Cl5(105)	0.33	0.08	1.08	1.77	0.98	2.85	8.50	131.41	244.72	1329.28
Cl5(110)	1.14	3.76	5.55	11.90	9.95	11.71	45.74	749.28	989.93	2888.51
Cl5(114)	0.09	0.12	0.12	0.13	0.14	0.14	0.14	3.14	9.65	48.55
Cl5(115)	0.08	0.10	0.11	0.12	0.12	0.12	0.66	4.15	7.68	51.57
Cl5(118)	0.51	2.27	3.04	6.98	6.67	7.90	23.77	209.64	460.02	1510.03
Cl5(107)/(123)	0.08	0.11	0.12	1.37	2.09	2.51	5.35	58.50	89.36	295.64
Cl5(124)	0.05	0.07	0.07	0.08	0.08	0.08	0.08	5.95	15.26	72.91
Cl5(126)	0.07	0.10	0.10	0.11	0.11	0.11	0.11	1.50	3.59	10.24
Cl6(128)	0.07	0.59	0.09	0.10	0.10	0.10	2.40	23.61	41.83	149.02
Cl6(130)	0.07	0.09	0.09	1.62	1.31	1.66	2.39	15.51	23.47	50.85
Cl6(134)	0.06	0.07	0.08	0.08	1.16	1.47	1.47	8.99	14.47	37.86
Cl6(135)	0.06	0.41	0.54	1.34	1.31	1.04	2.32	23.03	30.76	66.93
Cl6(136)	0.08	0.58	0.84	2.64	3.34	4.18	3.10	18.86	42.63	70.99
Cl6(137)	0.09	0.12	0.12	2.36	3.00	4.47	2.28	4.29	10.79	33.40
Cl6(138)	0.07	1.03	1.35	3.43	3.74	5.33	8.90	63.52	96.15	334.33
Cl6(141)	0.04	0.05	0.05	0.06	1.77	1.76	0.06	8.08	19.52	73.03
Cl6(144)	0.08	0.10	0.11	0.12	0.12	0.12	0.60	3.65	7.89	22.12
Cl6(146)	0.02	0.48	0.83	2.12	2.01	1.99	17.54	29.25	40.00	65.68
Cl6(149)	0.13	1.33	1.92	5.30	5.57	5.48	10.91	101.67	127.62	341.18
Cl6(151)	0.07	0.49	0.69	1.62	1.98	1.66	2.78	28.55	42.40	75.51
Cl6(132)/(153)/(168)	0.26	1.64	2.29	6.34	6.28	6.59	12.61	111.92	177.88	449.49
Cl6(156)	0.02	0.02	0.75	1.86	3.65	4.64	2.83	6.57	15.17	56.61
Cl6(157)	0.07	0.09	0.09	0.10	0.10	0.10	0.10	1.98	4.53	16.50
Cl6(129)/(158)	0.06	0.08	0.09	0.98	1.13	1.13	1.33	7.91	15.45	51.73
Cl6(163)	0.06	0.39	0.50	1.28	1.65	1.22	2.15	23.48	28.55	78.56
Cl6(164)	0.04	0.06	0.06	0.07	0.07	0.07	1.28	7.01	12.59	32.78
Cl6(166)	0.07	0.10	0.10	0.11	0.11	0.11	0.11	0.14	0.17	3.76
Cl6(167)	0.04	0.06	0.06	1.15	0.07	5.73	2.98	3.52	8.19	23.12
Cl6(169)	0.09	0.13	0.13	0.14	0.15	0.15	0.14	0.13	0.15	0.24
Cl7(170)	0.05	0.07	0.07	1.53	1.93	2.18	2.10	15.59	24.47	87.77
Cl7(171)	0.04	0.30	0.05	1.24	0.82	0.90	0.85	4.79	8.06	16.56
Cl7(172)	0.05	0.07	1.00	0.08	0.08	0.08	0.08	4.66	6.51	13.99
Cl7(174)	0.03	0.46	0.49	1.31	1.91	1.83	2.29	18.42	29.65	55.62
Cl7(176)	0.04	0.39	0.47	1.59	2.62	4.00	1.90	3.51	4.66	7.98
Cl7(177)	0.05	0.07	0.43	1.63	1.92	2.21	2.08	15.61	22.11	38.18
Cl7(178)	0.04	0.35	0.33	1.40	0.95	1.25	1.30	6.76	8.47	12.03
Cl7(179)	0.07	0.43	0.59	1.52	2.17	2.39	1.92	10.89	16.23	25.44
Cl7(180)	0.05	1.00	0.88	3.16	4.43	5.07	5.99	33.04	62.94	146.51
Cl7(183)	0.05	0.07	0.78	1.82	4.85	6.17	2.37	10.97	18.61	34.38
Cl7(184)	0.03	0.04	0.05	0.25	0.43	0.70	0.41	0.31	0.38	1.21
Cl7(185)	0.05	0.07	0.07	0.08	0.08	0.08	0.08	1.95	3.17	6.66
Cl7(187)	0.04	0.98	0.99	3.04	4.16	4.07	4.30	29.95	39.86	67.12
Cl7(189)	0.07	0.10	0.10	0.99	1.68	1.53	0.11	1.08	1.80	4.89
Cl7(190)	0.06	0.07	0.08	0.08	0.09	0.09	0.08	3.51	6.06	14.94
Cl7(193)	0.03	0.04	0.04	0.04	0.97	1.18	0.04	2.57	3.23	6.68
Cl8(194)	0.04	0.71	0.51	1.27	1.72	1.55	2.43	14.29	20.83	39.16
Cl8(195)	0.04	0.05	0.05	0.06	0.06	0.06	0.06	5.05	6.95	13.84
Cl8(199)	0.07	1.43	2.03	6.38	6.37	6.48	5.46	20.12	28.75	50.10
Cl8(200)	0.08	0.17	0.12	0.13	0.41	0.13	0.48	1.74	2.27	4.29
Cl8(201)	0.08	0.11	0.12	0.97	2.06	2.90	1.23	2.13	3.11	6.91
Cl8(202)	0.06	0.57	0.47	1.64	1.49	1.32	1.21	2.92	4.13	7.61
Cl8(196)/(203)	0.02	0.67	0.89	1.89	2.40	2.31	2.60	13.28	19.08	35.75
Cl8(205)	0.02	0.02	0.02	0.03	0.75	1.25	0.67	1.03	1.56	2.95
Cl9(206)	0.15	3.29	4.36	14.16	13.24	19.35	15.55	23.18	35.62	123.51
Cl9(207)	0.07	0.19	0.14	0.39	0.47	0.87	1.55	2.53	3.77	19.98
Cl9(208)	0.06	1.05	1.33	4.78	4.18	5.48	5.40	6.77	11.25	29.21
Cl10(209)	0.46	12.74	16.52	88.53	75.68	110.15	134.70	145.10	275.57	1350.99
Sum 117 congeners	36	88	130	322	309	404	1,489	26,730	35,593	100,817

STATION_ID	T170A	T170A	T170A	T170A	T170B	T170B	T170B	T170B	T170B	T170B
FIELD SAMPLE_ID	170A 10-11F	T170-A-NML	T170-A-KJI	170A 17-18F	T170B 0-1FT	T170B 1-2FT	170B 2.1-3F	T170B 3-4FT	T170-B-VU	170B 5.5-6F
SAMPLE DEPTH (from bottom)	10-11	11-14	14-17	17-18	0-1	1-2	2.1-3	3-4	4-5.5	5.5-6
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	71.20	52.16	13.11	3.43	1.51	1.17	38.59	29.93	94.36	46.11
Cl1(1)	28.74	13.61	0.08	0.07	0.05	0.05	0.07	0.07	0.07	0.06
Cl1(3)	18.30	10.02	0.04	0.04	0.02	0.03	0.03	0.03	0.04	0.03
Cl2(4)/(10)	124.71	77.08	2.99	0.74	0.09	0.09	0.12	0.12	0.12	0.11
Cl2(5)	10.60	7.08	0.13	0.12	0.08	0.08	0.11	0.11	0.11	0.10
Cl2(6)	981.80	231.69	9.23	1.52	0.52	0.27	0.08	0.09	0.09	0.08
Cl2(7)	20.57	15.27	0.07	0.06	0.04	0.04	0.06	0.06	0.06	0.05
Cl2(8)	395.68	216.72	8.96	1.68	0.26	0.08	2.07	2.28	0.11	0.09
Cl2(9)	30.22	26.31	0.64	0.08	0.06	0.06	0.08	0.08	0.08	0.07
Cl2(13)	205.96	85.87	3.64	0.84	0.06	0.06	0.08	0.08	0.08	0.07
Cl2(15)	126.23	87.09	4.98	1.49	0.10	0.10	3.72	0.14	0.14	0.12
Cl3(16)	1155.42	293.68	16.29	3.53	0.71	0.77	0.10	6.73	12.18	3.56
Cl3(17)	1292.70	435.93	23.03	4.43	0.77	0.58	0.06	9.93	14.34	4.11
Cl3(18)	4756.14	1147.23	43.42	11.27	1.60	1.07	0.08	19.81	30.39	12.08
Cl3(19)	179.48	59.87	2.20	0.64	0.07	0.07	0.09	0.09	0.10	0.08
Cl3(22)	1415.84	385.26	26.06	6.19	0.75	0.61	0.08	10.03	15.63	5.42
Cl3(24)	11.52	9.27	0.07	0.06	0.04	0.04	0.06	0.06	0.06	0.05
Cl3(25)	2782.34	736.17	38.39	7.61	1.07	0.84	1.09	4.38	3.90	5.04
Cl3(26)	3598.84	795.22	31.72	9.05	1.18	0.81	1.24	5.33	5.49	5.75
Cl3(27)	131.11	36.32	2.07	0.56	0.04	0.04	0.05	0.05	0.05	0.05
Cl3(28)	5145.64	1344.84	57.92	19.79	1.88	1.35	1.88	29.61	47.16	15.76
Cl3(31)	6698.67	1581.01	71.53	21.61	2.24	1.54	2.25	33.73	47.75	17.77
Cl3(32)	796.37	229.57	12.31	2.74	0.28	0.24	0.04	4.52	6.40	2.58
Cl3(33)/(20)	1968.70	603.20	37.29	7.81	1.20	0.74	3.75	16.47	26.68	7.76
Cl3(37)	530.64	188.21	14.50	3.80	0.07	0.07	0.09	6.29	9.27	3.07
Cl4(40)	1187.34	295.45	21.91	4.88	0.44	0.08	5.16	8.14	12.00	3.41
Cl4(41)	216.80	69.18	5.28	1.98	0.04	0.04	0.06	0.06	2.83	0.98
Cl4(42)/(59)	2908.11	682.30	33.78	11.79	1.04	0.91	0.08	21.53	31.05	9.79
Cl4(43)	304.27	103.47	5.63	1.12	0.05	0.05	0.07	2.85	3.95	1.01
Cl4(44)	7691.28	1717.62	85.05	28.70	2.30	1.80	11.60	51.34	80.04	24.77
Cl4(45)	1290.20	316.30	18.31	4.24	0.48	0.31	0.06	8.11	12.12	3.67
Cl4(46)	556.20	129.75	7.60	2.00	0.07	0.08	0.10	3.77	5.27	1.71
Cl4(47)	1727.95	471.61	32.52	7.68	0.59	0.45	0.08	15.60	21.19	6.04
Cl4(48)	852.79	204.05	14.82	4.66	0.32	0.06	0.08	6.91	15.11	3.44
Cl4(49)	6770.06	1593.68	73.19	23.14	1.72	1.40	6.23	39.83	52.72	22.37
Cl4(51)	374.08	89.92	5.10	1.28	0.07	0.07	0.09	2.04	3.28	1.01
Cl4(52)	8659.88	2136.99	99.20	30.11	2.26	1.89	6.96	49.70	70.55	31.15
Cl4(53)	1314.21	298.58	16.08	3.53	0.40	0.25	0.05	5.99	9.64	3.01
Cl4(54)	12.62	5.63	0.07	0.26	0.15	0.04	0.06	0.06	0.06	0.05
Cl4(56)	1819.53	516.64	30.10	11.95	0.74	0.57	0.10	20.43	29.30	8.65
Cl4(60)	330.20	93.35	10.36	3.75	0.21	0.07	0.09	1.84	4.49	1.40
Cl4(64)	3316.85	773.82	35.06	14.47	1.01	0.83	1.70	22.62	33.16	10.62
Cl4(66)	3768.64	926.51	58.47	22.69	1.49	1.08	5.43	51.02	75.40	18.85
Cl4(70)	5120.78	1404.41	74.63	28.56	1.86	1.57	7.40	61.55	93.66	29.11
Cl4(71)	1965.05	469.42	33.51	8.02	0.71	0.54	0.08	14.10	20.88	6.14
Cl4(74)	1833.69	466.84	39.66	11.76	0.76	0.50	2.83	18.28	33.69	8.30
Cl4(77)	214.41	84.62	6.91	2.58	0.13	0.13	0.18	3.63	5.66	1.52
Cl4(81)	4.06	2.02	0.07	0.06	0.04	0.04	0.06	0.06	0.06	0.05
Cl5(82)	326.76	120.45	8.57	2.82	0.05	0.05	0.07	3.41	6.56	2.41
Cl5(83)/(119)	327.58	104.45	7.57	2.21	0.07	0.07	2.92	5.10	7.75	3.65
Cl5(84)	1325.85	333.08	23.10	5.41	0.42	0.47	3.02	10.07	14.76	7.10
Cl5(85)	518.12	140.21	10.48	3.18	0.21	0.05	1.78	2.44	6.48	2.88
Cl5(87)	681.44	193.54	15.62	6.25	0.30	0.09	5.02	5.04	15.89	8.85
Cl5(91)	727.97	181.65	11.87	2.71	0.23	0.33	1.91	4.51	8.55	3.48
Cl5(92)	423.37	123.68	9.19	2.90	0.28	0.27	4.35	5.80	9.89	5.81
Cl5(95)	2394.39	552.90	39.87	13.20	0.78	0.63	9.04	19.82	32.69	18.96
Cl5(97)	805.14	232.63	16.25	5.58	0.40	0.31	4.12	8.01	15.40	6.76
Cl5(99)	858.26	253.55	18.13	5.97	0.34	0.32	7.80	11.23	22.01	8.92
Cl5(100)	16.61	6.20	0.35	0.06	0.04	0.04	0.49	0.06	0.77	0.05

STATION_ID	T170A	T170A	T170A	T170A	T170B	T170B	T170B	T170B	T170B	T170B
FIELD SAMPLE_ID	170A 10-11F	T170-A-NML	T170-A-KJI	170A 17-18F	T170B 0-1FT	T170B 1-2FT	170B 2.1-3F	T170B 3-4FT	T170-B-VU	170B 5.5-6F
SAMPLE DEPTH (from bottom)	10-11	11-14	14-17	17-18	0-1	1-2	2.1-3	3-4	4-5.5	5.5-6
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	1266.93	306.65	25.53	14.05	0.49	0.40	11.14	17.64	31.93	17.76
Cl5(105)	493.23	165.08	13.59	5.64	0.72	0.26	4.40	3.41	9.38	5.45
Cl5(110)	2777.43	781.96	44.16	18.64	1.12	0.90	15.25	28.55	52.42	28.99
Cl5(114)	12.28	5.36	0.16	0.15	0.10	0.10	0.13	0.14	0.14	0.12
Cl5(115)	28.05	8.60	0.56	0.19	0.09	0.09	0.12	0.12	0.98	0.11
Cl5(118)	1037.90	287.33	24.39	9.43	0.51	0.36	11.71	15.25	28.47	14.64
Cl5(107)/(123)	200.06	60.13	4.92	1.84	0.09	0.09	3.22	3.89	7.34	2.53
Cl5(124)	29.46	9.46	0.82	0.42	0.06	0.06	0.08	0.08	0.08	0.63
Cl5(126)	5.71	1.66	0.13	0.12	0.08	0.08	0.11	0.11	0.11	0.89
Cl6(128)	70.61	24.88	2.01	2.04	0.07	0.08	0.10	0.10	0.11	3.00
Cl6(130)	36.44	15.52	1.48	0.93	0.07	0.08	3.49	2.23	3.30	1.37
Cl6(134)	27.57	10.79	0.97	0.87	0.06	0.06	1.99	1.44	2.04	1.10
Cl6(135)	50.54	21.02	1.73	2.14	0.07	0.07	1.54	1.74	3.48	1.98
Cl6(136)	49.72	19.57	1.51	2.32	0.02	0.02	4.63	2.81	5.60	2.21
Cl6(137)	14.38	5.93	0.16	0.41	0.10	0.10	6.69	3.00	6.43	1.21
Cl6(138)	171.51	102.29	6.35	10.55	0.08	0.08	8.33	5.29	11.15	9.90
Cl6(141)	22.36	8.30	1.61	4.18	0.04	0.04	0.06	0.06	0.06	1.92
Cl6(144)	9.29	3.49	0.41	1.06	0.09	0.09	0.44	0.12	0.77	0.51
Cl6(146)	52.29	24.66	2.14	2.29	0.02	0.02	2.13	2.91	4.11	2.15
Cl6(149)	240.16	96.42	8.66	14.48	0.16	0.07	8.35	7.51	12.63	11.92
Cl6(151)	51.44	23.76	2.52	4.98	0.07	0.08	2.20	2.00	0.86	2.60
Cl6(132)/(153)/(168)	259.06	99.97	9.99	18.99	0.16	0.06	9.92	8.19	15.17	13.84
Cl6(156)	17.89	7.77	0.75	1.42	0.02	0.02	4.86	3.05	5.76	1.33
Cl6(157)	6.29	2.66	0.12	0.11	0.07	0.08	0.10	0.10	0.11	0.38
Cl6(129)/(158)	24.00	9.12	1.09	1.41	0.07	0.07	1.94	0.09	2.87	1.52
Cl6(163)	44.00	22.46	1.83	3.13	0.07	0.07	1.67	1.71	2.57	2.40
Cl6(164)	18.64	7.99	0.72	1.12	0.05	0.05	0.07	1.49	0.07	0.87
Cl6(166)	2.70	0.14	0.13	0.12	0.08	0.08	4.79	0.11	0.11	0.10
Cl6(167)	10.77	4.03	0.54	0.70	0.05	0.05	0.07	0.07	7.31	0.62
Cl6(169)	0.22	0.13	0.17	0.12	0.11	0.11	0.14	0.14	0.15	0.13
Cl7(170)	29.26	12.30	1.59	5.79	0.06	0.06	2.66	2.08	3.18	1.60
Cl7(171)	8.67	3.53	0.58	1.40	0.04	0.04	1.25	0.81	0.98	0.42
Cl7(172)	7.24	3.55	0.46	1.13	0.06	0.06	0.08	0.08	3.10	0.52
Cl7(174)	26.65	12.84	1.75	7.21	0.03	0.03	2.38	1.79	3.39	1.59
Cl7(176)	3.88	2.24	0.34	1.01	0.05	0.05	4.69	2.33	4.62	0.49
Cl7(177)	24.11	11.31	1.68	4.34	0.06	0.06	0.08	1.80	3.50	1.34
Cl7(178)	8.64	4.61	0.63	1.27	0.04	0.04	1.00	1.12	1.66	0.48
Cl7(179)	11.90	6.89	0.13	2.80	0.08	0.08	2.65	1.91	3.60	0.93
Cl7(180)	57.88	25.96	4.24	15.68	0.06	0.06	5.78	4.07	9.08	4.00
Cl7(183)	16.92	7.43	1.08	3.64	0.06	0.06	7.71	3.54	7.88	1.36
Cl7(184)	0.35	0.26	0.06	0.06	0.04	0.04	0.80	0.50	0.94	0.05
Cl7(185)	2.63	1.38	0.28	1.00	0.06	0.06	0.08	0.08	0.08	0.07
Cl7(187)	38.48	19.12	2.61	8.05	0.05	0.05	4.87	3.79	6.89	2.34
Cl7(189)	1.95	0.95	0.13	0.12	0.08	0.08	0.11	0.11	0.11	0.10
Cl7(190)	7.57	2.32	0.36	1.26	0.06	0.06	0.08	0.09	0.81	0.40
Cl7(193)	4.26	1.86	3.32	0.77	0.03	0.03	1.10	0.59	1.42	0.19
Cl8(194)	20.62	9.43	1.66	3.54	0.04	0.50	1.78	1.51	3.35	1.37
Cl8(195)	7.78	3.39	0.77	1.47	0.04	0.04	0.06	1.21	0.06	0.41
Cl8(199)	25.22	13.62	1.85	3.50	0.08	0.08	6.91	5.14	9.68	1.66
Cl8(200)	2.41	1.10	0.19	0.53	0.09	0.09	0.13	0.50	0.74	0.18
Cl8(201)	3.11	1.60	0.34	0.57	0.09	0.09	3.79	2.27	3.67	0.26
Cl8(202)	3.85	2.20	0.30	0.68	0.06	0.06	1.54	1.36	2.02	0.35
Cl8(196)/(203)	18.36	8.97	1.29	3.24	0.02	0.03	2.91	1.78	3.80	0.99
Cl8(205)	1.57	0.03	0.03	0.03	0.02	0.02	1.56	0.95	1.87	0.02
Cl9(206)	24.40	14.56	1.43	1.03	0.08	0.08	20.58	11.37	25.88	2.42
Cl9(207)	4.34	2.40	0.23	0.16	0.07	0.08	1.01	2.07	2.85	0.21
Cl9(208)	8.26	6.08	0.51	0.26	0.07	0.07	6.10	5.38	9.04	0.74
Cl10(209)	188.93	250.34	11.27	2.15	0.31	0.46	178.09	217.71	438.15	17.42
Sum 117 congeners	100,641	26,278	1,474	582	40	31	476	1,024	1,745	524

STATION_ID	T170B	T170B	T170B	T170B	T170B	T170B	T170B	T171A	T171A	T171A
FIELD SAMPLE_ID	T170B 6-7FT	T170B 7-8FT	T170B 8-9FT	T170B 9-10F	T170-B-ONM	T170-B-LKJ	70B 16.1-17.1	T171A 0-1FT	T171A 1-2FT	T171A 2-3FT
SAMPLE DEPTH (from bottom)	6-7	7-8	8-9	9-10	10-13	13-16.1	16.1-17.1	0-1	1-2	2-3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	59.25	58.53	69.99	77.31	64.95	25.45	4.85	0.15	5.28	18.67
Cl1(1)	0.07	0.12	0.14	38.71	20.15	0.07	0.08	0.05	0.05	0.06
Cl1(3)	0.04	0.06	0.07	26.28	13.89	0.04	0.04	0.02	0.03	0.03
Cl2(4)/(10)	11.24	62.59	58.20	165.89	199.56	10.08	0.13	0.08	0.10	0.11
Cl2(5)	0.12	0.20	0.22	13.02	10.96	0.12	0.12	0.08	0.09	0.10
Cl2(6)	169.85	823.02	120.91	1150.04	354.47	14.62	1.40	0.06	0.07	0.08
Cl2(7)	0.06	6.45	5.78	23.98	21.87	0.06	0.07	0.04	0.05	0.06
Cl2(8)	73.33	468.20	180.13	593.24	327.75	22.37	1.71	0.07	0.08	0.09
Cl2(9)	1.85	10.77	9.13	42.15	36.16	1.47	0.08	0.05	0.06	0.07
Cl2(13)	48.99	358.25	49.25	375.50	140.03	7.10	0.80	0.05	0.06	0.07
Cl2(15)	13.73	191.67	79.85	224.27	209.03	14.73	1.45	0.09	0.11	0.13
Cl3(16)	278.16	1386.98	325.62	1568.19	548.79	30.03	5.67	0.07	0.08	0.09
Cl3(17)	387.45	2232.95	399.57	1976.33	861.41	37.42	6.67	0.04	0.83	0.06
Cl3(18)	1114.47	6214.48	949.21	6219.15	2168.82	105.72	17.41	0.06	1.24	0.08
Cl3(19)	20.23	205.61	73.05	245.54	97.94	6.06	0.96	0.06	0.07	0.09
Cl3(22)	197.56	766.31	730.15	1483.68	663.20	43.14	9.41	0.05	0.75	0.07
Cl3(24)	0.06	5.67	5.10	13.26	12.66	0.06	0.07	0.04	0.05	0.06
Cl3(25)	749.14	4411.30	267.94	4203.86	1265.92	36.29	7.84	0.04	1.02	0.06
Cl3(26)	729.11	4273.99	280.06	5689.15	1472.50	56.39	10.60	0.06	1.28	0.08
Cl3(27)	14.39	153.07	55.71	133.73	85.86	4.68	0.82	0.04	0.04	0.05
Cl3(28)	1336.43	8351.99	1301.60	6711.19	2336.02	122.73	27.05	0.07	1.73	0.09
Cl3(31)	731.58	2497.98	2220.40	5247.92	2868.10	151.75	29.56	0.04	2.03	0.05
Cl3(32)	188.20	1077.48	227.98	1018.79	386.96	29.46	5.21	0.03	0.03	0.04
Cl3(33)/(20)	496.68	3248.48	583.02	2703.09	989.21	55.59	11.35	0.07	0.98	0.09
Cl3(37)	77.93	361.21	423.12	526.01	327.53	30.88	5.52	0.06	0.07	0.09
Cl4(40)	274.66	1827.25	290.18	1398.18	503.76	26.70	8.46	0.08	0.09	0.10
Cl4(41)	25.44	449.94	131.68	275.01	131.13	12.92	3.32	0.04	0.05	0.06
Cl4(42)/(59)	692.22	4494.29	671.14	3731.60	1189.48	69.23	18.56	0.05	1.13	0.07
Cl4(43)	41.30	495.18	138.59	399.68	201.79	10.63	2.04	0.05	0.05	0.06
Cl4(44)	1860.10	11301.82	1646.39	10016.70	3126.31	173.64	44.51	0.06	2.44	0.08
Cl4(45)	294.85	1700.22	250.65	1564.87	503.59	29.35	8.10	0.04	0.05	0.06
Cl4(46)	118.69	714.35	145.63	580.50	236.33	16.79	3.51	0.07	0.08	0.09
Cl4(47)	407.93	2747.98	402.25	2348.65	812.04	7.13	12.64	0.05	0.77	0.07
Cl4(48)	174.90	1214.63	357.90	886.55	353.69	35.37	6.89	0.05	0.06	0.07
Cl4(49)	1482.90	9326.68	1320.43	8503.82	3044.96	152.68	36.07	0.05	1.78	4.98
Cl4(51)	84.93	486.39	99.46	398.27	200.02	10.42	2.20	0.06	0.07	0.09
Cl4(52)	2091.85	12464.80	1813.32	11002.07	3647.76	204.57	49.98	0.04	2.49	4.62
Cl4(53)	269.73	1693.28	292.00	1519.68	520.20	27.18	6.91	0.04	0.36	0.05
Cl4(54)	2.28	8.63	7.38	17.89	8.83	0.06	0.07	0.04	0.05	0.06
Cl4(56)	571.83	4131.40	660.71	2191.02	1004.74	60.25	18.41	0.07	0.83	0.09
Cl4(60)	21.16	461.31	141.90	425.53	148.89	24.37	7.02	0.06	0.07	0.09
Cl4(64)	862.81	5350.53	832.43	4307.74	1468.16	78.05	22.28	0.02	1.09	0.03
Cl4(66)	471.36	1678.11	2237.34	2556.84	1638.24	120.26	35.53	0.05	1.45	3.76
Cl4(70)	1469.56	10539.64	1908.93	5957.57	2372.85	159.06	42.53	0.06	2.02	4.66
Cl4(71)	480.69	3062.96	485.64	2548.23	927.79	47.06	12.60	0.05	0.77	0.07
Cl4(74)	439.14	3149.26	743.86	2047.02	799.19	2.90	18.06	0.04	0.73	0.05
Cl4(77)	53.48	239.60	256.30	306.46	150.95	13.43	3.58	0.12	0.14	0.17
Cl4(81)	0.06	0.11	3.18	4.66	3.26	1.49	0.07	0.04	0.05	0.06
Cl5(82)	61.45	786.78	169.62	494.69	224.03	15.23	4.06	0.05	0.05	0.06
Cl5(83)/(119)	101.99	659.68	198.94	525.39	246.84	11.33	2.90	0.06	0.07	1.50
Cl5(84)	325.54	1963.98	303.65	1624.21	578.68	40.32	12.57	0.09	0.47	1.29
Cl5(85)	135.34	999.45	337.03	579.14	247.98	19.32	5.36	0.04	0.05	0.06
Cl5(87)	187.50	1486.01	338.97	721.50	308.43	29.94	7.48	0.09	0.10	1.20
Cl5(91)	153.72	1011.11	167.99	746.93	384.26	20.75	4.18	0.04	0.04	0.85
Cl5(92)	125.96	811.35	100.98	465.15	225.12	14.99	2.11	0.05	0.06	1.61
Cl5(95)	508.48	3398.88	550.20	2678.31	996.00	55.29	17.40	0.05	0.83	4.34
Cl5(97)	189.89	1351.03	286.78	786.51	402.28	30.57	6.89	0.03	0.03	1.96
Cl5(99)	200.82	1321.34	271.44	737.56	354.85	25.99	8.42	0.05	0.42	3.49
Cl5(100)	2.01	10.84	7.26	20.91	11.18	0.76	0.07	0.04	0.05	0.06

STATION_ID	T170B	T170B	T170B	T170B	T170B	T170B	T170B	T171A	T171A	T171A
FIELD SAMPLE_ID	T170B 6-7FT	T170B 7-8FT	T170B 8-9FT	T170B 9-10F	T170-B-ONM	T170-B-LKJ	70B 16.1-17.1	T171A 0-1FT	T171A 1-2FT	T171A 2-3FT
SAMPLE DEPTH (from bottom)	6-7	7-8	8-9	9-10	10-13	13-16.1	16.1-17.1	0-1	1-2	2-3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	268.17	1645.59	368.97	1021.43	570.75	47.33	14.55	0.09	0.55	4.87
Cl5(105)	98.42	859.39	223.49	536.44	267.75	23.45	6.72	0.06	0.07	0.09
Cl5(110)	726.60	4904.90	747.02	3673.19	1378.19	77.96	23.26	0.07	1.29	6.94
Cl5(114)	0.15	6.03	12.64	12.85	7.66	0.14	0.15	0.09	0.11	0.13
Cl5(115)	0.13	0.21	10.68	33.21	23.75	1.09	0.61	0.08	0.10	0.11
Cl5(118)	167.77	693.44	822.98	962.74	540.00	28.50	12.26	0.05	0.58	4.27
Cl5(107)/(123)	32.56	189.92	162.47	254.24	135.36	8.09	1.72	0.09	0.10	1.40
Cl5(124)	2.53	16.33	23.77	34.88	18.72	0.08	0.08	0.05	0.06	0.07
Cl5(126)	0.95	0.20	4.66	6.86	2.19	0.12	0.12	0.08	0.09	0.10
Cl6(128)	11.66	194.29	56.12	108.57	44.70	3.57	1.39	0.07	0.08	0.09
Cl6(130)	8.59	39.56	27.74	48.70	25.22	2.72	0.75	0.07	0.08	0.09
Cl6(134)	4.85	26.76	18.19	37.69	19.04	1.17	0.76	0.06	0.07	0.61
Cl6(135)	13.34	59.44	35.01	63.37	34.69	3.28	1.63	0.06	0.07	0.83
Cl6(136)	10.57	52.00	34.79	103.20	33.59	2.82	2.01	0.02	0.02	1.62
Cl6(137)	2.05	12.17	13.98	18.72	9.87	1.20	0.15	0.09	0.11	1.46
Cl6(138)	35.77	447.51	87.71	219.77	155.74	9.73	7.36	0.08	0.09	2.32
Cl6(141)	2.80	21.59	26.06	33.34	15.73	2.15	2.49	0.04	0.05	0.06
Cl6(144)	2.15	12.12	10.23	13.03	6.12	0.70	0.13	0.08	0.10	0.11
Cl6(146)	18.51	204.99	51.55	61.88	38.72	3.79	1.27	0.02	0.02	1.21
Cl6(149)	99.26	640.78	97.75	331.51	185.08	15.74	10.49	0.06	0.23	3.38
Cl6(151)	16.76	226.99	51.42	69.81	38.90	4.31	3.24	0.07	0.08	0.97
Cl6(132)/(153)/(168)	104.86	707.34	121.41	343.26	204.01	16.19	13.12	0.06	0.23	4.41
Cl6(156)	2.89	15.81	21.55	25.04	13.08	1.81	1.01	0.02	0.02	0.02
Cl6(157)	1.28	6.28	7.19	8.92	3.89	0.11	0.11	0.07	0.08	0.09
Cl6(129)/(158)	2.88	18.66	19.24	31.03	18.25	1.71	0.93	0.06	0.07	0.09
Cl6(163)	12.16	139.25	44.60	70.36	32.54	3.20	2.27	0.06	0.07	0.78
Cl6(164)	3.58	21.39	16.24	24.02	13.82	1.41	0.86	0.05	0.05	0.06
Cl6(166)	0.12	0.20	0.22	3.11	0.17	0.12	0.12	0.08	0.09	0.10
Cl6(167)	2.49	11.60	12.33	15.09	7.50	0.84	0.48	0.05	0.05	0.06
Cl6(169)	0.05	0.45	0.28	0.43	0.97	0.15	0.16	0.10	0.12	0.13
Cl7(170)	8.71	42.86	33.95	47.44	21.56	2.88	3.04	0.05	0.06	0.07
Cl7(171)	2.92	13.75	9.47	14.18	6.14	0.76	1.07	0.04	0.05	0.06
Cl7(172)	2.78	12.69	9.29	12.15	5.37	0.66	0.74	0.05	0.06	0.07
Cl7(174)	12.27	54.27	38.46	40.20	18.91	3.11	4.08	0.03	0.03	0.92
Cl7(176)	2.36	8.72	5.59	6.48	3.03	0.58	0.62	0.05	0.05	0.92
Cl7(177)	10.48	42.07	26.85	36.73	16.59	2.41	2.49	0.05	0.06	1.18
Cl7(178)	4.48	16.52	9.92	12.90	6.18	0.93	0.83	0.04	0.05	0.82
Cl7(179)	6.80	29.71	19.24	18.96	9.41	1.74	1.94	0.08	0.09	0.87
Cl7(180)	20.01	202.52	101.94	120.11	41.97	5.95	9.20	0.05	0.06	1.69
Cl7(183)	7.35	33.48	22.19	27.03	11.84	1.90	2.42	0.05	0.06	0.07
Cl7(184)	0.26	0.49	0.61	0.93	0.33	0.05	0.06	0.04	0.04	0.16
Cl7(185)	0.94	5.58	4.56	4.17	2.00	0.40	0.55	0.05	0.06	0.07
Cl7(187)	19.44	193.34	50.06	57.29	27.88	4.66	4.48	0.05	0.05	1.75
Cl7(189)	0.12	2.37	3.20	3.54	1.46	0.12	0.12	0.08	0.09	0.10
Cl7(190)	2.23	10.00	7.46	12.73	5.33	0.65	0.69	0.06	0.07	0.08
Cl7(193)	1.52	5.97	4.00	5.94	2.95	0.53	0.43	0.03	0.03	0.04
Cl8(194)	9.20	38.66	31.76	34.63	16.67	2.52	2.19	0.04	0.05	1.15
Cl8(195)	2.84	13.08	10.60	12.17	6.21	0.98	1.02	0.04	0.05	0.06
Cl8(199)	14.45	51.12	45.11	39.06	21.39	3.17	2.20	0.08	0.09	3.87
Cl8(200)	1.09	4.36	3.40	3.63	2.03	0.34	0.31	0.09	0.10	0.12
Cl8(201)	1.67	5.27	5.05	6.23	2.47	0.52	0.32	0.09	0.10	0.68
Cl8(202)	2.24	7.68	6.91	5.97	3.67	0.56	0.37	0.06	0.07	1.07
Cl8(196)/(203)	8.34	34.45	29.20	29.91	14.62	2.00	2.01	0.02	0.03	1.29
Cl8(205)	0.73	2.49	2.61	2.82	1.94	0.03	0.03	0.02	0.02	0.02
Cl9(206)	20.04	48.66	123.35	45.20	24.78	2.97	0.89	0.08	0.28	9.13
Cl9(207)	2.41	6.11	10.62	14.73	4.56	0.61	0.13	0.07	0.08	0.31
Cl9(208)	6.78	15.85	23.18	17.89	11.03	0.97	0.22	0.06	0.12	3.04
Cl10(209)	216.72	480.61	900.34	613.83	449.61	29.14	3.31	0.04	0.92	33.10
Sum 117 congeners	22,868	141,006	30,586	122,175	46,978	2,664	735	7	37	137

STATION_ID	T171A	T171A	T171A	T171A	T171A	T171A	T171A	T171A	T171A	T171A
FIELD SAMPLE_ID	T171A 3-4FT	T171A 4-5FT	T171A 5-6FT	T171A 6-7FT	T171A 7-8FT	T171A 8-9FT	T171A 9-10FT	T171-A-PON	T171-A-MLK	T171-A-JIH
SAMPLE DEPTH (from bottom)	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-13	13-16	16-18.4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	22.61	25.47	40.71	49.52	79.57	49.56	91.61	54.51	44.50	16.62
Cl1(1)	0.07	0.07	0.06	0.07	0.10	0.11	25.38	25.54	7.81	0.07
Cl1(3)	0.03	0.04	0.03	0.03	0.05	0.06	13.83	17.44	6.80	0.03
Cl2(4)/(10)	0.12	0.12	0.11	0.12	52.93	54.62	103.30	140.09	22.23	4.34
Cl2(5)	0.11	0.11	0.10	0.11	0.16	0.18	0.19	12.24	0.12	0.11
Cl2(6)	0.08	0.09	0.08	11.29	456.99	139.93	171.34	651.46	33.34	6.95
Cl2(7)	0.06	0.06	0.06	0.06	3.61	4.54	7.94	28.54	3.01	0.06
Cl2(8)	0.10	0.11	0.10	9.21	188.27	180.23	220.78	391.23	35.75	8.07
Cl2(9)	0.08	0.08	0.07	0.08	7.80	8.19	14.88	46.31	4.01	0.08
Cl2(13)	0.08	0.08	0.07	6.37	130.68	58.01	69.92	215.18	21.44	3.07
Cl2(15)	0.14	0.14	0.13	2.57	45.86	56.59	118.79	168.56	30.47	5.72
Cl3(16)	0.10	0.11	5.99	28.72	563.43	368.87	682.62	739.25	73.12	18.27
Cl3(17)	0.06	0.06	7.53	38.89	739.93	505.27	706.19	1158.43	95.15	26.38
Cl3(18)	0.08	0.09	15.21	97.52	2291.18	1567.43	2156.19	2988.67	232.33	39.57
Cl3(19)	0.09	0.10	0.09	3.92	71.37	87.00	164.26	145.13	12.76	2.53
Cl3(22)	0.08	0.08	7.49	37.72	684.00	507.07	1449.21	916.93	110.70	17.87
Cl3(24)	0.06	0.06	0.06	0.06	4.25	5.02	9.96	16.28	0.07	0.06
Cl3(25)	0.06	0.06	2.64	54.55	1846.20	383.99	490.53	1913.50	155.50	20.55
Cl3(26)	0.08	0.09	3.29	51.13	1825.38	452.75	541.80	2605.53	167.39	26.33
Cl3(27)	0.05	0.05	0.05	3.07	48.90	50.54	105.98	111.63	9.97	2.34
Cl3(28)	0.10	5.80	22.99	117.50	2521.63	1260.11	2261.47	3211.33	315.81	59.96
Cl3(31)	0.05	6.61	24.76	141.98	2609.78	1514.54	4414.55	3991.70	391.72	69.74
Cl3(32)	0.04	0.04	3.34	19.68	383.24	303.50	432.41	544.52	50.25	15.03
Cl3(33)/(20)	0.10	5.90	13.44	51.16	959.48	885.14	1109.69	1362.69	143.09	27.09
Cl3(37)	0.09	0.10	4.90	15.40	232.65	273.03	737.87	377.23	65.72	20.14
Cl4(40)	0.11	0.11	5.74	28.84	550.01	463.38	593.65	725.10	79.99	25.53
Cl4(41)	0.06	0.06	0.06	3.72	137.58	198.78	358.12	133.09	20.09	7.14
Cl4(42)/(59)	0.08	0.08	14.09	71.27	1369.00	1043.91	1366.67	1624.85	200.38	36.38
Cl4(43)	0.07	0.07	0.06	7.94	186.76	122.64	288.39	290.21	27.62	7.16
Cl4(44)	12.63	22.34	37.23	164.10	3347.05	2706.22	3223.47	4373.57	449.38	86.34
Cl4(45)	0.06	0.06	5.54	29.25	573.47	459.47	594.81	746.94	73.78	23.12
Cl4(46)	0.10	0.11	2.62	12.76	257.92	206.33	236.43	347.09	41.14	9.60
Cl4(47)	2.53	4.79	9.36	43.14	816.83	624.53	694.97	1181.23	114.63	23.64
Cl4(48)	0.08	0.08	6.14	20.69	266.59	475.53	680.62	422.35	54.61	19.73
Cl4(49)	8.72	13.78	26.95	129.61	3033.03	1979.27	2463.46	4232.85	372.25	77.96
Cl4(51)	0.09	0.10	1.38	8.47	172.53	116.22	195.66	264.62	24.04	5.88
Cl4(52)	6.70	14.40	36.32	168.17	4146.03	2944.16	3722.39	5242.68	453.57	102.78
Cl4(53)	0.05	0.05	4.27	25.05	566.18	384.66	601.82	732.03	64.16	19.91
Cl4(54)	0.06	0.06	0.06	0.06	7.51	6.64	15.96	11.56	1.85	0.40
Cl4(56)	0.10	0.11	14.35	59.57	977.71	1022.71	1171.35	1184.38	173.17	35.67
Cl4(60)	0.09	0.10	0.09	4.17	126.41	250.85	359.95	167.88	30.91	14.15
Cl4(64)	0.03	2.86	14.36	73.21	1618.33	1307.08	1578.63	2049.03	217.23	41.55
Cl4(66)	5.23	12.05	29.86	107.99	1287.31	2210.37	3727.91	2095.12	312.68	71.66
Cl4(70)	5.37	14.62	48.01	156.25	2691.73	2894.01	3375.01	2939.91	446.79	93.50
Cl4(71)	0.08	1.97	8.94	47.82	961.87	738.34	908.83	1209.54	127.40	25.24
Cl4(74)	0.05	4.33	14.02	46.12	671.57	1118.20	1400.16	999.96	149.95	31.76
Cl4(77)	0.18	0.18	2.30	8.00	143.75	2.97	454.10	165.28	29.39	9.66
Cl4(81)	0.06	0.06	0.06	0.06	1.13	2.79	8.20	3.76	3.00	0.98
Cl5(82)	0.07	0.07	0.06	9.88	195.41	234.74	571.12	337.86	34.31	10.28
Cl5(83)/(119)	2.63	3.23	3.97	12.71	192.12	170.32	348.76	251.44	36.64	9.39
Cl5(84)	1.64	5.11	6.48	30.96	666.77	494.44	575.12	817.53	87.15	28.63
Cl5(85)	0.06	1.96	2.29	9.73	283.25	263.75	312.01	427.43	37.70	12.93
Cl5(87)	1.86	4.02	6.04	17.78	356.88	436.96	564.24	414.26	52.96	20.13
Cl5(91)	1.07	2.11	3.57	14.89	298.11	238.67	279.78	421.78	45.25	13.76
Cl5(92)	2.94	4.37	4.78	12.02	211.66	159.21	237.17	270.40	35.34	11.73
Cl5(95)	6.29	11.39	13.86	51.89	1066.33	865.29	1018.02	1353.09	147.87	29.00
Cl5(97)	2.50	4.71	6.32	21.53	372.55	416.84	519.24	490.02	66.86	21.09
Cl5(99)	5.58	9.16	13.04	25.72	367.22	436.68	459.66	492.66	62.60	23.17
Cl5(100)	0.06	0.06	0.63	0.84	8.30	5.80	15.01	15.14	1.65	0.51

STATION_ID	T171A	T171A	T171A	T171A	T171A	T171A	T171A	T171A	T171A	T171A
FIELD SAMPLE_ID	T171A 3-4FT	T171A 4-5FT	T171A 5-6FT	T171A 6-7FT	T171A 7-8FT	T171A 8-9FT	T171A 9-10FT	T171-A-PON	T171-A-MLK	T171-A-JIH
SAMPLE DEPTH (from bottom)	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-13	13-16	16-18.4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	6.62	12.81	14.78	34.15	404.50	560.86	644.06	698.05	90.22	22.93
Cl5(105)	0.09	2.52	4.10	9.41	246.71	317.25	389.91	312.69	45.06	16.38
Cl5(110)	10.05	18.28	21.61	77.14	1436.90	1243.78	1253.21	1915.59	214.33	51.33
Cl5(114)	0.14	0.14	0.13	0.13	4.08	13.54	41.40	10.33	0.15	0.14
Cl5(115)	0.12	0.12	0.11	0.12	11.01	16.42	44.09	21.33	2.43	0.66
Cl5(118)	6.29	11.40	17.06	30.83	462.84	643.60	1435.73	781.48	93.99	28.98
Cl5(107)/(123)	2.33	3.37	4.23	7.39	135.51	112.07	287.41	186.23	20.17	6.09
Cl5(124)	0.08	0.08	0.07	0.08	10.04	20.94	57.26	22.41	2.75	0.98
Cl5(126)	0.11	0.11	0.10	0.11	2.71	4.42	9.12	5.92	0.12	0.11
Cl6(128)	0.10	0.11	0.10	4.25	48.65	49.66	130.95	62.35	7.51	2.97
Cl6(130)	1.38	2.58	4.13	2.96	34.28	26.27	48.20	34.40	5.31	1.80
Cl6(134)	0.08	1.66	4.13	1.49	19.63	15.64	34.56	24.57	3.23	1.03
Cl6(135)	1.27	1.71	1.51	2.72	50.02	33.29	60.09	48.62	7.27	2.70
Cl6(136)	2.83	4.10	9.21	3.55	40.35	32.36	62.73	45.19	6.41	2.04
Cl6(137)	1.86	3.18	11.87	0.13	7.96	12.57	32.04	12.14	1.74	0.88
Cl6(138)	2.77	6.30	7.92	8.76	133.79	152.99	314.54	132.92	21.28	8.21
Cl6(141)	0.06	0.06	0.06	0.06	15.58	26.63	56.77	19.64	3.54	1.60
Cl6(144)	0.12	0.12	0.11	0.12	7.62	9.87	20.28	8.00	1.31	0.46
Cl6(146)	2.22	2.81	3.72	4.85	62.64	45.58	75.32	51.53	9.89	3.34
Cl6(149)	4.83	8.42	7.19	12.94	180.87	151.21	174.39	152.96	32.57	11.71
Cl6(151)	1.39	2.37	2.16	3.83	51.83	48.77	71.31	53.33	9.32	3.45
Cl6(132)/(153)/(168)	5.86	10.42	8.17	14.15	218.86	227.78	197.02	204.25	35.47	13.14
Cl6(156)	1.70	3.47	10.02	1.72	12.05	20.58	51.24	17.49	2.78	1.49
Cl6(157)	0.10	0.11	0.10	0.10	4.06	6.14	15.10	6.90	0.95	0.10
Cl6(129)/(158)	0.86	1.15	1.82	1.66	14.15	19.06	46.31	23.47	3.52	1.50
Cl6(163)	1.16	2.03	2.57	2.89	48.70	40.93	86.93	52.92	8.03	2.52
Cl6(164)	0.07	2.26	0.06	1.36	14.69	16.59	33.90	16.56	2.77	1.10
Cl6(166)	0.11	0.11	4.58	0.11	0.16	0.18	2.56	0.19	0.12	0.11
Cl6(167)	0.07	0.07	0.06	1.81	6.95	9.29	22.55	9.79	1.91	0.07
Cl6(169)	0.14	0.15	0.14	0.14	0.75	0.28	0.36	0.31	0.16	0.15
Cl7(170)	1.21	1.83	3.08	2.31	31.52	30.57	82.23	27.07	5.19	2.34
Cl7(171)	0.06	0.58	0.06	0.69	11.54	8.50	16.40	8.02	1.54	0.79
Cl7(172)	0.08	0.08	0.07	1.49	10.58	8.14	13.24	7.20	1.54	0.50
Cl7(174)	1.20	2.08	3.28	2.59	41.96	36.16	55.51	24.13	6.25	2.71
Cl7(176)	1.53	2.47	8.92	1.63	7.56	5.42	8.04	4.01	1.15	0.60
Cl7(177)	0.08	0.08	0.07	2.41	34.59	25.52	38.41	23.37	5.54	2.46
Cl7(178)	0.06	1.49	1.52	1.98	15.60	9.22	12.37	8.05	2.12	0.89
Cl7(179)	1.49	2.11	5.22	2.21	25.30	18.48	24.39	11.62	3.64	1.46
Cl7(180)	3.02	4.78	9.61	5.59	88.27	66.05	159.50	54.81	12.18	5.96
Cl7(183)	0.08	3.85	14.80	3.49	26.50	21.67	32.69	15.33	3.67	1.76
Cl7(184)	0.30	0.45	1.61	0.38	0.46	0.40	0.97	0.47	0.21	0.05
Cl7(185)	0.08	0.08	0.07	0.08	4.48	4.01	5.82	2.31	0.62	0.34
Cl7(187)	2.39	3.72	5.91	5.02	74.45	46.32	70.27	37.55	9.41	4.25
Cl7(189)	0.11	0.11	0.10	0.11	2.26	2.12	4.23	2.00	0.12	0.11
Cl7(190)	0.08	0.09	0.08	0.08	7.41	6.87	13.91	6.79	1.22	0.60
Cl7(193)	0.04	0.60	0.04	0.64	5.37	3.73	5.83	4.02	0.87	0.26
Cl8(194)	1.13	1.80	2.22	3.35	31.71	25.31	40.26	22.15	4.16	1.97
Cl8(195)	0.06	0.06	0.06	1.00	10.25	8.38	13.53	8.09	1.72	0.55
Cl8(199)	5.43	6.67	10.51	11.07	45.22	35.14	48.90	27.42	5.94	2.37
Cl8(200)	0.28	0.45	0.12	0.53	4.02	3.09	4.20	2.70	0.57	0.24
Cl8(201)	0.13	0.13	0.12	1.79	4.98	3.59	6.67	3.43	0.62	0.41
Cl8(202)	1.63	1.69	1.83	1.91	6.90	4.99	7.61	4.35	1.09	0.52
Cl8(196)/(203)	1.64	2.28	3.73	3.38	29.02	22.79	36.86	19.89	3.88	1.94
Cl8(205)	0.79	0.03	0.02	0.03	2.25	1.77	2.25	2.11	0.03	0.03
Cl9(206)	12.13	13.43	67.94	27.12	82.68	43.49	107.87	30.94	6.02	2.12
Cl9(207)	0.31	0.56	1.50	1.12	5.70	4.35	17.85	5.36	0.68	0.33
Cl9(208)	4.28	4.68	8.86	8.00	15.95	13.31	27.26	11.76	2.16	0.69
Cl10(209)	81.55	116.44	236.47	170.15	413.53	420.02	1092.14	399.74	36.64	21.13
Sum 117 congeners	245	433	985	2,605	48,325	38,426	56,578	63,920	6,818	1,570

STATION_ID	T171A	T171B	T171B	T171B	T171B	T171B	T171B	T171B	T171B	T171B
FIELD SAMPLE_ID	71A 18.4-19.4	T171B 0-1FT	T171-B-YX	171B 2.3-3F	T171B 3-4FT	T171B 4-5FT	T171-B-TS	171B 6.3-6.5F	T171-B-QP	T171B 8-9FT
SAMPLE DEPTH (from bottom)	18.4-19.4	0-1	1-2.3	2.3-3	3-4	4-5	5-6.3	6.3-6.5	6.5-8	8-9
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	5.14	0.72	1.19	34.93	54.59	46.35	88.07	29.64	95.53	33.13
Cl1(1)	0.07	0.05	0.04	0.07	0.07	0.07	0.07	0.06	0.08	14.70
Cl1(3)	0.03	0.02	0.02	0.03	0.04	0.03	0.04	0.03	0.04	9.51
Cl2(4)/(10)	1.14	0.09	0.08	0.12	0.12	0.12	0.12	0.10	0.14	69.43
Cl2(5)	0.11	0.08	0.07	0.11	0.11	0.11	0.11	0.09	0.13	0.22
Cl2(6)	1.79	0.06	0.28	0.08	0.09	0.09	0.09	7.92	69.21	372.14
Cl2(7)	0.06	0.04	0.04	0.06	0.06	0.06	0.06	0.05	0.07	5.55
Cl2(8)	2.43	0.07	0.23	0.10	0.11	3.44	0.11	7.73	46.40	212.26
Cl2(9)	0.08	0.06	0.05	0.07	0.08	0.08	0.08	0.06	0.09	11.51
Cl2(13)	0.97	0.06	0.05	0.07	0.08	0.08	0.08	0.06	34.56	121.75
Cl2(15)	1.69	0.10	0.09	0.13	0.14	0.14	0.14	0.12	19.36	98.64
Cl3(16)	4.99	0.53	0.69	0.10	0.11	8.22	10.82	21.99	129.07	612.26
Cl3(17)	5.74	1.02	0.69	0.06	0.06	9.04	12.59	29.44	177.55	849.85
Cl3(18)	14.76	1.71	1.44	0.08	4.03	20.63	25.85	65.74	493.33	1672.91
Cl3(19)	0.90	0.07	0.06	0.09	0.10	0.09	0.10	2.83	24.01	71.68
Cl3(22)	8.76	1.06	0.65	0.07	0.08	11.73	15.68	30.14	159.70	707.51
Cl3(24)	0.06	0.04	0.04	0.06	0.06	0.06	0.06	0.05	0.07	6.48
Cl3(25)	7.54	0.98	0.86	0.06	0.06	4.00	4.04	36.92	218.49	1381.06
Cl3(26)	10.25	1.23	0.96	0.08	0.09	4.21	5.62	36.74	245.31	1445.32
Cl3(27)	0.77	0.04	0.03	0.05	0.05	0.05	0.05	1.97	17.54	76.91
Cl3(28)	26.07	2.56	1.71	0.10	5.36	31.81	37.69	84.36	553.72	2869.95
Cl3(31)	28.80	2.96	2.23	0.05	5.89	34.06	46.41	102.42	660.13	3530.63
Cl3(32)	3.76	0.42	0.32	0.04	0.04	4.48	6.09	15.09	94.26	449.53
Cl3(33)/(20)	11.25	1.30	0.99	0.10	5.87	17.78	24.79	36.37	225.42	1104.62
Cl3(37)	5.06	0.07	0.45	0.09	0.10	6.50	8.18	15.69	68.02	310.39
Cl4(40)	5.93	0.58	0.07	0.11	0.11	6.82	11.71	24.73	142.85	642.32
Cl4(41)	3.15	0.04	0.04	0.06	0.06	0.06	3.72	5.19	27.81	175.01
Cl4(42)/(59)	15.62	1.33	0.96	0.07	0.08	21.28	26.96	54.22	281.86	1637.66
Cl4(43)	1.49	0.05	0.04	0.07	0.07	0.07	4.14	6.52	42.43	177.33
Cl4(44)	36.48	3.31	2.31	12.06	18.12	49.31	63.75	123.58	709.26	4051.65
Cl4(45)	5.60	0.54	0.45	0.06	0.06	7.35	10.75	23.99	129.42	601.21
Cl4(46)	2.58	0.07	0.07	0.10	0.11	0.10	4.50	9.11	64.84	291.27
Cl4(47)	9.43	0.85	0.55	2.00	0.08	14.11	19.89	37.28	198.86	983.80
Cl4(48)	5.98	0.62	0.34	0.07	0.08	7.98	13.91	19.73	114.18	444.07
Cl4(49)	29.12	2.51	1.77	5.63	9.22	40.23	46.49	94.85	661.77	3624.69
Cl4(51)	1.38	0.23	0.06	0.09	0.10	2.20	2.84	5.85	42.59	182.45
Cl4(52)	38.23	3.37	2.39	6.49	11.50	46.08	64.01	126.26	868.61	2888.60
Cl4(53)	4.71	0.49	0.38	0.05	0.05	6.20	8.58	20.63	126.59	630.53
Cl4(54)	0.06	0.04	0.04	0.06	0.06	0.06	0.06	0.05	2.49	9.36
Cl4(56)	15.62	1.43	0.83	0.10	0.11	19.34	27.30	48.33	241.65	1369.75
Cl4(60)	5.87	0.07	0.16	0.09	0.10	0.09	3.58	7.15	26.46	184.90
Cl4(64)	19.16	1.58	1.19	0.03	2.88	19.97	30.43	60.33	322.84	1840.03
Cl4(66)	30.48	2.34	1.58	5.49	8.80	43.47	67.67	94.78	507.15	2368.12
Cl4(70)	38.69	3.04	2.04	6.30	9.99	61.09	86.39	131.85	672.99	3596.17
Cl4(71)	10.59	0.93	0.61	0.07	2.22	13.45	18.61	39.55	198.15	1150.39
Cl4(74)	16.19	1.16	0.78	0.05	3.08	17.59	31.32	44.38	216.76	1060.82
Cl4(77)	3.01	0.13	0.12	0.17	0.18	4.12	5.49	9.25	51.23	190.47
Cl4(81)	0.06	0.04	0.04	0.06	0.06	0.06	0.06	0.05	0.07	1.97
Cl5(82)	3.17	0.05	0.04	0.07	0.07	2.74	6.26	9.82	47.85	317.28
Cl5(83)/(119)	2.14	0.07	0.06	2.50	2.44	4.32	6.78	9.66	54.21	297.84
Cl5(84)	7.15	0.59	0.50	2.47	3.22	9.85	14.90	24.78	147.36	860.13
Cl5(85)	4.04	0.04	0.04	0.06	0.06	2.73	5.24	11.62	82.87	389.03
Cl5(87)	7.27	0.59	0.24	2.78	4.20	5.30	13.95	18.24	95.00	478.16
Cl5(91)	3.06	0.34	0.29	1.21	1.78	4.54	7.95	13.08	70.22	314.47
Cl5(92)	2.35	0.06	0.28	2.71	3.57	6.02	8.83	9.80	40.66	300.53
Cl5(95)	13.35	1.12	0.87	6.13	8.50	18.94	30.15	41.38	218.41	1253.45
Cl5(97)	6.10	0.73	0.39	2.37	3.49	7.52	13.50	19.93	99.56	436.55
Cl5(99)	6.78	0.52	0.43	6.73	8.95	12.20	20.19	22.40	115.02	567.27
Cl5(100)	0.06	0.04	0.04	0.06	0.06	0.06	0.64	0.05	2.82	11.21

STATION_ID	T171A	T171B	T171B	T171B	T171B	T171B	T171B	T171B	T171B	T171B
FIELD SAMPLE_ID	71A 18.4-19.4	T171B 0-1FT	T171-B-YX	T171B 2.3-3FT	T171B 3-4FT	T171B 4-5FT	T171-B-TS	171B 6.3-6.5F	T171-B-QP	T171B 8-9FT
SAMPLE DEPTH (from bottom)	18.4-19.4	0-1	1-2.3	2.3-3	3-4	4-5	5-6.3	6.3-6.5	6.5-8	8-9
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	11.53	0.81	0.48	7.96	10.24	18.39	30.68	33.78	161.13	863.84
Cl5(105)	6.26	0.40	0.32	0.09	3.63	3.80	9.26	12.25	61.07	292.22
Cl5(110)	20.35	1.70	1.16	11.11	13.66	28.29	44.74	64.50	306.71	1743.71
Cl5(114)	0.14	0.10	0.09	0.13	0.14	0.14	0.14	0.12	0.15	0.27
Cl5(115)	0.33	0.09	0.08	0.12	0.12	0.12	1.27	0.89	2.69	10.23
Cl5(118)	10.49	0.73	0.63	7.76	10.21	16.08	27.20	28.96	162.05	698.62
Cl5(107)/(123)	1.93	0.09	0.08	3.02	3.18	5.20	4.55	4.60	24.99	141.72
Cl5(124)	0.08	0.06	0.05	0.07	0.08	0.08	0.08	0.06	3.16	17.67
Cl5(126)	0.11	0.08	0.07	0.11	0.11	0.11	0.11	0.09	0.13	4.09
Cl6(128)	1.40	0.07	0.07	0.10	0.11	0.10	0.11	2.66	13.81	77.28
Cl6(130)	0.65	0.07	0.07	2.65	3.26	3.69	3.54	2.17	10.51	50.65
Cl6(134)	0.55	0.06	0.06	0.08	0.09	1.46	2.12	1.16	5.20	27.68
Cl6(135)	1.40	0.07	0.06	1.50	1.75	2.01	2.41	2.11	12.82	63.20
Cl6(136)	1.71	0.02	0.12	5.02	4.85	3.66	5.55	2.20	11.26	56.64
Cl6(137)	0.14	0.10	0.09	5.20	0.14	3.60	6.31	0.12	3.16	13.80
Cl6(138)	7.45	0.18	0.07	5.45	8.01	6.31	9.89	7.09	38.39	172.49
Cl6(141)	2.77	0.04	0.04	2.13	0.06	0.06	0.06	0.05	4.31	22.17
Cl6(144)	0.66	0.09	0.08	0.12	0.12	0.12	0.80	0.49	2.50	13.49
Cl6(146)	1.65	0.02	0.02	2.56	1.89	3.16	4.28	2.77	19.99	91.66
Cl6(149)	10.02	0.20	0.24	6.23	8.16	8.12	12.43	9.56	46.14	225.70
Cl6(151)	3.39	0.07	0.07	1.90	2.33	2.66	3.66	2.54	17.11	86.99
Cl6(132)/(153)/(168)	12.66	0.21	0.24	7.13	9.25	10.14	14.63	10.45	58.88	241.92
Cl6(156)	1.00	0.02	0.02	4.84	5.88	2.99	6.06	0.70	4.46	19.03
Cl6(157)	0.10	0.07	0.07	0.10	2.72	0.10	0.11	0.09	1.14	8.48
Cl6(129)/(158)	1.11	0.07	0.06	0.09	1.58	0.09	2.02	0.88	4.34	18.88
Cl6(163)	2.10	0.07	0.11	1.45	1.70	2.18	2.71	2.12	13.05	60.96
Cl6(164)	0.91	0.05	0.04	0.07	0.07	0.07	0.07	0.87	4.90	23.96
Cl6(166)	0.11	0.08	0.07	0.11	0.11	0.11	0.11	0.09	0.13	0.22
Cl6(167)	0.44	0.05	0.04	0.07	0.07	4.80	8.38	0.06	3.55	14.16
Cl6(169)	0.15	0.10	0.09	0.14	0.15	0.15	0.15	0.12	1.15	0.26
Cl7(170)	3.49	0.06	0.05	2.10	3.16	2.32	3.13	1.62	9.83	51.65
Cl7(171)	1.22	0.04	0.04	0.06	1.33	0.06	1.76	0.52	3.02	16.20
Cl7(172)	0.68	0.06	0.05	0.07	0.08	0.08	0.08	0.74	3.97	15.85
Cl7(174)	4.76	0.03	0.03	1.95	2.37	2.15	2.99	1.67	12.39	63.58
Cl7(176)	0.69	0.05	0.04	4.34	4.72	2.95	4.87	0.75	2.52	10.09
Cl7(177)	2.63	0.06	0.05	0.07	0.08	0.08	3.45	1.67	10.48	48.48
Cl7(178)	0.97	0.04	0.04	0.06	0.06	1.25	1.38	1.19	5.14	18.33
Cl7(179)	2.05	0.08	0.07	2.69	3.09	2.51	3.64	1.21	7.05	32.73
Cl7(180)	10.36	0.06	0.05	5.34	6.84	5.98	8.52	3.53	22.31	83.78
Cl7(183)	2.64	0.06	0.05	7.18	8.93	0.08	9.35	1.55	8.47	39.82
Cl7(184)	0.05	0.04	0.03	0.74	0.79	0.75	0.88	0.18	0.54	0.55
Cl7(185)	0.51	0.06	0.05	0.07	0.08	0.08	0.08	0.06	1.40	6.50
Cl7(187)	5.36	0.05	0.04	4.51	4.67	4.56	6.57	2.93	19.16	90.44
Cl7(189)	0.11	0.08	0.07	0.11	0.11	0.11	0.11	0.09	0.93	2.47
Cl7(190)	0.85	0.06	0.06	0.08	0.09	0.09	0.09	0.07	2.51	11.75
Cl7(193)	0.29	0.03	0.03	0.04	1.31	0.04	1.55	0.32	1.60	7.87
Cl8(194)	2.11	0.04	0.04	1.67	1.79	2.62	3.35	1.65	10.27	49.44
Cl8(195)	0.89	0.04	0.04	0.06	0.06	1.50	0.23	0.05	3.38	14.68
Cl8(199)	2.44	0.08	0.07	6.66	7.17	8.09	9.40	5.57	26.17	62.47
Cl8(200)	0.35	0.09	0.08	0.12	0.13	0.83	0.13	0.21	1.32	5.39
Cl8(201)	0.40	0.09	0.08	3.84	0.13	3.12	4.34	0.51	2.17	6.73
Cl8(202)	0.41	0.06	0.06	1.56	1.37	2.00	1.87	0.93	3.55	8.86
Cl8(196)/(203)	2.01	0.02	0.02	2.89	3.47	2.84	3.93	1.58	9.66	41.66
Cl8(205)	0.03	0.02	0.02	1.30	1.84	1.54	1.80	0.02	0.03	3.00
Cl9(206)	0.67	0.08	0.38	19.82	22.05	18.90	26.80	14.06	91.51	70.33
Cl9(207)	0.10	0.07	0.07	1.01	1.47	3.93	2.99	0.67	2.39	7.70
Cl9(208)	0.20	0.07	0.13	5.91	6.52	9.00	9.26	4.08	15.11	19.91
Cl10(209)	2.13	0.53	2.63	139.49	233.23	310.12	400.11	97.60	363.11	550.26
Sum 117 congeners	642	51	41	359	537	1,128	1,596	2,003	11,500	55,736

STATION_ID	T171B	T171B	T171B	T171B	T171B	T171B	T172A	T172A	T172A	T172A
FIELD SAMPLE_ID	T171B 9-10FT	171B 10-11F	T171-B-LKJ	T171-B-IHG	71B 17.2-17.6	71B 17.6-18.2	T172A 0-1FT	T172A 1-2FT	T172A 2-3FT	T172A 3-4FT
SAMPLE DEPTH (from bottom)	9-10	10-11	11-14	14-17.2	17.2-17.6	17.6-18.2	0-1	1-2	2-3	3-4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	31.10	96.61	62.81	22.68	3.43	2.01	2.36	15.34	17.12	15.33
Cl1(1)	14.09	31.28	18.93	0.07	0.05	0.05	0.05	0.06	0.07	0.07
Cl1(3)	9.42	20.83	13.56	0.03	0.03	0.03	0.03	0.03	0.04	0.03
Cl2(4)/(10)	60.60	116.66	114.03	3.43	0.95	0.09	0.09	0.11	0.13	0.12
Cl2(5)	0.23	6.36	10.28	0.11	0.09	0.09	0.09	0.10	0.12	0.11
Cl2(6)	99.02	22.09	256.68	12.01	1.37	0.71	0.50	0.08	0.09	0.09
Cl2(7)	5.59	13.92	20.34	0.06	0.05	0.05	0.05	0.05	0.06	0.06
Cl2(8)	150.16	19.87	311.31	13.72	2.35	0.88	0.26	0.09	0.11	2.26
Cl2(9)	8.44	21.86	32.56	1.05	0.06	0.06	0.06	0.07	0.08	0.08
Cl2(13)	51.50	5.33	94.89	5.15	0.06	0.06	0.06	0.07	0.08	0.08
Cl2(15)	90.55	131.04	158.21	11.54	1.54	0.59	0.11	0.12	0.14	0.14
Cl3(16)	466.26	56.16	514.94	34.78	6.33	2.41	0.74	0.09	0.11	0.10
Cl3(17)	521.77	69.94	726.11	35.92	7.48	2.78	1.02	1.11	2.85	4.57
Cl3(18)	1419.91	229.22	1851.87	96.94	20.02	7.17	2.34	2.15	4.19	9.84
Cl3(19)	75.36	12.34	90.27	4.09	0.92	0.49	0.07	0.08	0.10	0.10
Cl3(22)	520.53	66.83	656.10	32.71	11.18	3.34	1.26	0.07	0.08	6.61
Cl3(24)	8.16	9.57	11.58	0.06	0.05	0.05	0.44	0.05	0.06	0.06
Cl3(25)	335.71	64.78	865.28	39.66	7.28	2.39	1.67	2.40	0.06	8.58
Cl3(26)	372.11	87.14	1003.39	47.02	10.19	3.81	1.99	2.93	0.09	6.72
Cl3(27)	57.31	5.99	53.50	4.04	0.91	0.35	0.04	0.05	0.05	0.05
Cl3(28)	1847.59	222.14	2221.12	125.19	33.23	9.41	3.23	2.90	4.77	12.26
Cl3(31)	1972.43	277.40	2486.70	141.88	38.61	11.18	4.03	3.21	5.26	14.56
Cl3(32)	294.56	40.60	364.47	24.89	5.17	1.60	0.59	0.04	0.05	2.26
Cl3(33)/(20)	878.64	102.13	1019.68	61.35	13.51	4.35	1.80	2.55	4.06	7.33
Cl3(37)	330.27	24.66	313.84	27.62	6.74	1.73	0.69	0.08	0.10	0.10
Cl4(40)	447.08	56.14	489.16	26.12	9.24	2.67	0.93	0.10	0.12	0.11
Cl4(41)	240.94	18.52	117.73	12.27	4.33	1.28	0.30	0.05	0.06	0.06
Cl4(42)/(59)	997.61	117.51	1194.53	74.64	21.19	5.46	1.79	0.07	0.08	9.08
Cl4(43)	141.76	14.89	161.34	9.04	2.21	0.59	0.05	0.06	0.07	0.07
Cl4(44)	2527.03	333.64	3009.22	177.21	39.20	15.44	4.53	8.20	17.55	25.92
Cl4(45)	452.53	68.92	470.15	30.26	7.91	2.26	0.69	0.05	0.06	3.34
Cl4(46)	199.78	28.59	207.83	15.31	3.50	1.05	0.08	0.09	0.11	0.10
Cl4(47)	626.63	78.03	798.49	44.34	13.11	3.46	1.11	0.07	3.53	5.55
Cl4(48)	473.51	51.63	389.82	25.74	8.71	2.59	0.51	0.07	0.08	2.58
Cl4(49)	1983.98	268.35	2632.14	150.58	38.79	11.25	3.66	5.31	9.45	18.84
Cl4(51)	127.50	14.30	167.97	9.10	2.22	0.74	0.30	0.08	0.10	0.10
Cl4(52)	3047.40	388.00	3546.22	206.47	44.12	16.18	4.64	5.58	8.83	21.13
Cl4(53)	417.15	55.29	483.08	28.12	7.11	2.27	0.72	0.05	0.05	2.42
Cl4(54)	7.48	14.59	7.70	0.72	0.05	0.05	0.05	0.05	0.06	0.06
Cl4(56)	1097.06	121.48	995.38	61.11	21.75	5.64	1.58	1.48	0.11	6.88
Cl4(60)	199.73	25.96	172.11	22.77	8.21	1.87	0.40	0.08	0.10	0.10
Cl4(64)	1208.66	150.53	1360.75	76.66	25.75	7.47	2.11	2.08	3.13	7.79
Cl4(66)	2141.60	207.47	1990.71	126.54	40.92	10.64	2.84	3.41	7.52	14.32
Cl4(70)	2804.10	298.78	2639.36	160.88	40.15	13.86	3.60	4.42	9.08	18.40
Cl4(71)	681.03	85.06	825.16	53.54	14.88	4.17	1.23	1.21	0.08	4.93
Cl4(74)	1086.07	109.46	950.25	54.86	22.82	5.32	1.30	1.02	3.25	5.52
Cl4(77)	172.15	12.62	154.81	13.55	3.63	0.94	0.14	0.16	0.19	0.18
Cl4(81)	2.51	6.34	2.59	0.06	0.05	0.05	0.05	0.05	0.06	0.06
Cl5(82)	208.07	22.31	208.66	17.11	4.29	1.08	0.05	0.06	0.07	0.07
Cl5(83)/(119)	204.59	17.11	172.34	18.63	2.48	0.76	0.33	0.08	2.18	3.27
Cl5(84)	437.48	78.05	543.58	30.80	8.76	2.47	0.85	1.01	2.78	3.86
Cl5(85)	317.63	584.14	264.01	18.39	4.52	1.31	0.40	0.05	0.06	0.06
Cl5(87)	474.25	41.29	322.10	23.11	8.63	2.49	0.70	1.04	2.28	3.66
Cl5(91)	229.90	29.64	281.72	20.70	4.39	1.22	0.37	0.55	1.40	2.45
Cl5(92)	215.60	13.17	212.18	25.69	3.21	1.06	0.42	0.79	2.65	4.57
Cl5(95)	754.91	95.31	1001.80	60.15	16.14	5.11	1.43	2.33	5.64	9.65
Cl5(97)	440.01	38.40	402.23	25.82	7.57	2.07	0.68	1.18	2.38	4.16
Cl5(99)	532.22	46.89	407.04	34.18	8.47	2.28	0.60	1.76	4.69	6.94
Cl5(100)	7.12	15.03	10.10	0.55	0.05	0.05	0.05	0.05	0.06	0.41

STATION_ID	T171B	T171B	T171B	T171B	T171B	T171B	T172A	T172A	T172A	T172A
FIELD SAMPLE_ID	T171B 9-10FT	T171B 10-11F	T171-B-LKJ	T171-B-IHG	71B 17.2-17.6	71B 17.6-18.2	T172A 0-1FT	T172A 1-2FT	T172A 2-3FT	T172A 3-4FT
SAMPLE DEPTH (from bottom)	9-10	10-11	11-14	14-17.2	17.2-17.6	17.6-18.2	0-1	1-2	2-3	3-4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	660.23	69.06	626.55	63.03	12.88	3.53	0.85	2.43	6.32	9.38
Cl5(105)	290.18	32.35	275.71	24.82	7.33	2.07	0.52	0.08	0.10	2.53
Cl5(110)	1267.29	121.53	1269.90	86.26	23.02	6.43	2.27	4.00	10.47	15.12
Cl5(114)	11.98	23.41	9.31	0.57	0.11	0.72	0.67	0.12	0.14	0.14
Cl5(115)	15.96	29.88	11.57	0.87	0.59	0.16	0.09	0.11	0.13	0.12
Cl5(118)	687.84	53.59	569.62	37.43	11.61	2.88	0.90	2.09	6.09	8.12
Cl5(107)/(123)	162.71	10.46	119.48	10.23	1.98	0.37	0.10	0.11	0.14	2.80
Cl5(124)	25.02	48.60	19.01	1.54	0.53	0.06	0.06	0.07	0.08	0.08
Cl5(126)	3.75	8.80	3.42	0.11	0.09	0.09	0.09	0.10	0.12	0.11
Cl6(128)	67.75	111.50	42.42	6.35	1.01	0.39	0.08	0.09	0.11	0.10
Cl6(130)	34.89	45.65	21.35	5.92	0.49	0.08	0.08	0.09	0.11	2.01
Cl6(134)	21.94	31.96	16.59	4.23	0.07	0.07	0.07	0.08	0.09	0.09
Cl6(135)	40.42	60.12	30.57	17.65	0.68	0.36	0.07	0.35	1.12	2.63
Cl6(136)	40.67	59.74	29.50	13.31	0.61	0.41	0.13	0.65	2.25	3.27
Cl6(137)	15.98	25.59	9.97	1.30	0.38	0.11	0.11	0.12	2.44	3.10
Cl6(138)	134.43	14.07	148.32	40.15	2.62	1.47	0.09	0.10	3.63	5.07
Cl6(141)	29.01	49.11	16.43	14.30	0.78	0.67	0.05	0.05	0.06	0.06
Cl6(144)	12.72	17.18	5.82	2.56	0.09	0.09	0.09	0.11	0.13	0.12
Cl6(146)	59.29	71.97	35.34	23.33	0.59	0.36	0.02	0.61	1.90	3.49
Cl6(149)	156.75	12.63	115.60	75.58	3.38	2.25	0.31	1.19	4.51	10.50
Cl6(151)	59.93	74.71	34.05	27.45	0.89	0.82	0.08	0.33	1.68	4.11
Cl6(132)/(153)/(168)	168.45	17.44	150.60	78.18	3.98	2.64	0.20	1.53	5.02	10.79
Cl6(156)	23.74	40.23	14.40	4.56	0.49	0.20	0.02	0.02	2.21	3.66
Cl6(157)	8.57	11.89	5.21	0.10	0.08	0.08	0.08	0.09	0.11	0.10
Cl6(129)/(158)	20.24	39.83	15.74	5.12	0.55	0.07	0.07	0.08	0.10	0.10
Cl6(163)	43.12	62.29	32.35	23.44	0.63	0.47	0.07	0.08	0.99	2.25
Cl6(164)	20.41	30.61	12.13	5.71	0.44	0.05	0.05	0.06	0.07	0.07
Cl6(166)	0.23	4.10	0.18	0.11	0.09	0.09	0.09	0.10	0.12	0.11
Cl6(167)	15.71	19.62	8.24	3.09	0.05	0.05	0.05	0.06	0.07	0.07
Cl6(169)	0.50	0.44	0.29	0.18	0.11	0.11	0.11	0.13	0.15	0.15
Cl7(170)	43.14	69.52	18.93	32.97	0.90	0.49	0.06	0.07	1.46	4.20
Cl7(171)	12.61	17.35	5.27	9.54	0.26	0.23	0.05	0.05	0.06	1.64
Cl7(172)	11.95	14.96	5.49	7.04	0.30	0.18	0.06	0.07	1.40	2.33
Cl7(174)	50.14	56.16	18.24	41.35	0.70	0.75	0.03	0.04	2.12	6.46
Cl7(176)	7.10	6.97	2.72	6.67	0.18	0.11	0.05	0.30	1.16	2.32
Cl7(177)	32.98	40.19	15.74	29.42	0.66	0.45	0.06	0.07	1.14	4.49
Cl7(178)	12.81	12.78	5.68	10.40	0.27	0.21	0.05	0.27	1.08	2.97
Cl7(179)	25.87	21.36	8.79	22.75	0.38	0.32	0.09	0.27	1.80	4.73
Cl7(180)	80.27	160.53	40.06	79.05	1.68	1.51	0.06	0.70	4.74	14.64
Cl7(183)	29.89	32.63	10.77	24.08	0.46	0.41	0.06	0.07	2.18	5.62
Cl7(184)	0.75	1.25	0.42	0.05	0.04	0.04	0.04	0.05	0.28	0.31
Cl7(185)	6.42	6.00	1.87	5.40	0.16	0.17	0.06	0.07	0.08	1.03
Cl7(187)	66.41	63.87	24.72	44.82	1.00	0.99	0.05	0.50	3.81	11.77
Cl7(189)	3.72	5.84	1.95	1.45	0.09	0.09	0.09	0.10	0.12	1.59
Cl7(190)	10.42	16.76	4.89	7.73	0.07	0.19	0.07	0.08	0.09	0.93
Cl7(193)	5.51	8.07	2.60	4.91	0.03	0.03	0.03	0.04	0.05	0.78
Cl8(194)	43.63	50.22	15.75	22.85	0.65	0.35	0.05	0.05	2.52	5.90
Cl8(195)	12.79	15.73	5.19	8.48	0.05	0.05	0.05	0.05	0.06	2.68
Cl8(199)	60.38	51.54	19.83	19.65	0.73	0.48	0.09	1.31	6.69	13.38
Cl8(200)	5.25	4.55	1.86	3.11	0.10	0.10	0.10	0.11	0.53	0.93
Cl8(201)	6.98	7.41	2.78	3.19	0.10	0.10	0.10	0.11	1.31	2.54
Cl8(202)	9.21	6.98	3.49	3.81	0.07	0.07	0.07	0.45	1.82	2.52
Cl8(196)/(203)	39.83	39.19	14.20	22.50	0.03	0.32	0.03	0.03	2.93	7.00
Cl8(205)	3.13	3.53	0.04	1.39	0.02	0.02	0.02	0.02	0.03	0.84
Cl9(206)	124.49	68.53	23.93	6.60	0.55	0.22	0.12	3.77	15.22	23.99
Cl9(207)	11.97	19.52	5.17	1.21	0.08	0.08	0.08	0.09	0.53	0.71
Cl9(208)	30.14	26.45	10.42	1.71	0.13	0.07	0.07	1.20	4.58	6.54
Cl10(209)	824.15	875.59	423.03	38.18	2.19	0.69	0.53	14.68	83.49	86.76
Sum 117 congeners	40,167	8,067	44,145	3,416	705	225	69	101	302	573

STATION_ID	T172A	T172A	T172A	T172A	T172A	T172A	T172A	T172A	T172A	T172B
FIELD SAMPLE_ID	T172A 4-5FT	T172A 5-6FT	T172A 6-7FT	T172A 7-8FT	T172-A-RQP	T172-A-ON	l72A 13-13.8l	T172-A-LKJI	72A 16.5-17.5	T172B 0-0.5F
SAMPLE DEPTH (from bottom)	4-5	5-6	6-7	7-8	8-11	11-13	13-13.8	13.8-16.5	16.5-17.5	0-0.5
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	47.06	69.24	28.57	88.22	68.26	43.46	5.74	19.73	3.88	1.00
Cl1(1)	0.09	14.77	14.27	21.78	33.19	0.07	0.06	0.08	0.07	0.05
Cl1(3)	0.04	10.61	8.79	12.41	21.43	0.04	0.03	0.04	0.04	0.02
Cl2(4)/(10)	24.89	77.86	62.49	91.04	207.76	19.58	3.82	0.13	0.13	0.08
Cl2(5)	0.14	0.18	0.21	2.51	19.06	0.12	0.09	0.12	0.12	0.08
Cl2(6)	211.59	316.61	125.68	386.61	783.20	34.80	4.80	5.74	1.12	0.06
Cl2(7)	2.02	7.11	5.23	6.64	35.41	3.74	0.53	0.07	0.06	0.04
Cl2(8)	77.26	230.32	229.57	312.40	461.66	37.80	10.43	7.11	1.48	0.07
Cl2(9)	4.20	14.09	10.00	12.06	42.49	5.54	0.86	0.09	0.08	0.05
Cl2(13)	62.41	110.66	54.95	83.01	225.11	25.15	2.10	2.62	0.08	0.05
Cl2(15)	29.34	80.38	68.12	95.91	172.61	34.35	5.16	4.83	1.28	0.10
Cl3(16)	261.47	700.91	519.01	1163.26	766.51	74.85	22.92	17.38	4.33	0.07
Cl3(17)	408.11	863.06	594.09	1344.57	1229.75	112.28	25.66	24.62	4.92	0.46
Cl3(18)	861.89	1901.58	1442.12	2836.14	3383.36	254.34	97.73	49.39	12.44	0.63
Cl3(19)	46.48	78.02	80.11	144.58	153.43	16.41	3.40	2.47	0.77	0.07
Cl3(22)	315.88	802.70	586.88	1213.69	1077.85	103.25	34.13	31.08	8.27	0.05
Cl3(24)	0.08	8.37	7.82	7.41	20.16	0.06	0.05	0.07	0.06	0.54
Cl3(25)	832.78	1234.87	369.39	923.71	2761.02	153.25	20.00	35.09	5.90	0.81
Cl3(26)	826.66	1160.02	454.24	1127.72	3282.51	157.84	28.60	31.61	7.51	0.72
Cl3(27)	33.57	57.18	62.11	93.38	91.71	11.89	2.54	2.09	0.78	0.04
Cl3(28)	1223.32	2840.49	2103.99	4214.54	3961.13	350.30	102.94	73.45	25.15	1.03
Cl3(31)	1566.53	3427.14	2378.58	5201.23	5094.50	391.68	129.07	85.43	25.70	1.41
Cl3(32)	200.42	560.15	367.66	808.37	586.06	57.01	16.55	14.26	3.22	0.03
Cl3(33)/(20)	441.25	1136.23	990.12	1956.33	1642.53	145.65	48.60	30.15	9.25	0.57
Cl3(37)	95.79	357.61	283.33	532.88	362.38	46.16	21.24	20.34	5.19	0.07
Cl4(40)	278.51	741.33	580.36	957.63	909.86	73.37	27.40	25.66	6.12	0.08
Cl4(41)	62.10	223.87	214.00	413.10	118.72	21.59	14.49	6.72	2.64	0.04
Cl4(42)/(59)	691.29	1577.32	1094.04	2213.95	2182.11	196.20	68.04	48.89	15.54	0.61
Cl4(43)	89.00	191.25	143.59	275.53	234.65	30.62	7.21	6.79	1.63	0.05
Cl4(44)	1739.90	4070.38	2920.75	6488.63	5277.23	458.36	169.58	113.28	38.54	1.55
Cl4(45)	286.58	645.71	504.25	963.45	829.76	74.57	26.33	22.25	5.64	0.31
Cl4(46)	123.62	275.03	250.29	579.11	374.72	31.05	10.85	9.58	2.37	0.07
Cl4(47)	445.07	984.20	780.73	1456.96	1383.95	123.35	40.01	31.42	10.14	0.40
Cl4(48)	138.86	567.48	632.83	1131.43	440.45	54.61	31.29	18.84	5.53	0.22
Cl4(49)	1476.97	3565.63	2288.79	4776.43	5020.19	409.45	144.27	96.38	29.55	1.14
Cl4(51)	85.55	212.99	128.72	288.08	256.84	27.04	6.74	6.20	1.45	0.07
Cl4(52)	1405.62	3307.89	2598.90	4328.87	6325.37	508.19	202.61	121.60	39.58	1.35
Cl4(53)	282.04	627.08	514.00	1230.10	864.78	74.78	21.91	19.28	4.49	0.04
Cl4(54)	4.18	9.76	6.97	13.58	14.15	2.79	0.05	0.07	0.38	0.04
Cl4(56)	519.05	1452.87	1231.72	2470.08	1302.66	158.12	69.56	40.77	17.21	0.52
Cl4(60)	45.07	226.57	273.76	711.92	185.76	32.66	26.27	13.43	5.92	0.07
Cl4(64)	763.77	1861.16	1423.54	2930.66	2584.42	202.39	84.54	50.61	20.06	0.60
Cl4(66)	802.34	2461.81	2391.72	4333.04	2282.25	327.38	141.22	91.17	34.34	0.80
Cl4(70)	1334.86	3811.95	3139.06	5969.01	3467.62	454.99	187.00	115.56	42.79	1.24
Cl4(71)	436.77	1018.52	815.24	1639.36	1448.99	126.46	46.48	30.06	10.83	0.49
Cl4(74)	315.45	1263.36	1123.40	2337.96	998.52	137.85	67.49	36.84	17.39	0.33
Cl4(77)	62.92	228.51	181.22	326.42	173.22	32.16	10.91	10.51	3.47	0.13
Cl4(81)	0.08	3.09	3.79	7.23	2.72	0.06	0.05	0.07	0.06	0.04
Cl5(82)	99.00	301.10	254.65	496.50	291.20	37.35	13.96	10.63	3.65	0.05
Cl5(83)/(119)	100.71	243.03	199.29	287.93	287.33	32.38	8.48	10.10	2.51	0.07
Cl5(84)	379.33	837.39	397.27	1207.60	953.16	88.29	27.41	28.51	6.67	0.09
Cl5(85)	110.31	381.84	350.51	612.99	382.29	39.98	16.55	12.91	4.42	0.04
Cl5(87)	153.54	559.34	477.80	948.02	410.13	46.85	28.97	20.43	7.73	0.09
Cl5(91)	132.55	341.56	265.57	531.20	465.16	47.55	13.51	14.16	3.57	0.21
Cl5(92)	75.97	256.15	281.79	365.95	427.87	40.91	9.77	11.61	4.00	0.05
Cl5(95)	471.64	1182.51	845.45	1975.50	1641.24	150.62	52.96	40.52	14.72	0.52
Cl5(97)	154.43	459.38	484.96	713.47	524.64	66.15	25.63	21.75	7.02	0.03
Cl5(99)	172.41	696.82	551.74	1041.70	443.51	52.26	26.20	23.18	7.90	0.37
Cl5(100)	4.69	10.37	7.56	12.44	18.08	2.22	0.46	0.49	0.06	0.04

STATION_ID	T172A	T172A	T172A	T172A	T172A	T172A	T172A	T172A	T172A	T172B
FIELD SAMPLE_ID	T172A 4-5FT	T172A 5-6FT	T172A 6-7FT	T172A 7-8FT	T172-A-RQP	T172-A-ON	ı72A 13-13.8ł	T172-A-LKJI	ı72A 16.5-17.5'	ı172B 0-0.5F'
SAMPLE DEPTH (from bottom)	4-5	5-6	6-7	7-8	8-11	11-13	13-13.8	13.8-16.5	16.5-17.5	0-0.5
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	265.16	911.25	879.76	1438.99	667.98	88.85	39.34	33.86	12.97	0.38
Cl5(105)	75.47	376.19	274.19	686.58	277.19	38.25	23.15	17.56	7.59	0.07
Cl5(110)	718.04	1779.68	1246.37	2420.19	2267.60	217.51	79.91	53.75	22.78	0.88
Cl5(114)	0.17	12.03	16.78	33.99	9.34	0.14	1.72	0.15	0.15	0.10
Cl5(115)	0.15	20.48	16.67	35.52	26.16	2.83	1.51	1.22	0.13	0.08
Cl5(118)	234.89	770.02	678.01	1159.29	667.21	88.75	33.33	30.88	12.47	0.37
Cl5(107)/(123)	53.20	199.23	170.94	211.90	160.00	24.35	6.19	6.47	2.21	0.55
Cl5(124)	5.23	24.38	26.63	48.90	22.24	2.66	1.27	0.09	0.08	0.05
Cl5(126)	0.14	4.10	4.72	9.10	3.24	0.12	0.09	0.12	0.12	0.08
Cl6(128)	24.94	76.29	59.59	101.54	117.12	10.12	2.45	2.91	1.52	0.07
Cl6(130)	17.80	45.40	31.76	48.58	37.30	6.01	1.05	1.77	0.77	0.07
Cl6(134)	9.59	28.27	20.29	29.46	29.86	3.99	0.81	0.90	0.09	0.06
Cl6(135)	25.35	62.99	38.92	55.35	41.87	8.87	1.45	2.57	1.52	0.07
Cl6(136)	21.30	58.50	38.57	54.99	69.78	7.73	1.56	1.96	1.66	0.17
Cl6(137)	3.99	16.99	15.57	26.66	11.35	2.43	0.86	0.79	0.15	0.10
Cl6(138)	70.92	206.85	158.71	242.25	151.02	25.32	6.47	8.06	7.04	0.16
Cl6(141)	6.65	43.81	30.14	50.35	19.40	3.55	1.32	1.65	2.83	0.04
Cl6(144)	4.21	15.80	12.31	17.95	8.21	1.44	0.45	0.56	0.77	0.08
Cl6(146)	36.43	78.87	55.05	67.47	45.97	12.50	1.71	3.14	1.58	0.02
Cl6(149)	73.45	233.68	160.79	263.05	183.97	34.30	7.23	12.03	9.74	0.28
Cl6(151)	31.95	92.16	56.95	72.95	49.34	10.71	1.80	3.21	3.28	0.07
Cl6(132)/(153)/(168)	102.20	284.79	199.95	295.12	200.00	40.19	8.45	12.73	12.85	0.06
Cl6(156)	5.53	22.88	22.25	44.79	17.66	3.00	1.25	1.25	0.95	0.02
Cl6(157)	2.52	7.05	7.07	12.72	5.62	1.19	0.35	0.11	0.11	0.07
Cl6(129)/(158)	6.15	26.62	22.71	42.73	24.59	3.75	0.94	1.28	1.24	0.07
Cl6(163)	22.59	66.05	43.40	67.22	54.77	8.02	1.18	2.45	2.09	0.10
Cl6(164)	9.06	25.86	18.13	28.18	19.07	3.28	0.79	0.96	1.15	0.05
Cl6(166)	0.14	0.18	0.21	0.19	0.17	0.12	0.09	0.12	0.12	0.08
Cl6(167)	4.01	14.38	12.10	18.91	9.61	2.11	0.52	0.08	0.07	0.05
Cl6(169)	0.31	0.40	0.30	0.53	1.00	1.02	0.12	0.93	0.16	0.10
Cl7(170)	16.34	50.33	35.15	64.76	26.92	5.56	1.14	2.24	3.75	0.05
Cl7(171)	5.68	16.31	10.26	15.90	8.90	2.02	0.38	0.86	1.05	0.04
Cl7(172)	5.90	14.82	9.29	14.24	7.87	1.75	0.35	0.60	0.63	0.05
Cl7(174)	21.88	61.83	40.76	55.37	25.98	7.95	1.27	2.66	4.65	0.03
Cl7(176)	4.40	9.92	5.79	6.91	4.57	1.46	0.22	0.51	0.67	0.05
Cl7(177)	18.70	45.56	27.67	38.55	25.74	6.90	0.92	2.28	2.78	0.05
Cl7(178)	7.73	17.12	10.17	12.22	9.13	2.66	0.38	0.83	0.95	0.04
Cl7(179)	13.13	33.29	20.79	22.02	13.39	4.40	0.64	1.49	1.92	0.08
Cl7(180)	39.13	113.91	77.79	138.27	64.00	14.52	2.90	5.82	10.14	0.05
Cl7(183)	14.41	39.17	24.92	32.55	16.53	5.19	0.76	1.60	2.71	0.05
Cl7(184)	0.43	0.69	0.66	0.88	0.56	0.05	0.04	0.06	0.05	0.04
Cl7(185)	2.34	6.96	4.96	5.99	2.57	0.86	0.25	0.25	0.60	0.05
Cl7(187)	35.58	72.29	51.75	60.63	39.57	12.01	1.58	3.87	5.36	0.05
Cl7(189)	1.68	2.54	2.88	4.58	1.98	0.12	0.09	0.12	0.12	0.08
Cl7(190)	3.83	11.81	7.70	14.87	7.30	1.72	0.32	0.64	1.00	0.06
Cl7(193)	2.44	6.82	3.65	7.36	4.44	1.15	0.19	0.29	0.45	0.03
Cl8(194)	18.13	42.77	28.51	43.11	21.64	4.47	1.04	1.67	2.16	0.04
Cl8(195)	6.36	14.30	8.98	13.75	8.01	1.95	0.37	0.64	0.91	0.04
Cl8(199)	27.52	61.86	43.35	47.01	28.03	7.56	1.06	2.09	2.44	0.08
Cl8(200)	1.92	5.10	3.63	3.77	2.51	0.77	0.15	0.32	0.23	0.09
Cl8(201)	2.96	6.19	4.50	5.88	3.67	1.30	0.22	0.38	0.24	0.09
Cl8(202)	3.76	8.49	6.34	6.60	4.61	1.45	0.21	0.46	0.42	0.06
Cl8(196)/(203)	15.93	38.52	26.47	35.91	19.65	4.81	0.81	1.72	2.19	0.02
Cl8(205)	1.18	3.49	2.31	2.71	2.27	0.50	0.02	0.03	0.03	0.02
Cl9(206)	38.24	72.73	60.81	61.38	28.61	6.45	1.05	2.15	1.07	0.42
Cl9(207)	3.99	6.14	8.23	14.05	6.26	0.86	0.14	0.34	0.13	0.07
Cl9(208)	11.70	19.36	20.47	22.76	12.46	2.21	0.34	0.64	0.31	0.10
Cl10(209)	282.92	502.95	748.14	734.99	457.95	69.28	8.30	19.43	2.28	1.11
Sum 117 congeners	23,210	57,379	43,792	85,700	74,992	7,022	2,462	1,806	653	26

STATION_ID	T172B	T172B	T172B	T172B	T172B	T172B	T172B	T172B	T172B	T172B
FIELD SAMPLE_ID	172B 0.5-1F	T172-B-XW	172B 2.4-3F	T172B 3-4FT	T172B 4-5FT	T172B 5-6FT	T172B 6-7FT	T172B 7-8FT	T172-B-PO	T172-B-NML
SAMPLE DEPTH (from bottom)	0.5-1	1-2.4	2.4-3	3-4	4-5	5-6	6-7	7-8	8-10	10-12.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	28.64	40.16	29.33	101.31	39.65	52.21	63.58	76.20	73.01	28.50
Cl1(1)	0.06	0.07	0.06	0.07	0.07	0.09	0.08	18.65	47.52	7.72
Cl1(3)	0.03	0.03	0.03	0.03	0.03	0.04	0.04	9.64	29.41	3.67
Cl2(4)/(10)	0.11	0.12	0.10	0.12	0.12	24.44	21.33	70.76	194.13	42.10
Cl2(5)	0.10	0.11	0.09	0.11	0.11	0.14	0.13	0.22	21.70	2.62
Cl2(6)	0.08	0.08	0.07	0.09	16.36	162.95	190.55	189.38	910.80	54.25
Cl2(7)	0.05	0.06	0.05	0.06	0.06	0.08	0.07	6.86	41.83	5.25
Cl2(8)	2.24	0.10	2.21	3.44	14.98	62.66	80.00	182.96	663.55	95.21
Cl2(9)	0.07	0.07	0.06	0.08	0.08	3.47	4.07	10.44	46.78	7.06
Cl2(13)	0.07	0.07	0.06	0.08	6.77	63.37	41.22	75.19	319.22	20.69
Cl2(15)	0.13	0.13	0.12	0.14	5.27	27.81	26.75	62.59	260.81	36.39
Cl3(16)	0.09	0.10	3.94	11.53	38.61	278.36	259.30	584.30	1225.69	141.99
Cl3(17)	0.05	0.06	4.48	14.04	47.61	346.80	373.23	705.87	1968.51	171.57
Cl3(18)	0.08	0.08	10.43	30.53	125.13	1103.85	1100.75	2173.51	5431.29	427.26
Cl3(19)	0.09	0.09	0.74	0.09	5.13	41.64	39.22	101.86	268.09	24.40
Cl3(22)	0.07	0.07	5.41	15.95	41.59	318.48	276.79	771.64	1751.19	143.28
Cl3(24)	0.05	0.06	0.05	0.06	0.06	0.08	0.07	7.02	24.81	3.10
Cl3(25)	0.05	0.06	1.44	4.40	53.47	630.90	576.71	700.37	3191.07	144.64
Cl3(26)	0.08	0.08	2.62	7.03	60.64	649.44	635.13	757.87	3782.38	159.21
Cl3(27)	0.05	0.05	0.04	0.05	3.76	28.19	27.39	71.86	122.20	14.82
Cl3(28)	0.09	3.58	16.16	46.04	141.39	1152.38	1147.12	2480.63	6037.82	426.69
Cl3(31)	0.05	3.17	15.68	49.25	171.87	1353.49	1420.17	2783.16	7534.80	491.75
Cl3(32)	0.04	0.04	2.39	6.56	27.69	198.97	170.33	411.17	916.91	81.70
Cl3(33)/(20)	0.09	3.30	8.96	25.25	64.90	428.97	445.77	1146.18	2637.96	204.56
Cl3(37)	0.09	0.09	3.19	7.89	24.09	106.86	95.82	368.87	741.47	55.29
Cl4(40)	0.10	0.11	3.34	11.95	43.10	279.93	274.19	554.19	1329.16	87.77
Cl4(41)	0.05	0.06	1.13	2.74	7.96	59.61	39.62	230.05	367.99	30.00
Cl4(42)/(59)	0.07	0.07	7.97	28.33	79.20	587.65	572.13	1362.30	3387.20	204.76
Cl4(43)	0.06	0.07	0.06	3.34	11.82	69.26	81.04	167.58	440.01	25.39
Cl4(44)	8.77	10.40	21.79	68.56	211.91	1571.83	1610.18	3533.41	8276.48	486.15
Cl4(45)	0.05	0.06	3.03	11.46	41.57	305.42	255.46	582.22	1570.73	89.96
Cl4(46)	0.09	0.10	1.62	4.69	18.20	121.12	146.63	328.06	636.26	41.31
Cl4(47)	0.07	1.71	5.13	19.65	57.75	393.55	425.23	872.24	2156.79	125.32
Cl4(48)	0.07	1.30	4.41	14.00	31.91	159.16	169.74	586.21	1171.57	77.84
Cl4(49)	4.17	6.53	15.99	51.54	180.46	1311.34	1392.88	2730.01	7292.79	397.33
Cl4(51)	0.09	0.09	1.13	3.16	10.63	83.96	85.79	163.35	426.82	23.92
Cl4(52)	3.96	7.05	23.30	65.75	249.12	1886.92	1915.59	4101.86	9907.03	537.65
Cl4(53)	0.05	0.05	2.84	9.68	34.27	257.96	247.71	550.77	1453.85	80.52
Cl4(54)	0.05	0.06	0.05	0.06	0.06	3.69	3.92	9.53	21.18	2.37
Cl4(56)	0.09	1.77	8.29	27.69	78.90	512.09	520.93	1460.40	2295.88	176.54
Cl4(60)	1.36	0.09	1.34	3.59	9.73	44.48	43.83	308.42	370.14	36.70
Cl4(64)	0.03	1.81	9.39	32.84	102.50	696.03	697.22	1689.64	4058.90	238.25
Cl4(66)	4.03	6.25	19.15	67.81	145.04	862.56	862.25	2681.79	4517.89	328.27
Cl4(70)	4.36	6.92	24.77	83.87	199.68	1328.06	1250.98	3666.53	6840.08	438.71
Cl4(71)	0.07	1.04	5.52	19.24	58.66	395.42	402.71	948.54	2314.00	128.12
Cl4(74)	0.05	2.50	9.27	31.42	59.10	373.71	369.75	1318.81	2153.31	149.77
Cl4(77)	0.16	0.17	1.59	5.49	13.36	82.91	72.87	186.57	275.78	31.87
Cl4(81)	0.05	0.06	0.05	0.06	0.06	0.08	0.07	4.09	6.41	0.08
Cl5(82)	0.06	0.07	1.91	5.88	15.21	111.15	90.71	252.90	516.45	35.84
Cl5(83)/(119)	1.90	1.76	1.93	6.82	16.44	111.94	84.84	188.62	457.05	34.67
Cl5(84)	1.44	1.95	5.07	14.71	45.13	361.99	325.54	699.39	1540.74	92.69
Cl5(85)	0.05	0.06	1.97	5.63	17.19	135.08	131.46	329.86	687.15	32.74
Cl5(87)	1.92	2.53	6.15	13.28	28.21	182.70	152.38	494.51	883.57	57.33
Cl5(91)	0.87	1.12	2.14	6.97	22.26	108.67	107.54	269.38	912.23	58.81
Cl5(92)	2.45	2.87	3.42	7.50	17.50	108.21	102.86	203.33	633.76	37.64
Cl5(95)	4.12	5.08	12.22	29.25	69.74	476.97	445.51	1071.37	2644.40	154.08
Cl5(97)	1.53	2.42	5.48	14.53	31.18	180.02	171.23	463.04	911.24	62.70
Cl5(99)	4.80	5.89	6.79	19.04	35.20	185.57	196.47	563.96	1083.07	61.43
Cl5(100)	0.60	0.06	0.05	0.06	0.86	3.90	3.96	8.27	26.25	1.45

STATION_ID	T172B	T172B	T172B	T172B	T172B	T172B	T172B	T172B	T172B	T172B
FIELD SAMPLE_ID	T172B 0.5-1F	T172-B-XW	T172B 2.4-3F	T172B 3-4FT	T172B 4-5FT	T172B 5-6FT	T172B 6-7FT	T172B 7-8FT	T172-B-PO	T172-B-NML
SAMPLE DEPTH (from bottom)	0.5-1	1-2.4	2.4-3	3-4	4-5	5-6	6-7	7-8	8-10	10-12.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	5.57	6.73	12.20	28.54	53.00	291.76	301.22	831.67	1445.38	103.98
Cl5(105)	1.87	1.69	4.50	8.66	17.63	86.22	68.70	390.52	531.75	43.05
Cl5(110)	6.94	9.14	18.14	42.40	95.53	604.20	621.52	1470.93	3381.99	219.42
Cl5(114)	0.13	0.13	0.12	0.14	0.14	0.17	0.16	13.19	20.83	2.79
Cl5(115)	0.11	0.12	0.10	0.12	1.01	4.16	4.19	19.11	32.82	3.71
Cl5(118)	6.25	6.37	10.79	25.95	42.71	235.93	235.55	730.44	1140.48	83.74
Cl5(107)/(123)	2.44	2.46	1.61	5.27	9.46	55.65	51.99	107.29	309.90	19.95
Cl5(124)	0.07	0.07	0.06	0.08	0.08	4.97	2.50	25.18	49.63	2.94
Cl5(126)	0.10	0.11	0.09	0.11	0.11	0.14	0.13	6.68	9.38	0.14
Cl6(128)	0.09	0.10	1.78	0.10	4.56	22.42	22.27	60.71	110.40	7.34
Cl6(130)	2.77	1.80	1.10	3.29	2.38	14.91	14.06	31.04	54.59	4.55
Cl6(134)	0.08	1.46	0.62	0.09	1.78	8.50	8.02	21.27	42.01	2.63
Cl6(135)	1.23	0.98	1.17	2.04	3.61	19.95	19.21	39.96	62.76	5.40
Cl6(136)	4.41	3.96	1.29	4.34	3.52	18.53	17.83	37.99	64.89	10.85
Cl6(137)	6.87	4.20	0.86	5.09	0.14	3.76	4.67	14.86	25.37	1.93
Cl6(138)	4.71	3.83	5.68	9.57	11.16	68.52	53.80	150.49	263.75	18.06
Cl6(141)	3.23	0.06	0.93	0.06	0.06	6.39	6.65	26.13	43.19	3.20
Cl6(144)	0.11	0.12	0.32	0.12	0.86	4.03	3.91	11.16	15.28	0.91
Cl6(146)	1.79	1.72	1.55	3.62	5.26	29.89	30.11	54.15	67.68	9.23
Cl6(149)	4.84	5.11	5.54	10.56	15.98	72.24	86.19	158.41	386.65	26.02
Cl6(151)	1.57	0.51	1.47	3.24	4.46	28.04	26.08	53.14	64.44	5.78
Cl6(132)/(153)/(168)	6.02	5.39	7.48	13.81	17.88	105.69	100.94	230.34	470.45	29.53
Cl6(156)	7.18	3.87	1.13	4.48	0.98	5.42	4.74	23.99	33.04	3.02
Cl6(157)	0.09	0.10	0.09	0.10	0.10	2.28	1.68	6.90	10.48	1.07
Cl6(129)/(158)	1.16	1.14	0.92	2.11	1.89	5.74	6.00	23.24	41.89	3.73
Cl6(163)	1.36	1.48	1.14	2.39	3.82	18.53	18.80	41.47	83.63	5.74
Cl6(164)	0.06	1.49	0.71	0.07	1.25	7.77	7.17	19.03	30.49	2.41
Cl6(166)	0.10	0.11	0.09	0.11	0.11	0.14	0.13	0.22	2.95	0.14
Cl6(167)	0.06	0.07	0.06	5.50	1.21	4.08	4.65	10.41	18.09	2.02
Cl6(169)	0.13	0.14	0.12	0.14	0.15	1.22	0.66	0.20	0.60	0.49
Cl7(170)	2.48	1.64	1.01	3.38	2.23	14.20	15.16	34.01	48.37	3.89
Cl7(171)	0.05	0.06	0.05	1.19	0.72	5.10	5.14	10.05	12.80	1.23
Cl7(172)	0.07	0.07	0.06	0.08	1.07	5.01	4.69	10.15	11.63	2.11
Cl7(174)	2.41	1.66	0.97	3.18	2.76	20.09	19.55	35.25	41.54	3.97
Cl7(176)	4.83	3.78	0.38	3.34	0.93	3.50	3.37	5.13	6.19	0.66
Cl7(177)	0.07	0.07	0.72	3.13	2.38	15.52	15.33	26.85	34.88	3.62
Cl7(178)	0.05	1.16	0.34	1.33	1.83	6.95	6.59	9.12	12.30	1.35
Cl7(179)	2.98	2.21	0.65	2.56	1.70	11.29	10.94	19.19	18.71	1.74
Cl7(180)	6.83	4.35	2.19	6.94	6.28	35.64	33.08	72.95	120.75	9.86
Cl7(183)	8.22	6.81	0.95	6.49	2.41	13.05	12.80	21.37	25.36	3.66
Cl7(184)	0.77	0.53	0.17	0.70	0.34	0.47	0.40	0.85	0.67	0.27
Cl7(185)	0.07	0.07	0.06	0.08	0.42	2.07	1.87	3.79	4.86	0.52
Cl7(187)	5.40	4.10	1.47	5.05	4.38	30.56	28.85	46.46	55.68	6.07
Cl7(189)	0.10	0.11	0.09	1.70	0.11	0.14	1.33	2.99	3.22	0.65
Cl7(190)	0.08	0.08	0.07	0.09	0.89	3.76	3.60	8.12	11.85	2.17
Cl7(193)	1.95	0.85	0.04	0.76	0.04	2.49	1.95	4.46	5.87	0.66
Cl8(194)	2.08	1.96	1.00	3.27	3.20	15.50	14.87	28.05	32.51	3.67
Cl8(195)	1.41	0.06	0.05	1.37	1.32	4.88	4.36	9.19	12.30	1.47
Cl8(199)	8.25	6.07	2.21	8.22	8.57	29.20	27.00	43.61	39.20	4.89
Cl8(200)	0.12	0.12	0.11	0.65	0.38	1.94	1.74	3.82	3.35	0.70
Cl8(201)	3.82	3.19	0.56	3.55	0.96	2.41	2.26	5.84	5.23	0.99
Cl8(202)	1.51	1.51	0.42	1.54	1.39	3.99	3.62	7.14	6.16	0.90
Cl8(196)/(203)	3.09	2.13	0.96	3.38	3.33	14.14	13.42	26.95	30.17	4.73
Cl8(205)	1.48	1.35	0.02	0.03	0.03	1.61	1.44	2.53	2.08	3.95
Cl9(206)	24.46	16.51	5.01	24.21	23.45	55.10	48.75	75.30	40.08	6.42
Cl9(207)	1.02	0.76	0.34	1.91	1.08	3.04	3.14	14.71	8.79	1.90
Cl9(208)	6.34	4.75	1.54	7.61	7.09	14.59	13.63	27.33	16.06	3.08
Cl10(209)	120.71	110.13	56.76	279.34	178.58	332.67	339.48	1076.56	575.78	158.36
Sum 117 congeners	333	324	457	1,471	3,352	22,717	22,547	52,514	119,737	7,990

STATION_ID	T172B	T172B	T173A	T173A	T173A	T173A	T173A	T173A	T173A	T173A
FIELD SAMPLE_ID	T172-B-KJI	72B 14.4-15.4	T173A 0-1FT	T173A 1-2FT	T173A 2-3FT	T173A 3-4FT	T173A 4-5FT	T173A 5-6FT	T173A 6-7FT	T173A 7-8FT
SAMPLE DEPTH (from bottom)	12.3-14.4	14.4-15.4	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	22.41	6.64	0.29	0.29	1.93	7.44	11.87	20.01	48.95	45.09
Cl1(1)	0.07	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07
Cl1(3)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Cl2(4)/(10)	0.12	0.10	0.09	0.09	0.09	0.10	1.76	0.11	0.12	0.13
Cl2(5)	0.11	0.10	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.12
Cl2(6)	5.68	1.03	0.06	0.06	0.07	0.07	0.08	0.08	4.87	6.23
Cl2(7)	0.06	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06
Cl2(8)	5.67	0.94	0.08	0.08	0.08	0.08	0.09	1.48	6.70	9.08
Cl2(9)	0.08	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08
Cl2(13)	3.10	0.45	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08
Cl2(15)	5.19	0.59	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.15
Cl3(16)	16.70	1.85	0.08	0.08	0.08	0.08	0.09	0.09	18.31	30.36
Cl3(17)	23.24	2.35	0.04	0.04	0.33	0.05	0.05	1.57	26.51	43.00
Cl3(18)	49.90	6.21	0.06	0.06	0.42	0.69	0.69	2.52	48.49	99.42
Cl3(19)	2.35	0.51	0.07	0.07	0.07	0.08	0.08	0.09	2.22	4.00
Cl3(22)	23.13	3.09	0.06	0.06	0.06	0.06	0.07	0.07	25.04	43.07
Cl3(24)	0.06	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06
Cl3(25)	26.05	3.29	0.04	0.04	0.05	0.69	0.05	2.45	23.26	31.55
Cl3(26)	34.13	4.25	0.06	0.06	0.07	0.07	0.08	2.16	23.71	34.20
Cl3(27)	2.17	0.04	0.04	0.04	0.04	0.04	0.05	0.05	1.99	2.89
Cl3(28)	75.60	9.39	0.08	0.08	0.41	0.89	0.78	2.98	64.33	129.25
Cl3(31)	89.73	11.07	0.04	0.04	0.55	1.17	1.29	4.01	73.99	150.50
Cl3(32)	13.73	1.51	0.03	0.03	0.03	0.03	0.04	0.04	11.61	20.64
Cl3(33)/(20)	30.37	3.99	0.08	0.08	0.36	1.34	1.63	2.84	38.92	59.79
Cl3(37)	17.69	1.81	0.07	0.07	0.07	0.08	0.08	0.09	11.81	20.90
Cl4(40)	25.16	2.39	0.64	0.59	0.50	0.09	0.10	1.73	16.66	33.56
Cl4(41)	6.89	1.03	0.04	0.04	0.05	0.05	0.05	0.05	2.88	3.99
Cl4(42)/(59)	50.08	5.29	0.32	0.06	0.06	0.87	0.07	2.87	44.87	77.53
Cl4(43)	6.54	0.59	0.05	0.05	0.05	0.06	0.06	0.06	4.62	9.52
Cl4(44)	113.75	14.53	0.36	0.24	0.68	2.01	2.69	9.88	88.07	185.40
Cl4(45)	21.77	2.18	0.04	0.04	0.05	0.55	0.05	0.05	18.14	31.39
Cl4(46)	9.05	1.05	0.08	0.08	0.08	0.08	0.09	0.09	7.63	13.08
Cl4(47)	29.35	3.31	0.06	0.06	0.06	0.60	0.07	2.51	29.90	48.67
Cl4(48)	18.55	2.16	0.06	0.06	0.06	0.06	0.07	0.07	15.72	28.16
Cl4(49)	98.48	10.33	0.05	0.05	0.36	1.11	0.06	6.90	72.34	140.13
Cl4(51)	5.73	0.63	0.07	0.07	0.07	0.08	0.08	0.09	4.88	8.04
Cl4(52)	127.72	14.06	0.20	0.04	0.39	1.26	0.76	6.64	90.15	180.22
Cl4(53)	18.87	1.95	0.04	0.04	0.04	0.04	0.05	0.05	15.13	26.90
Cl4(54)	0.45	0.16	0.04	0.04	0.14	0.05	0.22	0.24	0.06	0.06
Cl4(56)	45.47	5.30	0.08	0.08	0.24	0.80	0.09	1.55	36.73	73.76
Cl4(60)	14.78	1.68	0.07	0.07	0.07	0.08	0.08	1.37	3.00	5.23
Cl4(64)	58.00	6.70	0.03	0.03	0.22	0.71	0.03	2.40	41.38	85.77
Cl4(66)	95.27	10.43	0.27	0.06	0.37	1.56	1.11	5.03	74.60	151.15
Cl4(70)	117.10	13.81	0.20	0.17	0.42	1.49	0.81	6.16	99.16	202.65
Cl4(71)	33.05	3.77	0.06	0.06	0.12	0.44	0.07	1.36	28.94	52.32
Cl4(74)	38.07	5.21	0.04	0.04	0.26	0.83	0.05	2.39	33.47	62.35
Cl4(77)	8.74	1.20	0.13	0.13	0.14	0.15	0.16	0.16	5.90	12.73
Cl4(81)	0.90	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06
Cl5(82)	9.91	1.09	0.05	0.05	0.05	0.06	0.06	0.06	6.14	11.02
Cl5(83)/(119)	8.71	0.85	0.07	0.07	0.07	0.08	0.08	1.34	7.53	13.69
Cl5(84)	25.43	2.54	0.09	0.10	0.10	0.54	0.11	1.79	18.21	33.50
Cl5(85)	12.02	1.35	0.04	0.13	0.05	0.05	0.05	0.05	6.21	12.40
Cl5(87)	19.70	2.40	0.09	0.10	0.22	0.62	0.70	1.06	12.07	22.69
Cl5(91)	13.78	1.22	0.04	0.04	0.04	0.27	0.05	0.92	8.96	16.04
Cl5(92)	12.01	1.05	0.06	0.06	0.06	0.06	0.07	2.16	9.04	14.97
Cl5(95)	41.87	4.32	0.05	0.05	0.20	0.42	0.31	4.28	34.66	56.88
Cl5(97)	19.81	2.22	0.03	0.03	0.03	0.49	0.04	1.69	14.04	24.41
Cl5(99)	21.35	1.94	0.05	0.05	0.14	0.43	0.06	3.62	18.56	29.62
Cl5(100)	0.48	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.75	0.77

STATION_ID	T172B	T172B	T173A	T173A	T173A	T173A	T173A	T173A	T173A	T173A
FIELD SAMPLE_ID	T172-B-KJI	72B 14.4-15.4	T173A 0-1FT	T173A 1-2FT	T173A 2-3FT	T173A 3-4FT	T173A 4-5FT	T173A 5-6FT	T173A 6-7FT	T173A 7-8FT
SAMPLE DEPTH (from bottom)	12.3-14.4	14.4-15.4	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	29.69	3.18	0.10	0.10	0.25	0.46	0.29	4.64	27.58	45.54
Cl5(105)	16.54	2.01	0.07	0.07	0.07	0.50	0.08	1.15	6.77	14.25
Cl5(110)	58.47	6.85	0.08	0.15	0.23	0.71	0.78	7.79	46.95	88.78
Cl5(114)	0.96	0.68	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.15
Cl5(115)	0.82	0.10	0.09	0.09	0.09	0.10	0.11	0.11	0.12	0.73
Cl5(118)	27.60	3.07	0.06	0.06	0.15	0.49	0.07	4.35	22.88	37.78
Cl5(107)/(123)	5.79	0.11	0.09	0.10	0.23	0.10	0.11	1.53	3.40	5.07
Cl5(124)	1.03	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08
Cl5(126)	0.11	0.10	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.12
Cl6(128)	2.57	0.59	0.08	0.08	0.08	0.08	0.09	0.09	2.48	3.97
Cl6(130)	1.66	0.09	0.08	0.08	0.08	0.08	0.09	0.09	2.23	3.19
Cl6(134)	0.94	0.07	0.06	0.06	0.07	0.07	0.08	0.08	1.18	1.60
Cl6(135)	2.28	0.30	0.07	0.07	0.07	0.08	0.08	0.68	1.99	3.21
Cl6(136)	1.81	0.35	0.02	0.02	0.02	0.02	0.02	1.59	2.99	3.02
Cl6(137)	0.64	0.12	0.10	0.10	0.11	0.11	0.12	1.74	0.13	0.15
Cl6(138)	6.97	1.14	0.08	0.08	0.09	0.09	0.10	2.01	7.19	10.84
Cl6(141)	1.62	0.48	0.04	0.04	0.05	0.05	0.05	0.05	0.06	1.14
Cl6(144)	0.47	0.10	0.09	0.09	0.09	0.10	0.11	0.11	0.44	0.52
Cl6(146)	2.69	0.36	0.02	0.02	0.02	0.02	0.02	1.16	3.67	5.12
Cl6(149)	9.79	1.37	0.07	0.07	0.07	0.08	0.08	3.04	9.96	13.95
Cl6(151)	2.79	0.43	0.08	0.08	0.08	0.08	0.09	0.98	2.57	3.69
Cl6(132)/(153)/(168)	11.04	1.82	0.06	0.06	0.07	0.07	0.08	3.93	11.34	15.62
Cl6(156)	1.42	0.02	0.02	0.02	0.02	0.02	0.02	1.57	1.95	1.16
Cl6(157)	0.45	0.09	0.08	0.08	0.08	0.08	0.09	0.09	0.10	0.11
Cl6(129)/(158)	1.37	0.08	0.07	0.07	0.07	0.08	0.08	0.09	1.37	1.54
Cl6(163)	1.91	0.21	0.07	0.07	0.07	0.08	0.08	0.80	1.90	2.86
Cl6(164)	0.95	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.79	0.91
Cl6(166)	0.11	0.10	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.12
Cl6(167)	0.67	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.07	1.33
Cl6(169)	0.15	0.13	0.11	0.11	0.11	0.12	0.13	0.13	2.17	0.15
Cl7(170)	1.83	0.57	0.06	0.06	0.06	0.06	0.07	0.91	1.80	2.10
Cl7(171)	0.69	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.63	0.81
Cl7(172)	0.47	0.07	0.06	0.06	0.06	0.06	0.07	0.07	1.45	1.39
Cl7(174)	2.11	0.48	0.03	0.03	0.03	0.03	0.04	0.72	2.16	2.30
Cl7(176)	0.36	0.06	0.05	0.05	0.05	0.06	0.06	1.10	1.57	0.96
Cl7(177)	1.82	0.44	0.06	0.06	0.06	0.06	0.07	1.08	1.97	2.42
Cl7(178)	0.77	0.05	0.04	0.04	0.05	0.05	0.05	0.80	1.30	2.00
Cl7(179)	1.12	0.23	0.08	0.08	0.09	0.09	0.10	0.85	1.43	1.97
Cl7(180)	4.77	0.96	0.06	0.06	0.06	0.06	0.07	1.79	4.16	6.34
Cl7(183)	1.37	0.25	0.06	0.06	0.06	0.06	0.07	1.45	3.02	2.07
Cl7(184)	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.18	0.46	0.35
Cl7(185)	0.18	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.45
Cl7(187)	3.37	0.52	0.05	0.05	0.05	0.06	0.06	1.74	3.70	4.57
Cl7(189)	0.11	0.10	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.12
Cl7(190)	0.63	0.14	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.69
Cl7(193)	0.37	0.04	0.03	0.03	0.03	0.03	0.04	0.44	0.04	0.43
Cl8(194)	1.74	0.34	0.04	0.04	0.05	0.05	0.05	1.16	2.31	3.44
Cl8(195)	0.77	0.05	0.04	0.04	0.05	0.05	0.05	0.55	0.75	1.07
Cl8(199)	2.20	0.57	0.08	0.08	0.09	0.09	0.10	4.24	7.52	9.88
Cl8(200)	0.21	0.11	0.09	0.10	0.10	0.10	0.11	0.12	0.43	0.33
Cl8(201)	0.33	0.11	0.09	0.10	0.10	0.10	0.11	0.82	1.53	0.92
Cl8(202)	0.40	0.07	0.06	0.06	0.07	0.07	0.08	1.48	1.28	1.51
Cl8(196)/(203)	1.63	0.36	0.03	0.03	0.03	0.03	0.03	1.04	2.54	3.40
Cl8(205)	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.56	0.86	0.57
Cl9(206)	2.04	0.30	0.08	0.08	0.09	0.09	0.17	11.88	18.03	27.21
Cl9(207)	0.31	0.09	0.08	0.08	0.08	0.08	0.09	0.24	1.22	0.99
Cl9(208)	0.71	0.10	0.07	0.07	0.07	0.08	0.09	3.58	6.44	7.81
Cl10(209)	20.56	0.82	0.04	0.04	0.05	0.21	0.42	64.41	196.00	186.83
Sum 117 congeners	1,798	211	9	8	13	28	22	230	1,679	2,894

STATION_ID	T173A	T173A	T173A	T173A	T173A	T173A	T173A	T173A	T173B	T173B
FIELD SAMPLE_ID	T173A 8-9FT	T173A 9-10FT	173A 10-11F	173A 11-12F	173A 12-13F	T173-A-MLK	T173-A-JIH	73A 18.7-19.7	T173-B-ZY	T173-B-XW
SAMPLE DEPTH (from bottom)	8-9	9-10	10-11	11-12	12-13	13-16	16-18.7	18.7-19.7	0-1.8	1.8-3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	87.34	34.35	108.88	52.25	73.41	38.68	13.14	10.59	1.94	16.03
Cl1(1)	17.79	12.44	33.01	52.42	28.73	0.07	0.08	0.08	0.05	0.06
Cl1(3)	10.99	8.66	17.19	31.99	21.31	0.04	0.04	0.04	0.02	0.03
Cl2(4)/(10)	92.13	51.45	93.11	174.20	287.19	28.89	0.13	1.27	0.09	0.10
Cl2(5)	3.90	0.22	3.75	20.54	22.21	0.12	0.12	0.13	0.08	0.09
Cl2(6)	513.45	107.58	322.93	2347.90	678.29	62.93	2.94	1.67	0.06	0.07
Cl2(7)	6.54	5.04	7.44	40.95	43.92	5.03	0.07	0.07	0.04	0.05
Cl2(8)	226.94	159.61	274.90	1087.46	807.54	64.95	3.52	2.26	0.07	0.08
Cl2(9)	12.35	8.18	13.99	66.57	77.91	7.70	0.08	0.09	0.06	0.06
Cl2(13)	185.18	54.75	91.46	558.11	221.93	26.12	1.49	0.84	0.06	0.06
Cl2(15)	67.11	80.56	96.59	298.50	296.54	34.57	2.69	1.54	0.10	0.11
Cl3(16)	684.14	452.01	881.26	2473.36	1039.90	119.64	9.84	6.82	0.07	0.08
Cl3(17)	971.27	559.43	1061.22	3628.28	1535.62	156.78	14.00	7.88	0.99	0.05
Cl3(18)	3070.76	1623.41	3492.51	10204.59	3892.21	385.32	32.09	20.37	1.20	0.99
Cl3(19)	109.41	69.43	190.45	178.55	178.39	21.01	1.60	0.89	0.07	0.08
Cl3(22)	931.80	592.67	1044.26	2409.19	1283.00	159.21	17.92	10.70	0.06	0.06
Cl3(24)	7.17	6.54	9.17	22.18	26.59	3.07	0.07	0.07	1.64	0.05
Cl3(25)	2094.28	380.68	938.90	6708.04	2153.98	262.80	18.39	10.61	1.20	0.95
Cl3(26)	2107.39	483.54	995.27	8963.20	2381.53	288.52	25.24	13.43	1.15	0.07
Cl3(27)	75.88	56.91	103.66	125.07	131.59	17.66	1.42	0.92	0.04	0.04
Cl3(28)	3598.74	2133.00	3513.82	9716.08	4664.36	533.76	46.66	36.83	1.96	1.37
Cl3(31)	4422.30	2328.66	4085.61	13020.23	5268.65	654.57	56.51	40.42	2.42	1.32
Cl3(32)	521.07	336.12	652.91	1740.50	727.95	76.00	8.24	4.56	0.03	0.03
Cl3(33)/(20)	1272.64	974.34	1527.47	3818.35	2013.26	240.48	24.11	15.00	1.37	0.80
Cl3(37)	338.83	307.11	456.40	657.49	583.68	83.19	10.81	7.82	0.07	0.08
Cl4(40)	816.04	598.31	859.92	2476.13	1036.60	117.55	14.13	9.88	0.08	0.09
Cl4(41)	179.08	251.48	315.15	222.35	152.99	37.40	4.35	2.99	0.04	0.05
Cl4(42)/(59)	1934.94	1210.17	1861.65	5441.21	2328.89	311.32	31.87	22.82	0.94	0.06
Cl4(43)	229.67	183.77	201.93	678.63	250.02	29.99	4.29	2.01	0.05	0.06
Cl4(44)	4925.49	3039.12	5005.03	14995.38	6263.01	740.41	76.46	54.79	2.20	2.76
Cl4(45)	862.31	584.14	903.09	2658.76	1012.68	111.79	12.63	9.44	0.43	0.05
Cl4(46)	370.41	267.81	393.97	1205.54	447.26	49.38	5.52	3.82	0.07	0.09
Cl4(47)	1274.54	746.33	1176.59	3743.27	1610.77	188.57	23.15	15.19	0.68	0.06
Cl4(48)	425.70	549.35	890.67	1332.73	760.71	87.43	12.39	7.68	0.06	0.06
Cl4(49)	4295.25	2382.93	3876.88	13547.36	5470.66	671.01	62.90	45.70	1.77	1.69
Cl4(51)	204.86	132.50	261.40	688.89	309.40	34.92	3.58	1.92	0.07	0.08
Cl4(52)	5877.76	3522.17	5637.56	18323.76	7079.89	813.36	79.84	60.15	2.21	1.68
Cl4(53)	778.27	506.02	883.07	2656.18	909.30	108.98	11.28	7.10	0.39	0.04
Cl4(54)	10.81	7.43	11.89	24.27	12.16	3.32	0.07	0.07	0.04	0.14
Cl4(56)	1738.71	1369.58	1938.37	3214.70	2173.84	241.32	28.35	24.62	0.82	0.08
Cl4(60)	182.29	291.68	335.14	415.67	271.09	48.56	8.46	7.96	0.31	0.08
Cl4(64)	2374.32	1514.78	2386.42	6900.38	2782.49	331.91	34.10	26.69	1.04	0.67
Cl4(66)	2664.08	2601.48	3494.35	5748.35	3329.37	469.45	62.69	47.91	1.35	1.32
Cl4(70)	4187.35	3374.60	5028.60	8590.39	5148.55	664.56	75.22	57.56	1.87	1.20
Cl4(71)	1349.50	775.62	1281.21	3653.39	1544.20	185.08	23.50	14.86	0.69	0.06
Cl4(74)	1220.73	1393.52	1674.86	2720.61	1622.36	201.28	31.48	22.65	0.69	0.04
Cl4(77)	214.57	187.02	253.63	324.01	251.56	40.18	5.86	4.23	0.13	0.15
Cl4(81)	1.78	2.68	4.30	4.23	2.47	0.06	0.07	0.07	0.04	0.05
Cl5(82)	298.06	266.49	306.55	520.43	381.83	47.03	6.02	5.16	0.05	0.06
Cl5(83)/(119)	314.59	181.67	279.63	838.10	372.93	47.64	5.68	3.53	0.07	0.08
Cl5(84)	1147.41	671.98	1123.05	3014.81	1380.80	136.12	16.50	11.43	0.42	0.49
Cl5(85)	469.84	334.57	506.23	957.98	465.59	64.63	6.86	0.07	0.29	0.05
Cl5(87)	550.64	536.42	631.07	857.60	470.01	82.14	12.40	8.52	0.46	0.10
Cl5(91)	408.06	267.54	453.18	1202.96	553.36	71.88	8.13	5.45	0.25	0.27
Cl5(92)	276.91	146.03	176.41	878.19	291.18	61.91	6.91	4.14	0.18	0.35
Cl5(95)	1457.76	962.92	1439.74	4459.91	1854.79	246.23	28.47	18.98	0.74	0.72
Cl5(97)	503.07	456.71	630.92	1136.55	637.04	92.53	12.74	8.96	0.03	0.03
Cl5(99)	562.68	616.15	730.46	1433.01	768.95	90.38	14.02	11.21	0.31	0.53
Cl5(100)	12.79	6.98	10.96	30.69	16.55	2.36	0.38	0.07	0.04	0.05

STATION_ID	T173A	T173A	T173A	T173A	T173A	T173A	T173A	T173A	T173B	T173B
FIELD SAMPLE_ID	T173A 8-9FT	T173A 9-10F	173A 10-11F	173A 11-12F	173A 12-13F	T173-A-MLK	T173-A-JIH	73A 18.7-19.7	T173-B-ZY	T173-B-XW
SAMPLE DEPTH (from bottom)	8-9	9-10	10-11	11-12	12-13	13-16	16-18.7	18.7-19.7	0-1.8	1.8-3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	963.61	837.81	1073.50	2123.59	1135.06	148.30	20.47	17.77	0.44	0.66
Cl5(105)	323.28	351.64	507.21	606.79	345.66	63.65	10.51	9.84	0.42	0.08
Cl5(110)	2249.20	1470.53	1955.70	5679.48	2629.55	324.57	36.99	30.68	1.04	1.27
Cl5(114)	4.30	17.86	20.25	11.92	12.77	2.56	0.15	0.16	0.10	0.11
Cl5(115)	10.62	24.72	24.23	20.79	15.72	4.44	0.87	4.83	0.09	0.10
Cl5(118)	815.18	757.79	911.18	1514.79	984.45	134.53	18.37	16.06	0.56	0.74
Cl5(107)/(123)	138.17	112.92	135.45	276.88	184.94	30.16	3.46	2.65	0.09	0.10
Cl5(124)	17.55	26.85	34.38	38.88	29.84	3.73	0.67	0.09	0.06	0.06
Cl5(126)	6.33	6.33	7.99	8.60	6.32	0.12	0.12	0.13	0.08	0.09
Cl6(128)	72.73	63.63	79.77	121.94	63.18	11.00	1.63	1.29	0.07	0.08
Cl6(130)	49.36	32.56	42.52	57.60	33.71	6.58	0.94	0.12	0.07	0.08
Cl6(134)	28.98	20.95	27.88	46.48	26.93	4.40	0.68	0.10	0.06	0.07
Cl6(135)	68.47	39.79	51.64	86.51	48.52	9.79	1.58	0.97	0.07	0.08
Cl6(136)	61.93	40.15	50.55	85.34	47.84	8.74	1.30	0.94	0.02	0.23
Cl6(137)	13.26	18.17	19.55	20.68	16.54	2.56	0.15	0.16	0.10	0.11
Cl6(138)	180.34	204.90	245.60	249.56	191.62	31.37	5.51	4.97	0.08	0.09
Cl6(141)	21.82	33.33	36.13	31.65	22.87	4.62	1.34	1.07	0.04	0.05
Cl6(144)	13.55	12.86	14.71	13.27	8.13	1.79	0.41	0.38	0.09	0.10
Cl6(146)	79.96	54.91	71.35	79.42	55.27	13.29	1.90	1.36	0.02	0.02
Cl6(149)	260.43	204.47	257.23	323.71	214.98	46.20	7.47	5.33	0.18	0.33
Cl6(151)	62.61	60.16	67.13	69.54	54.63	12.67	2.26	0.12	0.10	0.08
Cl6(132)/(153)/(168)	289.33	226.62	369.37	522.43	221.98	43.73	8.25	7.20	0.22	0.45
Cl6(156)	16.21	25.35	32.43	23.56	21.41	3.77	0.81	0.03	0.02	0.02
Cl6(157)	5.98	7.13	9.27	9.84	7.39	1.79	0.11	0.12	0.07	0.08
Cl6(129)/(158)	19.25	24.46	31.22	35.26	23.14	5.28	1.11	0.99	0.07	0.08
Cl6(163)	82.16	43.40	52.92	89.96	46.40	10.13	1.51	1.07	0.07	0.08
Cl6(164)	24.67	20.62	24.77	28.80	20.29	4.07	0.95	0.57	0.05	0.06
Cl6(166)	0.19	0.22	0.23	0.20	0.20	0.12	0.12	0.13	0.08	0.09
Cl6(167)	12.50	12.42	17.35	16.91	12.93	2.47	0.52	0.08	0.05	0.06
Cl6(169)	0.24	2.56	0.38	0.36	0.63	0.41	0.16	0.17	0.10	0.12
Cl7(170)	49.56	42.04	62.93	49.23	31.21	6.88	1.58	1.86	0.06	0.06
Cl7(171)	16.71	11.18	16.72	15.12	8.31	2.21	0.53	0.53	0.04	0.05
Cl7(172)	15.32	9.82	13.46	12.89	8.51	2.05	0.39	0.09	0.06	0.06
Cl7(174)	64.47	46.26	54.75	41.56	27.41	8.27	2.04	1.69	0.03	0.03
Cl7(176)	11.52	6.42	7.15	6.59	4.35	1.48	0.30	0.21	0.05	0.06
Cl7(177)	49.35	31.20	38.87	42.32	23.61	6.58	1.55	1.27	0.06	0.06
Cl7(178)	19.30	10.98	12.91	14.66	8.00	2.68	0.61	0.52	0.04	0.05
Cl7(179)	36.22	22.98	21.72	19.01	11.89	4.38	1.02	0.82	0.08	0.13
Cl7(180)	98.64	66.89	158.18	122.10	60.71	16.07	3.87	4.00	0.06	0.06
Cl7(183)	39.44	27.07	32.31	26.71	15.80	5.28	1.08	1.27	0.06	0.06
Cl7(184)	0.54	0.55	0.82	0.78	0.65	0.18	0.06	0.06	0.04	0.04
Cl7(185)	6.57	5.65	6.20	4.32	2.73	0.91	0.23	0.09	0.06	0.06
Cl7(187)	83.59	56.20	63.67	63.44	38.53	12.13	2.84	1.98	0.08	0.16
Cl7(189)	2.54	3.89	4.13	4.16	1.78	0.64	0.12	0.13	0.08	0.09
Cl7(190)	11.15	8.92	14.86	12.45	8.11	1.66	0.46	0.58	0.06	0.07
Cl7(193)	8.22	5.53	7.10	7.63	4.40	0.96	0.22	0.05	0.03	0.03
Cl8(194)	49.37	36.52	44.47	36.00	24.94	5.21	1.20	0.99	0.04	0.14
Cl8(195)	15.21	11.04	15.28	14.03	9.20	1.79	0.46	0.07	0.04	0.05
Cl8(199)	62.87	45.78	50.82	42.26	31.43	7.92	1.62	1.87	0.08	0.51
Cl8(200)	5.55	3.66	3.78	3.79	2.79	0.79	0.19	0.15	0.09	0.10
Cl8(201)	6.98	4.76	6.55	5.01	4.66	1.08	0.23	0.15	0.09	0.10
Cl8(202)	9.08	6.10	7.32	6.33	5.99	1.49	0.34	0.10	0.06	0.14
Cl8(196)/(203)	42.68	30.09	35.76	31.70	22.87	5.61	1.09	1.46	0.02	0.17
Cl8(205)	0.04	3.11	3.31	3.73	2.06	0.03	0.03	0.03	0.02	0.02
Cl9(206)	65.29	65.71	62.75	45.22	43.25	7.50	1.50	0.98	0.08	1.05
Cl9(207)	7.93	7.08	11.90	9.53	9.97	0.88	0.25	0.12	0.07	0.08
Cl9(208)	18.33	18.87	24.67	15.45	21.93	2.75	0.57	0.31	0.07	0.32
Cl10(209)	508.00	692.76	794.29	468.11	976.65	101.37	22.35	8.16	0.45	3.63
Sum 117 congeners	70,659	46,768	72,620	196,559	88,224	10,809	1,185	851	38	33

STATION_ID	T173B	T173B	T173B	T173B	T173B	T173B	T173B	T173B	T173B	T173B
FIELD SAMPLE_ID	T173B 3-4FT	T173B 4-5FT	T173B 5-6FT	T173B 6-7FT	T173B 7-8FT	T173B 8-9FT	T173B 9-10FT	T173B 10-11F	T173B 11-12F	T173-B-MLK
SAMPLE DEPTH (from bottom)	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-15.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	32.09	46.94	35.63	56.89	76.15	41.96	36.66	28.80	15.34	20.17
Cl1(1)	0.07	0.07	0.07	0.08	0.08	10.39	13.86	38.45	33.01	4.40
Cl1(3)	0.03	0.04	0.03	0.04	0.04	6.87	9.73	25.83	20.72	3.20
Cl2(4)/(10)	0.12	0.13	0.12	0.14	23.75	51.05	58.77	142.40	241.55	27.15
Cl2(5)	0.11	0.12	0.11	0.13	0.14	0.39	0.26	12.50	14.61	2.36
Cl2(6)	0.08	0.09	1.03	50.81	306.62	309.75	147.23	778.69	679.94	34.26
Cl2(7)	0.06	0.06	0.06	0.07	0.07	5.51	6.25	23.44	31.31	4.22
Cl2(8)	0.10	0.11	3.84	26.19	95.31	188.44	193.76	554.92	550.94	68.06
Cl2(9)	0.08	0.08	0.08	0.09	4.11	10.45	10.61	38.98	51.23	6.87
Cl2(13)	0.08	0.08	0.08	33.62	121.37	131.70	47.49	214.40	175.53	16.34
Cl2(15)	0.13	0.15	0.14	10.44	33.85	75.44	97.17	152.12	216.03	38.09
Cl3(16)	0.10	2.71	9.71	85.81	428.27	578.97	541.89	1243.22	1102.72	94.07
Cl3(17)	0.06	3.12	15.18	114.77	624.07	672.58	591.80	1665.28	1554.27	108.55
Cl3(18)	0.08	3.76	31.55	326.71	1669.91	2131.67	1838.47	5503.77	4620.53	269.55
Cl3(19)	0.09	0.10	1.45	15.04	55.84	76.39	82.18	160.55	302.03	15.43
Cl3(22)	0.08	0.08	15.19	122.33	422.59	558.72	666.59	1345.30	1231.65	130.23
Cl3(24)	0.06	0.06	0.06	0.07	3.17	4.67	6.29	16.66	18.45	2.96
Cl3(25)	0.06	3.19	7.58	285.35	1114.22	1242.96	430.85	2503.97	2166.53	106.66
Cl3(26)	0.08	2.31	8.24	267.48	1116.47	1110.45	453.53	3732.42	2757.01	121.78
Cl3(27)	0.05	0.06	0.05	11.34	38.76	59.34	64.44	254.78	138.90	11.40
Cl3(28)	1.72	4.07	36.54	412.91	1535.31	2311.93	2120.62	5320.17	4724.50	338.92
Cl3(31)	1.82	5.15	38.05	566.90	1963.07	2712.11	2257.19	6692.38	6060.55	403.75
Cl3(32)	0.04	0.05	6.70	56.73	289.91	414.29	344.86	905.20	789.81	56.47
Cl3(33)/(20)	2.63	5.01	26.02	160.25	563.70	942.93	1081.89	2301.39	1920.16	176.05
Cl3(37)	0.09	0.10	9.10	50.73	116.69	309.19	293.03	564.98	567.58	70.71
Cl4(40)	3.43	0.12	11.44	98.96	326.64	531.14	573.11	1304.02	1041.82	75.88
Cl4(41)	0.06	0.06	0.06	21.01	59.46	155.62	263.87	622.85	232.49	24.44
Cl4(42)/(59)	0.08	4.01	33.77	245.54	794.78	1170.79	1262.20	2901.03	2662.75	196.47
Cl4(43)	0.07	0.07	4.88	32.75	88.60	149.49	180.67	523.23	328.29	23.20
Cl4(44)	10.80	15.90	63.36	641.92	2058.82	3275.96	2948.99	8598.00	7215.73	434.42
Cl4(45)	0.06	0.06	11.89	92.35	407.47	581.47	559.97	1472.08	1273.96	75.40
Cl4(46)	0.10	0.11	4.12	56.94	199.90	280.99	332.99	698.82	563.38	35.14
Cl4(47)	1.27	3.16	23.02	149.17	572.34	893.22	776.02	2060.20	1735.34	116.13
Cl4(48)	0.08	0.08	13.90	57.14	164.12	383.55	762.66	848.26	945.67	74.32
Cl4(49)	6.01	8.26	47.18	504.45	1844.08	2793.35	2427.32	7108.36	6116.81	348.26
Cl4(51)	0.09	0.10	3.58	33.60	130.69	176.92	188.72	533.99	322.26	21.32
Cl4(52)	5.47	10.20	57.65	667.47	2625.46	4006.24	3298.23	9743.70	8385.80	441.01
Cl4(53)	0.05	0.06	10.34	88.53	365.13	508.98	512.20	1382.41	1146.56	64.20
Cl4(54)	0.06	0.06	0.06	2.05	5.23	8.32	10.23	19.64	16.28	1.20
Cl4(56)	0.10	2.50	32.12	198.83	598.65	1227.13	1341.56	2354.43	2254.52	179.59
Cl4(60)	0.09	0.10	0.09	32.58	59.28	192.50	328.09	654.93	393.93	36.98
Cl4(64)	1.08	2.80	35.50	288.38	904.68	1569.51	1699.48	3762.39	3403.32	216.31
Cl4(66)	4.68	8.17	58.05	286.66	745.41	1885.02	2721.30	4000.94	3751.54	347.01
Cl4(70)	5.62	9.28	66.16	518.21	1396.38	3141.15	3568.20	6178.50	5709.78	461.74
Cl4(71)	1.18	2.37	21.48	168.50	540.59	928.79	858.69	2172.61	1942.57	133.59
Cl4(74)	1.73	2.74	29.70	138.35	328.76	949.38	1309.83	1928.83	1800.23	170.06
Cl4(77)	0.18	0.19	6.18	25.70	57.08	158.79	247.62	286.32	293.83	35.69
Cl4(81)	0.06	0.06	0.06	0.07	0.07	2.81	4.37	7.80	5.92	0.54
Cl5(82)	0.07	0.07	4.30	52.16	123.90	245.40	221.22	608.84	400.90	33.09
Cl5(83)/(119)	2.45	2.99	6.55	49.58	104.22	213.33	189.02	497.24	427.93	33.87
Cl5(84)	2.66	2.34	12.95	114.50	398.85	883.58	722.42	2054.68	1447.73	82.28
Cl5(85)	0.06	0.06	3.77	51.96	173.88	319.88	377.24	788.08	663.15	41.95
Cl5(87)	2.10	3.75	8.37	75.49	168.87	441.44	573.82	860.66	714.36	64.06
Cl5(91)	1.15	2.34	7.12	54.28	153.23	333.69	281.15	661.02	580.46	42.25
Cl5(92)	2.01	3.53	8.72	49.93	140.46	186.37	181.35	355.38	482.11	38.19
Cl5(95)	5.30	8.11	27.57	188.21	647.40	1150.04	1048.78	2421.04	2146.90	146.69
Cl5(97)	2.50	3.37	12.26	70.56	165.06	400.58	577.51	840.93	780.53	71.90
Cl5(99)	5.83	7.65	16.73	70.16	205.36	482.51	624.70	1022.69	958.73	67.10
Cl5(100)	0.59	0.06	0.46	1.96	4.76	8.99	8.65	22.10	21.87	1.41

STATION_ID	T173B	T173B	T173B	T173B	T173B	T173B	T173B	T173B	T173B	T173B
FIELD SAMPLE_ID	T173B 3-4FT	T173B 4-5FT	T173B 5-6FT	T173B 6-7FT	T173B 7-8FT	T173B 8-9FT	T173B 9-10FT	T173B 10-11FT	T173B 11-12FT	T173-B-MLK
SAMPLE DEPTH (from bottom)	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-15.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	6.47	9.34	25.82	84.02	295.02	640.53	858.11	1552.98	1278.48	93.51
Cl5(105)	1.93	3.13	4.85	51.32	98.68	257.98	384.78	803.54	664.94	52.12
Cl5(110)	9.43	12.55	40.83	276.27	740.24	1519.49	1389.32	3358.05	2718.20	209.12
Cl5(114)	0.13	0.15	0.14	0.15	0.80	7.97	23.98	31.94	22.38	2.35
Cl5(115)	0.12	0.13	0.40	3.35	3.34	8.99	21.59	50.94	34.31	2.63
Cl5(118)	7.09	9.39	21.89	89.22	183.51	527.47	719.34	1264.48	1023.87	107.66
Cl5(107)/(123)	2.32	3.19	5.29	23.61	73.65	157.69	122.77	370.52	212.95	18.60
Cl5(124)	0.08	0.08	0.08	2.09	3.68	18.64	33.67	57.68	49.05	2.95
Cl5(126)	0.11	0.12	0.11	0.13	2.48	5.64	7.69	11.26	8.99	0.10
Cl6(128)	0.10	0.11	0.10	9.90	23.85	66.78	69.77	116.07	92.85	6.41
Cl6(130)	3.01	2.69	2.88	8.67	18.26	37.14	34.99	59.02	47.39	3.73
Cl6(134)	1.93	1.94	2.19	3.81	9.94	21.47	20.58	43.60	36.44	2.45
Cl6(135)	0.93	1.45	2.00	9.76	25.81	51.89	42.58	78.16	63.75	4.85
Cl6(136)	4.37	4.64	3.10	8.29	20.59	66.10	42.65	79.56	65.50	4.31
Cl6(137)	5.50	5.54	0.14	2.51	3.46	12.78	20.46	32.44	25.33	1.78
Cl6(138)	4.86	6.25	5.82	29.02	63.50	185.72	204.76	444.04	220.11	17.74
Cl6(141)	2.19	0.06	0.06	3.55	6.14	23.99	38.26	56.31	43.37	3.08
Cl6(144)	0.12	0.13	0.12	1.84	4.13	10.31	13.03	19.43	14.19	1.04
Cl6(146)	1.88	2.52	3.44	14.03	35.87	72.93	56.91	82.32	65.64	6.37
Cl6(149)	5.05	7.11	8.90	42.19	109.68	230.06	211.86	439.38	273.34	23.40
Cl6(151)	1.43	2.44	2.58	12.16	32.67	68.21	62.76	93.52	73.50	5.73
Cl6(132)/(153)/(168)	5.62	8.49	9.87	42.78	83.06	225.29	251.33	368.50	272.08	24.27
Cl6(156)	5.90	5.63	2.85	2.79	4.67	19.63	27.92	45.49	36.34	1.99
Cl6(157)	0.10	0.11	0.10	0.81	1.46	8.81	8.95	13.51	11.03	0.94
Cl6(129)/(158)	0.09	0.10	0.09	4.83	5.63	23.48	27.14	54.67	42.68	2.83
Cl6(163)	1.44	1.54	1.89	8.66	20.79	57.77	48.31	87.15	65.98	5.33
Cl6(164)	0.07	0.07	1.06	3.58	7.16	22.53	20.90	34.51	26.69	1.94
Cl6(166)	0.11	0.12	0.11	0.13	0.14	0.39	0.26	0.26	3.12	0.10
Cl6(167)	0.07	7.90	4.25	2.72	3.53	10.71	15.25	23.21	17.90	1.49
Cl6(169)	0.14	0.16	0.14	0.37	1.17	2.28	0.72	0.90	0.20	0.07
Cl7(170)	2.52	3.48	2.12	7.08	15.47	41.54	43.26	65.94	44.95	3.61
Cl7(171)	1.10	0.06	0.76	2.17	5.79	12.48	12.18	18.17	11.35	0.92
Cl7(172)	0.08	0.08	0.08	3.44	5.79	10.81	10.65	15.45	10.04	0.94
Cl7(174)	1.99	2.71	2.26	9.78	21.44	49.02	46.25	53.28	36.74	3.84
Cl7(176)	4.59	4.40	2.32	2.08	4.42	0.24	6.60	7.86	5.20	0.58
Cl7(177)	0.08	2.72	2.08	7.60	18.55	39.26	30.35	44.83	29.33	3.17
Cl7(178)	0.06	1.39	1.37	4.15	7.90	14.01	12.67	14.38	9.97	1.18
Cl7(179)	2.61	3.03	2.08	5.62	13.01	25.33	25.60	23.61	15.20	1.87
Cl7(180)	5.93	6.66	5.38	19.72	35.64	91.04	99.71	114.38	87.47	8.01
Cl7(183)	0.08	8.14	3.27	6.88	13.57	29.45	28.06	33.55	21.31	2.01
Cl7(184)	0.77	0.90	0.45	0.51	0.36	0.18	1.03	1.42	0.53	0.12
Cl7(185)	0.08	0.08	0.08	1.04	2.18	5.05	6.08	6.77	3.85	0.58
Cl7(187)	4.08	4.66	4.66	16.21	36.39	69.30	59.59	66.41	46.83	5.50
Cl7(189)	2.53	0.12	0.11	0.13	1.16	2.77	3.67	4.86	3.83	0.10
Cl7(190)	0.08	0.09	0.09	2.27	3.60	9.15	10.46	16.95	11.05	0.90
Cl7(193)	1.66	0.99	0.60	1.36	3.17	5.93	4.69	7.55	4.85	0.51
Cl8(194)	1.97	2.36	2.28	10.91	18.75	37.98	38.71	47.61	33.55	3.42
Cl8(195)	1.21	1.94	1.28	3.20	6.83	12.27	12.11	18.48	10.29	1.44
Cl8(199)	8.02	8.64	6.74	21.74	25.43	45.35	54.21	49.75	34.37	4.27
Cl8(200)	0.13	0.98	0.51	1.35	2.14	4.42	4.27	4.65	3.20	0.49
Cl8(201)	3.20	5.07	2.20	2.06	2.50	5.48	6.32	8.39	4.60	0.70
Cl8(202)	1.92	2.02	1.58	2.84	3.32	6.40	7.80	7.60	5.26	0.75
Cl8(196)/(203)	2.87	3.85	2.68	9.64	16.04	32.27	34.58	40.10	26.72	2.97
Cl8(205)	1.64	2.16	1.18	1.12	1.02	3.42	3.08	6.48	1.99	0.02
Cl9(206)	25.15	26.21	15.94	48.96	27.28	46.42	91.82	64.22	41.79	6.62
Cl9(207)	1.09	3.84	2.62	2.65	2.60	5.60	12.65	20.32	8.64	1.47
Cl9(208)	6.37	8.89	6.43	12.76	7.56	13.49	27.85	26.43	14.23	3.00
Cl10(209)	143.97	277.94	210.90	225.81	175.90	366.93	919.04	724.84	395.62	192.70
Sum 117 congeners	373	616	1,288	8,902	29,448	48,901	48,735	114,676	98,570	7,108

STATION_ID	T173B	T174A	T174A	T174A	T174A	T174A	T174A	T174A	T174A	T174A
FIELD SAMPLE_ID	73B 15.3-16.3	T174A 0-1FT	T174A 1-2FT	T174A 2-3FT	T174A 3-4FT	T174A 4-5FT	T174A 5-6FT	T174A 6-7FT	T174A 7-8FT	T174A 8-9FT
SAMPLE DEPTH (from bottom)	15.3-16.3	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	3.46	5.61	10.00	38.06	38.65	48.61	70.28	35.14	41.41	113.12
Cl1(1)	0.06	0.05	0.06	0.06	0.07	0.07	0.10	13.67	16.30	29.86
Cl1(3)	0.03	0.03	0.03	0.03	0.03	0.03	0.05	10.50	10.00	18.20
Cl2(4)/(10)	0.10	0.09	0.10	8.76	0.12	0.12	25.81	52.14	54.40	103.16
Cl2(5)	0.09	0.08	0.09	0.10	0.11	0.11	0.16	0.24	0.30	0.28
Cl2(6)	1.85	0.06	0.07	0.08	1.28	41.49	229.15	168.47	138.50	358.67
Cl2(7)	0.05	0.04	0.05	0.06	0.06	0.06	0.09	5.42	4.26	9.34
Cl2(8)	1.44	0.08	0.09	0.10	3.19	19.85	91.23	155.69	156.69	346.26
Cl2(9)	0.06	0.06	0.07	0.07	0.08	0.08	4.01	8.83	9.14	14.50
Cl2(13)	0.60	0.06	0.07	0.07	0.08	20.40	93.33	57.36	49.80	85.68
Cl2(15)	0.97	0.10	0.12	0.13	0.14	7.94	42.48	83.78	89.12	107.64
Cl3(16)	4.46	0.08	0.09	0.10	8.29	60.00	370.42	443.07	592.01	1136.63
Cl3(17)	5.32	0.38	0.05	1.77	10.55	67.62	535.02	551.54	642.54	1409.81
Cl3(18)	15.10	0.41	0.07	2.80	22.39	220.35	1617.76	1767.48	1833.32	4614.53
Cl3(19)	0.63	0.07	0.08	0.09	0.09	8.81	61.75	80.21	80.79	239.09
Cl3(22)	5.81	0.06	0.07	2.03	12.53	63.36	410.59	575.51	642.01	1488.86
Cl3(24)	0.05	0.45	0.05	0.06	0.06	0.06	0.09	6.88	0.16	11.46
Cl3(25)	4.97	0.04	0.05	1.98	6.87	178.14	1030.67	641.78	441.86	1014.69
Cl3(26)	7.17	0.06	0.07	2.62	7.00	163.96	1020.03	746.64	458.85	1373.58
Cl3(27)	0.60	0.04	0.04	0.05	0.05	6.58	45.97	62.78	64.33	106.14
Cl3(28)	17.32	0.42	0.73	3.72	39.54	244.92	1690.31	2131.63	2384.18	4871.29
Cl3(31)	21.62	0.62	0.97	5.07	41.08	326.13	2117.18	2304.88	2585.11	5832.65
Cl3(32)	3.36	0.03	0.04	0.04	4.60	39.41	282.63	348.20	407.56	862.73
Cl3(33)/(20)	8.15	0.49	0.85	3.83	19.96	98.04	605.18	921.60	1067.07	2276.60
Cl3(37)	2.95	0.07	0.08	0.09	7.27	34.36	125.82	281.57	386.39	640.35
Cl4(40)	4.61	0.08	0.09	0.10	9.15	68.79	424.63	484.77	628.33	1331.56
Cl4(41)	1.93	0.04	0.05	0.06	0.06	10.02	77.43	180.62	311.02	477.79
Cl4(42)/(59)	10.37	0.06	0.59	5.07	23.85	129.70	919.79	1231.44	1192.92	2808.33
Cl4(43)	1.30	0.05	0.06	0.06	0.07	22.73	91.52	115.79	140.34	291.99
Cl4(44)	26.61	0.63	1.70	11.76	54.22	351.42	2325.93	3074.00	3334.57	7252.90
Cl4(45)	4.56	0.04	0.05	1.94	8.32	71.59	397.76	573.25	680.26	1329.48
Cl4(46)	2.12	0.08	0.09	0.10	3.88	34.09	192.49	265.21	258.34	535.77
Cl4(47)	6.31	0.06	0.07	1.69	18.27	104.40	595.79	719.39	839.18	1698.02
Cl4(48)	4.60	0.06	0.07	0.07	9.67	42.63	198.09	419.88	799.12	1378.67
Cl4(49)	18.87	0.46	1.12	6.91	36.93	335.60	2064.95	2481.21	2595.13	5694.81
Cl4(51)	1.35	0.07	0.08	0.09	2.41	19.80	106.77	153.83	217.93	356.98
Cl4(52)	27.32	0.59	1.34	7.35	47.47	435.82	2793.60	3344.27	4017.86	8239.00
Cl4(53)	4.30	0.04	0.04	0.91	7.32	56.87	378.51	507.13	580.07	1235.88
Cl4(54)	0.05	0.16	0.05	0.06	0.06	1.47	5.35	8.55	10.60	15.79
Cl4(56)	8.75	0.08	0.09	2.42	24.47	118.86	701.29	1203.90	1582.42	2715.40
Cl4(60)	2.77	0.07	0.08	1.34	2.58	11.76	68.69	191.59	435.75	562.26
Cl4(64)	12.47	0.27	0.58	2.78	26.10	168.53	1118.47	1413.86	1766.82	3501.76
Cl4(66)	16.41	0.41	0.95	5.40	48.94	156.98	1094.58	2265.07	2867.79	4984.50
Cl4(70)	23.79	0.42	1.17	6.71	50.48	286.49	1840.73	2936.54	3873.15	7180.71
Cl4(71)	7.47	0.06	0.07	1.87	16.16	100.71	618.71	824.10	940.79	1916.09
Cl4(74)	9.31	0.04	0.04	2.20	23.81	77.52	475.34	1136.74	1620.29	2421.60
Cl4(77)	1.35	0.13	0.15	0.17	4.52	17.22	75.14	154.02	218.28	367.30
Cl4(81)	0.05	0.04	0.05	0.06	0.06	0.06	0.09	3.51	5.36	8.49
Cl5(82)	1.85	0.05	0.06	0.06	4.83	37.33	156.63	236.66	323.65	517.67
Cl5(83)/(119)	1.09	0.07	0.08	1.57	5.60	34.08	140.25	149.34	185.68	360.42
Cl5(84)	4.05	0.10	0.11	2.26	10.64	96.83	501.77	615.88	804.78	1542.57
Cl5(85)	1.90	0.04	0.05	0.06	3.97	39.91	197.80	353.30	447.85	703.20
Cl5(87)	3.64	0.10	0.11	2.20	8.59	45.56	227.85	521.35	623.57	999.96
Cl5(91)	2.11	0.04	0.04	0.84	5.68	30.38	191.49	249.53	309.40	563.56
Cl5(92)	1.13	0.06	0.07	1.66	7.39	39.69	128.65	246.11	215.61	288.81
Cl5(95)	7.20	0.05	0.61	4.69	22.09	117.56	635.80	1042.12	1014.08	2089.40
Cl5(97)	3.26	0.03	0.04	2.29	10.18	43.37	236.69	431.55	465.19	861.26
Cl5(99)	3.16	0.05	0.39	3.67	14.06	43.90	264.60	489.18	645.58	1180.34
Cl5(100)	0.05	0.04	0.05	0.06	0.06	1.45	6.05	8.30	9.65	16.20

STATION_ID	T173B	T174A	T174A	T174A	T174A	T174A	T174A	T174A	T174A	T174A
FIELD SAMPLE_ID	73B 15.3-16.3	T174A 0-1FT	T174A 1-2FT	T174A 2-3FT	T174A 3-4FT	T174A 4-5FT	T174A 5-6FT	T174A 6-7FT	T174A 7-8FT	T174A 8-9FT
SAMPLE DEPTH (from bottom)	15.3-16.3	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	5.06	0.10	0.53	5.48	21.43	68.55	337.36	815.34	1046.96	1735.90
Cl5(105)	3.17	0.07	0.08	0.09	5.15	28.26	116.47	330.70	512.16	761.10
Cl5(110)	10.03	0.32	0.88	8.07	33.19	164.73	948.89	1307.42	1627.21	2799.68
Cl5(114)	0.11	0.10	0.12	0.13	0.14	0.13	0.20	15.52	35.88	36.84
Cl5(115)	0.10	0.09	0.10	0.11	0.12	1.33	4.97	11.60	30.30	39.65
Cl5(118)	4.36	0.06	0.73	5.35	18.82	51.38	277.58	668.24	835.12	1295.17
Cl5(107)/(123)	0.86	0.10	0.11	1.84	4.41	17.17	79.12	110.04	172.62	206.66
Cl5(124)	0.06	0.06	0.07	0.07	0.08	1.44	7.03	27.79	39.34	57.76
Cl5(126)	0.09	0.08	1.23	0.10	0.11	0.11	0.16	7.13	9.50	10.81
Cl6(128)	0.42	0.08	0.09	0.10	0.10	7.92	33.08	69.86	80.22	111.43
Cl6(130)	0.09	0.08	0.09	2.13	3.11	5.88	22.92	38.90	36.50	60.04
Cl6(134)	0.07	0.06	0.07	0.08	1.84	3.11	12.03	23.19	25.56	35.88
Cl6(135)	0.44	0.07	0.08	0.84	1.73	6.64	32.04	45.31	46.84	68.53
Cl6(136)	0.35	0.02	0.28	2.21	3.52	5.90	26.49	47.15	49.97	70.22
Cl6(137)	0.11	0.10	0.12	2.73	3.01	1.83	5.54	16.32	23.89	29.79
Cl6(138)	1.32	0.08	0.09	3.17	7.43	20.76	79.61	141.42	232.92	311.32
Cl6(141)	0.50	0.04	0.05	0.06	0.06	2.67	9.88	33.82	49.96	64.29
Cl6(144)	0.10	0.09	0.10	0.11	0.12	1.27	5.98	13.85	17.43	20.15
Cl6(146)	0.31	0.02	0.02	1.37	3.11	9.90	45.31	65.27	63.06	91.75
Cl6(149)	2.05	0.07	0.36	3.79	8.29	31.23	116.88	220.91	212.89	343.34
Cl6(151)	0.73	0.08	0.09	1.24	2.43	8.71	43.25	68.07	73.45	90.62
Cl6(132)/(153)/(168)	2.34	0.06	0.36	4.66	10.22	31.13	128.41	245.79	321.18	407.07
Cl6(156)	0.27	0.02	0.02	3.01	4.50	2.49	7.24	25.09	37.51	51.09
Cl6(157)	0.09	0.08	0.09	0.10	0.10	1.01	2.46	7.35	13.42	14.37
Cl6(129)/(158)	0.20	0.07	0.08	1.10	2.03	2.49	7.39	26.59	36.55	50.67
Cl6(163)	0.31	0.07	0.08	0.96	1.94	7.58	34.32	53.82	51.75	83.08
Cl6(164)	0.06	0.05	0.06	1.46	0.07	2.51	9.35	21.22	25.71	35.68
Cl6(166)	0.09	0.08	0.09	0.10	0.11	0.11	0.16	0.24	0.30	0.28
Cl6(167)	0.06	0.05	0.06	0.06	5.58	2.08	5.45	17.06	16.16	23.97
Cl6(169)	0.12	0.11	0.12	0.14	0.14	0.41	0.08	0.79	0.73	0.98
Cl7(170)	0.65	0.06	0.07	1.44	2.85	5.19	24.91	45.36	57.75	95.62
Cl7(171)	0.05	0.04	0.05	0.06	0.06	1.54	8.33	14.42	14.72	23.34
Cl7(172)	0.06	0.06	0.07	0.07	0.08	2.52	8.28	11.42	13.55	20.61
Cl7(174)	0.57	0.03	0.04	1.36	2.40	6.41	32.66	54.68	58.17	76.07
Cl7(176)	0.06	0.05	0.24	1.82	3.04	1.67	5.49	8.35	8.03	9.43
Cl7(177)	0.45	0.06	0.07	0.07	2.70	5.91	25.92	38.05	37.84	55.18
Cl7(178)	0.05	0.04	0.05	0.75	1.44	2.47	10.43	13.01	13.32	16.12
Cl7(179)	0.35	0.08	0.20	1.40	2.34	3.66	18.52	26.73	26.64	28.62
Cl7(180)	1.11	0.06	0.07	3.20	6.82	13.36	55.24	89.26	122.83	125.53
Cl7(183)	0.35	0.06	0.07	3.35	6.14	5.12	20.23	32.56	34.34	46.41
Cl7(184)	0.04	0.04	0.04	0.38	0.81	0.40	0.34	0.53	1.13	1.03
Cl7(185)	0.06	0.06	0.07	0.07	0.08	0.90	3.40	6.63	6.88	8.66
Cl7(187)	0.65	0.05	0.06	2.93	5.26	10.03	48.91	67.97	67.52	85.21
Cl7(189)	0.09	0.08	0.09	1.52	0.11	0.11	1.99	2.90	4.44	6.10
Cl7(190)	0.07	0.06	0.07	0.08	0.08	1.56	5.40	10.20	13.33	23.77
Cl7(193)	0.04	0.03	0.04	0.43	0.86	1.32	4.13	5.81	7.16	11.01
Cl8(194)	0.53	0.04	0.05	1.57	2.49	7.68	27.09	37.71	45.62	62.55
Cl8(195)	0.05	0.04	0.05	1.03	1.99	2.33	8.73	12.74	14.83	20.06
Cl8(199)	0.42	0.08	0.34	4.14	7.10	12.48	34.15	49.58	54.51	63.96
Cl8(200)	0.11	0.10	0.11	0.54	0.88	0.75	2.98	4.34	4.70	5.69
Cl8(201)	0.11	0.10	0.11	1.86	3.78	1.62	3.30	5.24	7.04	7.82
Cl8(202)	0.07	0.06	0.15	1.08	2.08	1.61	4.71	7.10	8.12	9.53
Cl8(196)/(203)	0.35	0.03	0.40	1.81	3.50	5.99	23.39	33.93	39.14	53.33
Cl8(205)	0.02	0.02	0.02	0.94	1.88	0.94	1.87	2.92	3.77	3.89
Cl9(206)	0.19	0.08	1.18	11.41	21.96	25.55	34.02	56.33	77.71	67.36
Cl9(207)	0.09	0.08	0.09	2.36	6.02	1.66	4.08	5.94	11.86	17.49
Cl9(208)	0.08	0.07	0.33	4.91	10.27	7.38	9.90	17.01	26.32	28.73
Cl10(209)	0.51	0.04	4.05	107.22	246.28	131.63	226.27	327.90	795.48	714.91
Sum 117 congeners	370	12	29	321	1,184	5,506	32,707	44,916	53,378	102,977

STATION_ID	T174A	T174A	T174A	T174B	T174B	T174B	T174B	T174B	T174B	T174B
FIELD SAMPLE_ID	T174-A-QPO	T174-A-NML	74A 14.4-15.4	T174B 0-1FT	T174B 1-2FT	T174B 2-3FT	T174B 3-4FT	T174B 4-5FT	T174B 5-6FT	T174B 6-7FT
SAMPLE DEPTH (from bottom)	9-12	12-14.4	14.4-15.4	0-1	1-2	2-3	3-4	4-5	5-6	6-7
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	47.13	12.79	4.31	1.16	41.16	43.00	68.28	45.70	42.83	55.04
Cl1(1)	13.32	0.07	0.07	0.05	0.07	0.07	0.08	0.08	11.74	22.46
Cl1(3)	9.38	0.04	0.03	0.02	0.03	0.03	0.04	0.04	8.02	13.75
Cl2(4)/(10)	101.67	2.49	1.05	0.09	0.12	0.12	0.13	19.59	60.48	76.10
Cl2(5)	6.76	0.12	0.11	0.08	0.11	0.11	0.12	0.13	0.26	4.81
Cl2(6)	203.63	3.10	2.11	0.06	0.09	0.08	11.95	84.50	54.58	128.35
Cl2(7)	13.56	0.06	0.06	0.04	0.06	0.06	0.07	2.56	5.69	6.89
Cl2(8)	236.19	3.38	2.94	0.07	0.10	2.29	18.24	35.91	175.73	221.78
Cl2(9)	23.26	0.08	0.08	0.06	0.08	0.07	0.09	2.18	9.88	11.41
Cl2(13)	65.27	1.44	1.16	0.06	0.08	0.07	0.09	35.03	121.86	47.73
Cl2(15)	94.87	3.01	2.54	0.10	0.14	0.13	5.55	12.60	71.83	92.14
Cl3(16)	348.31	10.48	7.00	0.81	0.10	6.86	65.31	116.32	69.46	73.69
Cl3(17)	460.41	13.51	8.62	0.98	0.06	8.93	89.60	143.99	92.08	76.62
Cl3(18)	1271.06	23.02	20.92	2.24	0.09	19.18	178.10	417.69	294.74	269.76
Cl3(19)	61.60	1.60	1.13	0.07	0.10	1.12	10.90	19.88	83.47	105.25
Cl3(22)	450.43	18.21	13.23	1.06	0.08	8.91	81.33	135.92	98.99	103.38
Cl3(24)	8.62	0.06	0.06	0.04	0.06	0.06	0.07	0.07	7.05	7.58
Cl3(25)	640.26	18.11	11.97	1.73	0.06	3.49	52.40	326.38	180.16	52.09
Cl3(26)	754.27	23.25	15.00	1.55	0.09	4.49	51.18	337.30	177.57	63.13
Cl3(27)	34.70	1.35	0.91	0.04	0.05	0.05	7.42	14.43	61.30	77.99
Cl3(28)	1436.89	38.25	39.71	3.42	0.10	28.30	241.73	508.73	343.59	323.75
Cl3(31)	1786.47	47.05	44.73	4.02	0.05	28.64	256.01	661.09	411.54	360.89
Cl3(32)	236.78	7.95	5.57	0.52	0.04	4.02	48.31	88.82	52.51	56.32
Cl3(33)/(20)	667.26	23.22	16.19	1.77	0.10	14.36	119.28	200.09	136.26	162.02
Cl3(37)	208.25	12.29	8.02	0.74	0.10	5.01	42.76	54.87	38.85	57.73
Cl4(40)	267.06	14.54	10.11	0.08	0.11	7.78	78.63	105.03	69.80	74.76
Cl4(41)	92.05	4.60	3.47	0.04	0.06	0.06	7.21	18.39	189.07	40.36
Cl4(42)/(59)	765.42	26.66	24.67	1.89	0.08	18.40	121.22	256.77	166.70	172.39
Cl4(43)	93.59	3.97	2.62	0.05	0.07	2.76	22.29	41.08	168.26	202.19
Cl4(44)	1962.86	64.09	58.53	4.56	13.07	41.13	283.83	652.08	414.54	424.65
Cl4(45)	329.61	12.95	8.63	0.82	0.06	7.71	69.78	103.74	71.87	73.00
Cl4(46)	133.10	5.81	3.71	0.07	0.10	4.12	32.81	67.78	33.76	33.77
Cl4(47)	440.35	24.29	15.62	1.26	2.07	13.97	112.33	179.62	107.26	109.69
Cl4(48)	267.10	12.83	8.13	0.56	0.08	8.01	66.90	71.16	49.70	97.05
Cl4(49)	1675.39	49.42	46.49	3.56	6.35	37.41	256.59	607.01	360.58	332.21
Cl4(51)	96.40	3.95	2.50	0.07	0.10	2.28	21.04	42.72	175.39	197.78
Cl4(52)	2156.16	64.31	63.84	4.70	7.03	47.68	337.46	792.90	501.57	478.72
Cl4(53)	304.12	11.53	7.41	0.80	0.05	6.46	68.20	132.79	70.47	69.99
Cl4(54)	4.40	0.06	0.06	0.04	0.06	0.06	1.70	2.75	10.08	13.19
Cl4(56)	558.10	26.29	24.94	1.92	0.10	19.59	136.74	216.84	164.50	211.07
Cl4(60)	114.70	10.08	7.52	0.07	0.10	2.52	10.95	19.92	209.88	58.37
Cl4(64)	887.16	30.61	30.06	2.17	1.56	19.20	148.67	298.04	52.60	211.25
Cl4(66)	1135.15	56.77	48.54	3.14	6.45	43.34	279.29	317.62	257.63	382.49
Cl4(70)	1513.63	66.41	63.86	4.55	6.85	49.57	349.22	506.39	385.40	483.82
Cl4(71)	474.63	25.00	16.98	1.34	0.08	11.94	111.13	176.22	119.25	130.49
Cl4(74)	547.55	24.51	24.04	1.35	0.05	17.79	106.47	122.93	121.16	212.86
Cl4(77)	81.24	6.44	4.29	0.13	0.18	4.34	30.94	32.28	176.97	248.63
Cl4(81)	1.44	0.06	0.06	0.04	0.06	0.06	0.07	0.07	3.07	6.62
Cl5(82)	115.87	6.57	5.34	0.37	0.07	3.65	26.54	53.31	36.87	38.29
Cl5(83)/(119)	96.11	5.94	3.74	0.34	2.12	4.58	31.64	54.72	237.18	238.26
Cl5(84)	392.71	16.48	12.26	0.87	2.88	10.88	66.54	100.80	88.93	85.02
Cl5(85)	148.10	8.74	6.27	0.42	0.06	2.87	24.66	62.51	44.45	56.19
Cl5(87)	197.13	14.49	11.80	0.68	3.70	6.13	41.42	69.22	52.38	77.14
Cl5(91)	172.32	8.01	5.56	0.58	1.31	3.81	38.25	77.23	36.21	39.22
Cl5(92)	116.50	8.14	5.53	0.48	3.61	5.48	33.85	47.45	26.15	257.93
Cl5(95)	595.43	24.22	26.82	1.46	7.43	18.89	121.63	184.42	147.79	149.03
Cl5(97)	201.47	13.65	9.70	0.80	3.27	7.87	56.99	81.97	52.83	72.98
Cl5(99)	215.87	15.72	10.94	0.82	7.21	11.38	68.89	87.06	57.26	87.94
Cl5(100)	5.04	0.37	0.06	0.04	0.06	0.06	1.43	2.47	8.76	9.87

STATION_ID	T174A	T174A	T174A	T174B	T174B	T174B	T174B	T174B	T174B	T174B
FIELD SAMPLE_ID	T174-A-QPO	T174-A-NML	74A 14.4-15.4	T174B 0-1FT	T174B 1-2FT	T174B 2-3FT	T174B 3-4FT	T174B 4-5FT	T174B 5-6FT	T174B 6-7FT
SAMPLE DEPTH (from bottom)	9-12	12-14.4	14.4-15.4	0-1	1-2	2-3	3-4	4-5	5-6	6-7
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	345.42	22.25	22.90	1.17	8.96	19.45	104.71	128.80	97.41	142.50
Cl5(105)	162.01	12.33	10.19	0.49	3.47	4.24	18.00	35.93	37.22	68.53
Cl5(110)	762.63	34.65	34.92	2.30	11.91	27.77	154.43	301.43	198.40	217.54
Cl5(114)	6.12	0.77	0.14	0.10	0.14	0.13	0.15	0.17	7.90	26.91
Cl5(115)	10.58	0.67	0.42	0.09	0.12	0.12	0.13	0.15	0.28	17.83
Cl5(118)	307.39	19.98	16.76	0.96	9.17	16.84	93.37	106.53	85.53	120.67
Cl5(107)/(123)	77.11	4.75	2.68	0.09	3.35	3.45	15.81	27.06	138.98	162.14
Cl5(124)	10.86	0.79	0.68	0.06	0.08	0.07	0.09	0.09	16.98	39.26
Cl5(126)	2.99	0.12	0.11	0.08	0.11	0.11	0.12	0.13	4.90	6.56
Cl6(128)	23.49	2.29	3.24	0.07	0.10	1.77	8.18	12.08	71.53	85.21
Cl6(130)	12.04	1.39	1.07	0.07	2.78	2.19	7.10	9.60	40.69	38.74
Cl6(134)	9.31	0.89	1.54	0.06	0.09	1.63	3.70	5.90	28.02	28.39
Cl6(135)	16.62	1.94	4.22	0.07	1.19	1.79	6.98	14.01	59.89	49.09
Cl6(136)	15.81	1.55	4.82	0.19	5.00	3.09	7.28	11.78	54.73	55.90
Cl6(137)	6.23	0.15	0.70	0.10	6.67	2.68	0.15	2.09	12.66	24.19
Cl6(138)	56.53	6.61	18.00	0.27	5.86	5.91	23.82	34.72	204.74	253.06
Cl6(141)	9.73	1.65	8.34	0.04	0.06	0.06	1.62	3.01	23.18	40.92
Cl6(144)	3.27	0.53	2.17	0.09	0.12	0.12	1.38	2.32	14.46	17.38
Cl6(146)	16.96	2.66	4.22	0.02	1.92	2.77	13.02	18.73	81.80	66.04
Cl6(149)	75.74	9.73	29.47	0.42	6.96	7.65	31.11	51.60	234.89	230.59
Cl6(151)	18.30	2.66	10.55	0.16	1.92	2.03	9.31	16.00	78.25	70.84
Cl6(132)/(153)/(168)	83.83	11.04	35.43	0.45	7.83	9.57	40.89	54.57	31.15	33.27
Cl6(156)	7.77	1.02	2.18	0.02	5.80	3.29	2.32	2.66	18.62	35.44
Cl6(157)	2.46	0.11	0.25	0.07	2.11	0.10	0.11	1.60	8.38	10.66
Cl6(129)/(158)	9.19	1.60	2.49	0.07	0.10	1.05	3.43	3.44	18.59	31.05
Cl6(163)	16.74	2.26	5.62	0.07	1.94	1.95	9.60	13.83	67.04	65.03
Cl6(164)	6.36	0.94	2.11	0.05	0.07	1.21	3.51	4.54	22.59	27.28
Cl6(166)	0.14	0.12	0.42	0.08	0.11	0.11	0.12	0.13	0.26	0.27
Cl6(167)	4.06	0.56	0.85	0.05	0.07	0.07	1.61	1.77	12.81	18.34
Cl6(169)	0.51	0.16	0.15	0.11	0.15	0.14	0.11	0.28	0.38	0.50
Cl7(170)	10.11	2.41	10.79	0.06	3.18	2.32	4.38	7.35	43.79	50.14
Cl7(171)	2.87	0.49	3.08	0.04	0.06	0.83	1.76	3.07	14.69	15.03
Cl7(172)	2.59	0.51	2.07	0.06	0.08	5.35	0.09	3.43	15.53	12.84
Cl7(174)	9.04	2.48	14.21	0.17	2.38	1.97	7.26	10.05	55.31	50.64
Cl7(176)	1.52	0.46	1.88	0.09	4.28	2.10	1.65	2.13	8.85	7.31
Cl7(177)	8.50	2.28	8.34	0.14	0.08	1.95	5.12	8.31	41.04	32.27
Cl7(178)	2.98	0.72	2.51	0.04	1.46	1.27	3.78	5.05	17.19	12.41
Cl7(179)	4.42	1.43	6.22	0.11	3.00	1.84	4.47	6.73	30.19	26.21
Cl7(180)	21.89	5.62	28.60	0.20	6.42	4.87	12.66	16.82	90.43	100.16
Cl7(183)	5.77	1.71	8.37	0.20	10.24	2.20	5.29	6.98	32.20	29.39
Cl7(184)	0.22	0.05	0.05	0.04	0.95	0.45	0.72	0.49	0.66	1.40
Cl7(185)	1.13	0.30	1.75	0.06	0.08	0.07	0.75	1.11	5.91	5.72
Cl7(187)	12.87	3.72	15.41	0.15	4.52	3.52	11.19	18.19	77.56	62.69
Cl7(189)	0.93	0.12	0.51	0.08	0.11	2.17	0.12	1.54	2.46	3.45
Cl7(190)	2.97	0.70	2.29	0.06	0.09	0.60	0.89	2.01	10.95	10.54
Cl7(193)	1.22	0.43	1.20	0.03	1.60	0.71	1.00	1.94	7.53	5.09
Cl8(194)	7.59	1.73	6.21	0.04	1.88	2.71	9.35	11.48	44.31	41.42
Cl8(195)	3.86	0.49	2.24	0.04	1.42	1.65	0.07	4.17	16.84	15.10
Cl8(199)	10.37	2.03	6.50	0.08	7.35	5.87	27.69	22.94	62.95	57.54
Cl8(200)	1.13	0.17	0.82	0.09	0.13	0.47	0.99	1.31	5.31	5.26
Cl8(201)	1.69	0.33	0.81	0.09	4.22	1.86	2.43	1.63	6.96	7.86
Cl8(202)	2.08	0.42	1.02	0.06	1.74	1.66	3.17	2.93	8.30	9.14
Cl8(196)/(203)	7.54	1.54	6.03	0.02	2.57	3.04	8.19	10.73	40.38	42.23
Cl8(205)	0.03	0.03	0.55	0.02	1.77	1.49	0.03	1.04	2.57	3.76
Cl9(206)	16.09	2.00	1.86	0.65	22.83	18.79	66.41	49.55	77.29	95.16
Cl9(207)	3.83	0.23	0.30	0.09	1.35	2.76	2.36	2.29	8.10	18.99
Cl9(208)	6.68	0.59	0.39	0.23	6.75	6.00	17.78	12.49	19.01	31.52
Cl10(209)	414.96	29.48	5.16	3.19	159.65	125.84	187.10	138.10	40.42	106.23
Sum 117 congeners	27,936	1,128	1,143	74	417	904	5,395	10,022	9,695	10,636

STATION_ID	T174B	T174B	T174B	T174B	T175A	T175A	T175A	T175A	T175A	T175A
FIELD SAMPLE_ID	T174B 7-8FT	T174B 8-9FT	T174-B-QPO	74B 11.7-12.7	T175-A-ZY	T175A 1.5-2FT	T175A 2-3FT	T175A 3-4FT	T175A 4-5FT	T175A 5-6FT
SAMPLE DEPTH (from bottom)	7-8	8-9	9-11.7	11.7-12.7	0-1.5	1.5-2	2-3	3-4	4-5	5-6
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	42.90	14.53	13.11	3.82	14.14	114.37	123.62	49.79	63.71	49.59
Cl1(1)	39.81	17.45	0.07	0.06	0.05	0.10	0.13	0.07	0.10	0.16
Cl1(3)	19.58	9.68	0.03	0.03	0.03	0.05	0.06	0.03	0.05	0.08
Cl2(4)/(10)	151.66	86.57	15.46	1.14	0.09	16.25	24.49	27.65	57.77	77.99
Cl2(5)	8.48	6.28	1.15	0.09	0.09	0.16	0.21	0.11	0.16	0.26
Cl2(6)	424.11	431.23	34.91	1.11	0.07	67.07	152.91	13.93	28.13	491.31
Cl2(7)	16.45	12.89	2.33	0.05	0.05	0.09	2.59	0.06	0.08	6.99
Cl2(8)	454.45	295.38	38.81	1.21	0.02	31.17	63.14	45.60	103.16	216.99
Cl2(9)	27.77	20.21	3.85	0.06	0.06	1.96	3.21	2.57	3.74	10.43
Cl2(13)	121.79	125.17	16.36	0.47	0.06	33.76	73.73	55.45	89.59	188.08
Cl2(15)	143.30	103.68	15.90	1.86	0.10	13.87	29.78	17.43	42.10	102.61
Cl3(16)	1124.68	514.73	66.48	2.34	0.72	128.57	40.34	18.70	42.29	764.32
Cl3(17)	1219.75	784.87	72.53	2.91	0.76	163.12	50.98	27.48	54.67	1078.55
Cl3(18)	4307.52	2510.90	177.50	7.40	1.85	518.69	172.23	86.16	183.44	3326.34
Cl3(19)	164.19	80.15	9.47	0.44	0.07	19.43	46.20	29.00	61.14	123.96
Cl3(22)	1307.24	790.96	76.07	3.71	0.88	200.11	61.68	26.56	60.70	1155.16
Cl3(24)	12.42	7.98	1.54	0.05	0.05	0.09	0.11	0.06	0.08	0.14
Cl3(25)	1205.45	1636.48	110.53	3.26	1.19	335.49	102.08	71.63	103.22	2056.03
Cl3(26)	1561.43	1871.70	125.23	4.51	1.03	325.83	97.61	67.52	109.33	2114.45
Cl3(27)	114.52	60.16	7.60	0.04	0.04	19.01	36.25	20.47	46.28	94.93
Cl3(28)	4305.02	2737.73	236.28	10.98	2.43	675.53	214.52	98.99	190.13	4214.77
Cl3(31)	5353.14	3504.33	274.03	11.22	2.84	844.98	267.93	126.60	250.49	5032.87
Cl3(32)	801.79	411.97	37.19	1.97	0.42	100.05	34.22	14.81	33.56	632.09
Cl3(33)/(20)	2098.81	1196.64	100.73	4.54	1.03	279.80	90.00	39.23	85.06	1710.33
Cl3(37)	575.56	304.45	36.59	2.63	0.31	80.70	167.87	65.04	22.21	440.48
Cl4(40)	1072.55	605.32	36.03	2.70	0.61	154.15	54.42	22.29	46.69	909.07
Cl4(41)	395.94	125.94	13.98	1.28	0.05	53.39	153.07	52.68	16.13	281.20
Cl4(42)/(59)	2306.90	1519.51	129.56	5.84	1.45	348.21	115.94	48.07	105.29	2171.27
Cl4(43)	294.38	167.11	17.18	0.61	0.05	54.46	116.63	58.67	116.17	271.70
Cl4(44)	6017.93	3719.83	309.30	14.42	3.59	915.53	281.26	127.18	256.82	5353.99
Cl4(45)	1081.18	629.42	47.15	2.51	0.66	144.98	51.13	19.77	47.27	890.60
Cl4(46)	488.80	256.59	24.25	1.35	0.35	79.44	179.22	92.16	23.05	445.90
Cl4(47)	1386.36	1015.16	78.83	3.96	0.90	247.70	73.55	33.23	72.05	1409.20
Cl4(48)	1153.23	407.73	41.49	2.22	0.47	119.92	39.69	92.35	37.23	713.52
Cl4(49)	4764.57	3367.20	265.74	11.87	2.64	790.52	239.62	109.31	217.73	4607.86
Cl4(51)	270.46	160.12	15.80	0.66	0.23	53.42	115.46	59.33	120.08	270.91
Cl4(52)	6865.11	4375.71	327.18	16.19	3.47	1098.31	340.93	153.49	306.01	6478.22
Cl4(53)	1021.04	586.96	49.90	2.42	0.46	152.54	46.53	18.40	42.49	917.10
Cl4(54)	18.06	9.16	1.07	0.30	0.15	3.24	6.64	3.17	7.01	14.92
Cl4(56)	2496.51	1282.72	97.89	5.80	1.39	404.00	129.61	46.23	101.51	2221.24
Cl4(60)	792.81	187.29	23.43	2.01	0.26	91.93	25.72	49.31	30.71	301.94
Cl4(64)	2943.24	1860.76	144.90	6.51	1.54	453.72	26.79	61.15	130.84	2627.41
Cl4(66)	4359.73	2056.57	200.42	11.22	2.15	615.24	198.76	53.37	156.42	3775.01
Cl4(70)	6144.16	3126.48	260.64	13.65	3.18	950.23	294.80	103.66	241.31	5090.04
Cl4(71)	1635.79	1027.07	86.87	4.00	0.92	273.92	83.90	35.25	76.13	1602.87
Cl4(74)	2395.34	951.54	94.24	5.34	1.05	307.16	102.45	22.16	84.37	1856.03
Cl4(77)	386.31	178.72	20.85	0.93	0.39	60.74	127.67	33.08	102.07	325.72
Cl4(81)	10.53	3.09	2.13	0.05	0.05	0.09	2.20	0.06	2.19	3.76
Cl5(82)	531.31	259.05	23.49	1.31	0.30	95.61	24.19	88.55	19.40	494.58
Cl5(83)/(119)	312.17	219.00	23.60	0.88	0.29	71.18	140.06	69.62	128.64	366.65
Cl5(84)	1236.00	760.44	54.40	3.49	0.57	189.41	44.28	21.54	55.33	1233.21
Cl5(85)	724.34	411.13	29.76	1.39	0.30	115.21	37.36	105.59	30.40	704.06
Cl5(87)	911.19	331.17	33.08	2.31	0.54	134.06	45.39	13.44	34.08	753.34
Cl5(91)	547.08	356.64	36.93	1.37	0.35	101.42	26.82	101.56	23.24	488.31
Cl5(92)	386.55	279.68	22.14	0.89	0.29	67.95	191.13	84.50	16.19	343.42
Cl5(95)	1962.06	1205.67	100.55	4.89	1.03	302.84	91.04	35.62	85.00	1704.20
Cl5(97)	974.78	450.96	47.38	2.07	0.47	133.14	42.67	114.82	31.60	728.63
Cl5(99)	1053.84	484.70	36.51	2.73	0.54	148.49	45.36	107.04	36.89	881.00
Cl5(100)	15.98	11.10	1.17	0.05	0.05	3.04	5.63	2.87	5.57	16.34

STATION_ID	T174B	T174B	T174B	T174B	T175A	T175A	T175A	T175A	T175A	T175A
FIELD SAMPLE_ID	T174B 7-8FT	T174B 8-9FT	T174-B-QPO	74B 11.7-12.7	T175-A-ZY	T175A 1.5-2FT	T175A 2-3FT	T175A 3-4FT	T175A 4-5FT	T175A 5-6FT
SAMPLE DEPTH (from bottom)	7-8	8-9	9-11.7	11.7-12.7	0-1.5	1.5-2	2-3	3-4	4-5	5-6
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	1562.94	815.70	64.31	3.99	0.72	264.38	80.64	20.10	62.34	1422.67
Cl5(105)	845.72	334.13	25.01	1.95	0.32	124.64	40.56	67.93	31.31	526.24
Cl5(110)	2698.80	1756.37	134.43	7.05	1.54	457.85	145.10	56.79	124.57	2776.63
Cl5(114)	50.91	8.15	1.22	0.11	0.10	0.20	0.25	0.14	7.81	12.19
Cl5(115)	49.95	20.18	1.71	0.10	0.09	6.01	10.10	3.63	16.18	19.05
Cl5(118)	1336.65	677.48	55.71	3.31	0.65	223.24	68.08	105.43	50.75	1303.82
Cl5(107)/(123)	219.16	123.53	13.70	0.62	0.44	42.98	89.46	35.96	81.30	206.97
Cl5(124)	64.05	22.15	2.08	0.06	0.06	7.16	15.44	2.20	17.22	34.28
Cl5(126)	10.83	5.10	0.11	0.09	0.09	0.16	5.16	0.11	3.81	6.88
Cl6(128)	99.11	50.73	4.83	0.51	0.08	22.13	39.17	15.32	34.85	100.16
Cl6(130)	45.39	26.00	3.30	0.08	0.08	12.90	23.06	11.81	20.99	61.21
Cl6(134)	37.50	21.11	2.01	0.26	0.07	7.31	15.19	6.60	12.72	41.00
Cl6(135)	60.16	37.88	3.89	0.31	0.07	17.35	30.39	16.16	29.11	92.12
Cl6(136)	65.02	38.22	3.45	0.51	0.10	15.85	29.59	13.61	28.38	88.93
Cl6(137)	30.47	11.58	1.40	0.11	0.10	4.97	10.00	2.42	8.45	22.14
Cl6(138)	254.41	125.81	13.35	1.50	0.18	66.11	133.50	45.47	104.79	329.79
Cl6(141)	0.16	19.33	2.19	0.67	0.05	11.92	19.02	4.66	18.96	45.01
Cl6(144)	20.12	7.42	0.78	0.10	0.09	4.69	9.24	2.97	7.72	23.57
Cl6(146)	68.60	36.46	5.24	0.37	0.02	25.58	41.21	21.87	34.51	123.04
Cl6(149)	223.97	131.30	19.24	1.83	0.28	76.10	132.34	58.89	120.18	371.00
Cl6(151)	70.54	39.30	5.01	0.69	0.08	25.61	42.06	18.80	40.09	129.67
Cl6(132)/(153)/(168)	327.74	146.65	20.52	2.34	0.30	99.35	170.63	61.72	142.72	487.17
Cl6(156)	48.35	16.42	1.78	0.02	0.02	3.69	8.56	3.02	9.68	27.56
Cl6(157)	14.82	6.10	0.57	0.08	0.08	3.03	5.73	1.52	4.07	11.15
Cl6(129)/(158)	45.45	20.28	2.05	0.26	0.07	12.62	19.12	4.66	16.24	34.00
Cl6(163)	75.54	42.68	3.97	0.48	0.07	22.01	37.41	16.53	33.76	110.09
Cl6(164)	30.71	14.95	1.79	0.06	0.05	7.67	12.37	4.90	10.60	36.11
Cl6(166)	0.30	0.15	0.11	0.09	0.09	0.16	0.21	0.11	0.16	0.26
Cl6(167)	21.94	8.03	0.96	0.06	0.05	5.54	8.77	2.28	6.68	17.53
Cl6(169)	0.76	0.19	0.30	0.12	0.11	0.20	0.33	0.14	0.28	0.39
Cl7(170)	63.61	22.58	2.95	0.64	0.06	18.09	31.56	9.59	25.40	91.87
Cl7(171)	15.85	6.38	0.96	0.21	0.05	6.34	10.40	3.98	8.59	32.33
Cl7(172)	13.30	6.68	0.87	0.06	0.06	7.01	10.96	4.76	7.91	24.84
Cl7(174)	49.84	17.86	3.23	0.70	0.03	26.80	37.66	12.99	31.70	110.72
Cl7(176)	6.84	2.90	0.48	0.11	0.05	4.04	6.06	2.36	5.27	17.88
Cl7(177)	34.18	15.83	2.84	0.44	0.06	16.42	24.30	10.20	22.01	79.13
Cl7(178)	11.40	5.87	1.10	0.05	0.05	9.06	12.24	5.74	10.05	30.18
Cl7(179)	19.35	8.17	1.75	0.34	0.09	15.37	20.19	7.90	16.85	57.36
Cl7(180)	114.96	41.32	7.29	1.51	0.06	53.81	78.87	23.49	63.14	190.07
Cl7(183)	27.87	11.43	1.95	0.37	0.06	17.09	23.07	9.12	18.29	66.02
Cl7(184)	1.03	0.38	0.09	0.04	0.04	1.07	1.09	0.38	0.30	0.70
Cl7(185)	6.47	2.09	0.40	0.06	0.06	3.95	4.49	1.37	4.01	13.74
Cl7(187)	55.41	25.58	4.96	1.00	0.05	39.65	52.56	21.93	44.92	149.70
Cl7(189)	4.95	2.10	0.11	0.09	0.09	2.04	2.93	0.76	1.67	4.22
Cl7(190)	14.83	5.43	0.76	0.07	0.07	4.19	7.54	2.62	5.15	20.25
Cl7(193)	6.04	2.54	0.49	0.12	0.03	3.42	4.65	1.89	3.99	12.40
Cl8(194)	43.17	18.41	2.63	0.68	0.05	29.72	43.30	15.68	29.93	87.62
Cl8(195)	17.16	7.60	0.87	0.05	0.05	9.49	14.47	5.46	9.68	32.60
Cl8(199)	47.53	20.83	3.36	0.65	0.09	52.37	57.13	23.02	38.68	105.05
Cl8(200)	4.71	1.66	0.36	0.10	0.10	3.13	4.07	1.58	2.87	9.59
Cl8(201)	7.45	2.33	0.38	0.14	0.10	5.08	5.97	2.24	3.70	10.98
Cl8(202)	7.29	2.92	0.64	0.09	0.07	6.35	7.54	2.91	5.07	13.30
Cl8(196)/(203)	39.62	16.30	2.11	0.66	0.03	28.29	39.13	13.88	27.66	80.56
Cl8(205)	4.00	1.58	0.02	0.02	0.02	2.55	4.31	1.64	2.10	5.59
Cl9(206)	61.16	23.53	3.41	0.20	0.45	81.53	83.63	36.62	35.39	72.54
Cl9(207)	16.38	4.20	0.49	0.08	0.08	7.81	9.84	2.28	3.81	10.52
Cl9(208)	21.19	7.19	1.16	0.08	0.14	20.67	20.25	8.55	9.34	18.10
Cl10(209)	475.42	179.86	55.21	0.78	2.01	316.75	44.51	16.80	22.82	441.87
Sum 117 congeners	92,086	54,938	4,654	236	55	14,955	7,138	3,750	5,914	84,343

STATION_ID	T175A	T175A	T175A	T175A	T175A	T175A	T175A	T175B	T175B	T175B
FIELD SAMPLE_ID	T175A 6-7FT	T175A 7-8FT	T175A 8-9FT	T175A 9-10FT	T175-A-ON	75A 12.1-12.5	75A 12.5-13.1	T175B 0-1FT	T175B 1-2FT	T175B 2-3FT
SAMPLE DEPTH (from bottom)	6-7	7-8	8-9	9-10	10-12.1	12.1-12.5	12.5-13.1	0-1	1-2	2-3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	42.58	60.86	41.22	13.10	17.30	6.98	4.40	8.62	47.56	224.80
Cl1(1)	14.75	22.63	26.03	0.06	0.08	0.08	0.05	0.05	0.07	0.10
Cl1(3)	9.07	14.25	14.66	0.03	0.04	0.04	0.03	0.03	0.03	0.05
Cl2(4)/(10)	62.03	88.22	138.58	8.82	0.13	1.62	0.72	1.38	0.12	0.18
Cl2(5)	0.26	0.26	8.59	0.09	0.12	0.12	0.08	0.09	0.11	0.17
Cl2(6)	125.26	203.87	313.50	16.86	5.00	2.14	0.55	0.25	8.60	176.33
Cl2(7)	5.40	6.39	18.34	1.28	0.07	0.07	0.04	0.05	0.06	0.09
Cl2(8)	174.98	219.28	382.34	20.46	4.46	2.49	0.63	0.08	7.32	68.82
Cl2(9)	9.49	11.82	30.29	1.86	0.09	0.08	0.06	0.06	0.08	0.12
Cl2(13)	58.24	79.39	105.09	7.47	2.49	1.21	0.06	0.06	4.61	77.34
Cl2(15)	79.06	89.74	155.97	14.08	3.47	2.42	0.38	0.11	0.14	27.29
Cl3(16)	615.34	769.26	698.73	41.74	14.02	8.94	1.88	0.08	25.71	270.08
Cl3(17)	557.79	805.59	915.65	51.81	20.24	11.60	2.24	0.73	33.15	371.65
Cl3(18)	1729.16	2620.22	2814.25	131.04	54.73	27.39	6.32	1.10	69.56	1117.24
Cl3(19)	78.91	117.98	121.69	7.23	2.11	1.10	0.38	0.08	2.83	37.02
Cl3(22)	720.70	922.67	937.78	54.93	25.61	15.09	2.50	0.06	35.87	415.11
Cl3(24)	8.05	6.58	12.29	0.05	0.07	0.07	0.25	0.05	0.06	0.09
Cl3(25)	466.11	787.57	982.20	63.75	72.66	12.89	1.54	0.05	44.15	695.49
Cl3(26)	551.73	795.07	1101.61	76.35	90.48	15.82	2.37	0.07	43.10	705.83
Cl3(27)	58.96	85.71	87.72	5.13	1.77	1.12	0.34	0.04	2.22	32.13
Cl3(28)	2303.35	3019.79	3003.38	151.31	93.72	37.26	6.89	0.92	91.06	1352.04
Cl3(31)	2649.66	3484.24	3577.93	190.79	119.47	39.93	7.81	1.03	104.65	1795.94
Cl3(32)	361.69	499.51	516.23	31.52	12.16	7.11	1.64	0.03	17.35	210.33
Cl3(33)/(20)	1194.72	1363.47	1443.80	77.11	46.14	17.53	2.99	0.62	52.28	571.04
Cl3(37)	444.68	446.60	473.28	30.16	16.37	9.76	1.44	0.08	15.92	138.52
Cl4(40)	562.65	676.36	664.20	52.06	28.90	14.51	1.77	0.09	29.52	362.97
Cl4(41)	260.29	337.69	206.55	16.07	7.66	4.17	0.92	0.05	5.24	116.30
Cl4(42)/(59)	1223.76	1496.78	1575.83	93.60	78.12	31.46	4.69	0.06	57.22	800.92
Cl4(43)	150.30	211.00	220.23	12.04	7.77	3.29	0.53	0.05	8.03	86.61
Cl4(44)	2922.42	3770.15	3928.11	203.46	166.20	53.08	11.83	2.14	132.91	2059.99
Cl4(45)	506.96	679.12	694.86	45.71	20.38	12.04	2.06	0.05	26.61	339.41
Cl4(46)	238.25	347.16	338.90	21.25	9.20	5.28	1.08	0.08	11.07	139.53
Cl4(47)	744.23	954.99	1054.43	64.33	48.84	21.03	2.69	0.48	45.27	470.75
Cl4(48)	658.43	709.89	613.26	38.14	19.28	10.71	2.16	0.06	24.24	278.77
Cl4(49)	2509.41	3156.25	3273.13	173.60	147.48	45.51	8.77	1.17	108.44	1574.43
Cl4(51)	154.39	210.49	210.70	13.00	6.02	3.19	0.58	0.08	6.79	89.35
Cl4(52)	3535.87	4550.75	4609.24	244.10	170.38	58.10	12.73	1.33	142.40	2280.69
Cl4(53)	531.44	599.25	628.51	43.27	17.53	10.59	1.73	0.29	23.62	300.74
Cl4(54)	10.41	11.82	12.38	1.12	0.07	0.07	0.17	0.19	0.06	4.63
Cl4(56)	1432.74	1715.05	1599.78	82.15	65.60	31.76	4.41	0.08	52.05	750.58
Cl4(60)	438.09	343.46	317.83	28.60	18.14	10.02	1.73	0.08	4.70	174.92
Cl4(64)	1548.70	1930.37	2024.94	102.69	84.27	34.69	5.67	0.34	62.98	958.16
Cl4(66)	2921.26	3117.70	3003.30	144.29	123.35	48.41	8.25	1.20	101.66	1229.02
Cl4(70)	3562.31	4122.37	3988.89	198.81	163.73	57.17	10.83	1.06	145.71	1968.70
Cl4(71)	974.57	1053.84	1135.30	68.62	50.11	20.99	3.09	0.42	45.22	575.67
Cl4(74)	1547.55	1628.11	1491.70	78.12	61.89	30.93	4.05	0.38	44.58	647.88
Cl4(77)	219.81	295.10	211.68	15.01	10.65	6.05	0.74	0.14	9.93	98.41
Cl4(81)	4.60	4.75	4.98	0.40	0.07	0.07	0.04	0.05	0.06	0.09
Cl5(82)	302.22	336.97	312.25	18.02	22.58	6.14	0.88	0.05	11.81	164.44
Cl5(83)/(119)	198.83	249.02	238.82	14.84	18.75	4.63	0.56	0.54	13.09	115.91
Cl5(84)	750.14	762.51	774.27	45.08	50.98	18.07	2.04	0.45	32.97	346.12
Cl5(85)	429.98	519.51	398.49	24.04	33.44	8.71	1.20	0.05	11.42	194.89
Cl5(87)	577.40	622.59	476.25	29.52	49.85	12.15	1.72	0.10	25.32	341.52
Cl5(91)	328.20	346.14	386.57	23.85	24.13	7.43	0.98	0.04	15.07	170.33
Cl5(92)	238.92	234.79	264.16	15.95	24.44	5.46	0.92	0.34	14.41	147.05
Cl5(95)	1046.63	1209.82	1242.02	74.40	79.30	25.65	3.95	0.74	51.13	625.13
Cl5(97)	578.98	636.85	562.12	31.94	43.76	11.29	1.41	0.47	26.41	287.45
Cl5(99)	703.17	661.55	615.90	35.36	44.61	14.53	1.68	1.07	30.74	284.18
Cl5(100)	8.45	10.08	11.42	0.81	0.66	0.07	0.04	0.05	0.93	4.59

STATION_ID	T175A	T175A	T175A	T175A	T175A	T175A	T175A	T175B	T175B	T175B
FIELD SAMPLE_ID	T175A 6-7FT	T175A 7-8FT	T175A 8-9FT	T175A 9-10FT	T175-A-ON	75A 12.1-12.5	75A 12.5-13.1	T175B 0-1FT	T175B 1-2FT	T175B 2-3FT
SAMPLE DEPTH (from bottom)	6-7	7-8	8-9	9-10	10-12.1	12.1-12.5	12.5-13.1	0-1	1-2	2-3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	1087.19	1225.39	1067.38	50.81	60.69	22.29	3.08	1.19	47.50	402.60
Cl5(105)	539.70	505.88	442.93	26.11	43.80	11.15	1.38	0.08	13.83	261.32
Cl5(110)	1655.36	1737.77	1915.07	93.18	148.86	28.43	4.72	1.41	82.84	916.71
Cl5(114)	30.36	17.90	16.29	1.67	2.28	0.15	0.10	0.11	0.14	0.21
Cl5(115)	22.73	20.83	23.34	1.56	2.25	0.56	0.09	0.10	0.89	9.61
Cl5(118)	959.04	1004.94	972.19	44.28	68.06	21.51	2.49	1.22	39.83	393.67
Cl5(107)/(123)	140.20	161.94	149.43	8.53	10.80	3.17	0.40	0.10	8.58	75.15
Cl5(124)	35.19	33.43	31.78	1.71	2.19	0.96	0.06	0.06	0.08	12.69
Cl5(126)	6.78	8.04	6.35	0.09	0.12	0.12	0.08	0.09	0.11	3.30
Cl6(128)	78.93	89.33	67.93	4.23	6.62	1.74	0.44	0.08	5.95	31.71
Cl6(130)	34.51	42.05	32.70	2.58	3.26	1.08	0.08	0.08	4.12	18.43
Cl6(134)	25.56	28.51	24.84	1.83	2.27	0.70	0.06	0.07	2.19	10.08
Cl6(135)	46.87	51.60	42.92	3.34	5.66	1.65	0.40	0.15	3.33	22.99
Cl6(136)	50.07	53.63	46.28	3.28	4.32	1.29	0.40	0.74	4.77	21.22
Cl6(137)	22.17	19.75	17.85	1.23	1.69	0.15	0.10	1.06	3.07	6.80
Cl6(138)	233.92	258.67	186.83	12.14	20.24	6.06	1.04	0.58	16.25	91.24
Cl6(141)	44.82	38.28	31.16	2.35	4.63	1.27	0.44	0.05	2.95	16.51
Cl6(144)	16.39	17.56	11.03	0.75	1.39	0.49	0.09	0.10	0.80	6.22
Cl6(146)	59.31	75.36	52.82	4.34	6.61	1.83	0.26	0.02	5.33	31.94
Cl6(149)	217.43	231.88	187.05	15.63	28.45	6.63	1.85	0.71	17.93	120.37
Cl6(151)	66.55	66.04	49.52	3.68	7.74	2.02	0.58	0.22	4.62	35.01
Cl6(132)/(153)/(168)	290.66	300.70	234.61	17.50	32.37	9.23	2.34	0.73	21.90	138.21
Cl6(156)	39.43	33.96	25.18	1.74	3.39	0.78	0.25	0.62	3.48	7.05
Cl6(157)	12.78	9.85	9.10	0.67	0.85	0.11	0.08	0.46	0.10	2.85
Cl6(129)/(158)	33.35	33.96	26.79	2.15	2.92	0.71	0.12	0.08	2.34	16.00
Cl6(163)	67.29	73.30	51.40	4.32	6.55	1.92	0.50	0.19	3.75	23.21
Cl6(164)	24.45	26.75	20.06	1.17	2.35	1.08	0.17	0.05	2.42	9.81
Cl6(166)	0.26	0.26	0.22	0.09	0.12	0.12	0.08	0.09	0.11	0.17
Cl6(167)	15.69	18.27	13.06	0.85	0.97	0.66	0.21	0.05	4.20	7.08
Cl6(169)	0.62	0.36	0.37	0.08	0.11	0.16	0.11	0.12	0.14	0.16
Cl7(170)	48.94	63.25	41.98	3.57	7.76	1.65	0.46	0.06	3.53	24.76
Cl7(171)	14.45	17.50	11.77	1.14	1.86	0.54	0.20	0.05	1.10	7.07
Cl7(172)	13.31	16.70	10.49	0.90	1.56	0.44	0.09	0.06	2.28	8.46
Cl7(174)	54.01	57.84	34.22	2.94	8.05	1.71	0.56	0.03	3.39	31.26
Cl7(176)	7.58	7.46	4.48	0.45	1.20	0.33	0.12	0.59	2.40	4.79
Cl7(177)	32.05	38.78	23.14	2.44	6.10	1.31	0.36	0.06	3.21	20.92
Cl7(178)	12.83	14.31	8.73	1.00	1.98	0.48	0.15	0.27	1.75	9.59
Cl7(179)	28.37	25.94	13.94	1.53	3.83	0.78	0.29	0.41	2.58	16.87
Cl7(180)	106.86	121.09	77.70	6.59	18.79	4.01	1.19	0.71	8.48	67.59
Cl7(183)	31.42	33.10	19.34	1.79	4.72	1.07	0.32	0.36	3.84	21.47
Cl7(184)	0.88	1.36	0.68	0.12	0.06	0.06	0.04	0.14	0.58	0.82
Cl7(185)	6.59	6.80	4.18	0.41	0.85	0.08	0.06	0.06	0.08	4.47
Cl7(187)	64.17	71.32	39.99	4.29	11.04	2.44	0.68	0.51	5.64	44.73
Cl7(189)	4.70	5.95	3.40	0.36	0.48	0.12	0.08	0.09	0.11	2.21
Cl7(190)	10.89	15.91	9.55	0.86	1.66	0.56	0.15	0.07	0.08	6.40
Cl7(193)	5.77	7.04	4.11	0.70	0.92	0.05	0.09	0.03	1.26	3.43
Cl8(194)	43.03	51.75	28.65	3.03	7.41	1.83	0.20	0.53	3.61	30.86
Cl8(195)	14.45	19.13	11.29	1.70	2.61	0.68	0.28	0.05	1.56	9.31
Cl8(199)	58.48	72.37	35.02	3.12	7.37	1.55	0.32	0.97	10.90	47.07
Cl8(200)	4.77	5.68	2.83	0.35	0.63	0.20	0.10	0.10	0.67	2.99
Cl8(201)	6.18	7.96	4.16	0.41	0.85	0.28	0.10	0.10	1.98	4.80
Cl8(202)	8.12	10.56	5.37	0.43	0.96	0.42	0.06	0.23	1.61	6.05
Cl8(196)/(203)	39.94	50.61	26.99	2.97	5.88	1.07	0.39	0.60	3.87	27.73
Cl8(205)	2.56	4.28	2.62	0.02	0.63	0.03	0.02	0.02	1.30	2.83
Cl9(206)	82.92	92.07	44.19	2.93	4.55	1.55	0.08	3.66	29.95	77.00
Cl9(207)	9.06	16.96	10.77	0.34	0.47	0.16	0.08	0.18	1.49	6.84
Cl9(208)	23.43	32.21	16.17	0.74	1.08	0.33	0.07	0.86	8.46	20.38
Cl10(209)	631.60	594.04	507.58	17.31	67.58	20.78	0.37	16.05	226.23	420.21
Sum 117 congeners	51,326	61,621	61,731	3,413	2,936	1,016	176	58	2,516	29,676

STATION_ID	T175B	T175B	T175B	T175B	T175B	T175B	T175B	T175B	T175B	T175B
FIELD SAMPLE_ID	T175B 3-4FT	T175B 4-5FT	T175B 5-6FT	T175B 6-7FT	T175B 7-8FT	T175B 8-9FT	175B 9-9.85F	75B 9.85-10.7	75B 10.7-11.3	75B 11.3-11.7
SAMPLE DEPTH (from bottom)	3-4	4-5	5-6	6-7	7-8	8-9	9-9.85	9.85-10.7	10.7-11.3	11.3-11.7
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	107.33	61.41	31.77	39.59	32.02	12.42	11.00	24.23	8.33	1.83
Cl1(1)	0.11	0.18	13.27	12.46	25.57	20.63	22.89	7.18	0.07	0.06
Cl1(3)	0.05	0.09	8.31	9.12	16.45	14.89	16.82	4.92	0.03	0.03
Cl2(4)/(10)	0.19	33.80	86.78	58.34	122.84	151.47	174.20	67.33	1.68	0.38
Cl2(5)	0.17	0.29	0.26	0.28	5.56	7.58	15.11	4.63	0.11	0.09
Cl2(6)	127.16	206.57	536.10	132.30	352.76	327.18	769.44	118.19	2.75	0.62
Cl2(7)	0.09	0.16	6.46	6.12	14.56	13.75	29.91	8.91	0.06	0.05
Cl2(8)	56.79	70.43	297.91	225.02	405.30	401.92	542.57	163.52	3.32	0.75
Cl2(9)	0.12	0.20	12.24	8.82	21.27	23.41	50.82	15.03	0.08	0.06
Cl2(13)	55.08	79.83	174.86	49.92	113.67	110.61	245.50	39.60	1.64	0.06
Cl2(15)	21.93	21.88	98.75	93.97	127.95	159.42	221.40	70.15	2.70	0.49
Cl3(16)	237.68	268.52	963.48	590.98	1036.50	888.48	927.78	165.60	8.86	1.71
Cl3(17)	320.13	392.06	1385.50	683.09	1202.84	1128.51	1444.82	212.34	12.05	1.87
Cl3(18)	982.10	1132.55	3999.88	1957.19	3833.04	3429.31	3885.72	512.46	29.80	5.07
Cl3(19)	30.25	41.85	144.21	81.27	158.46	139.13	136.26	28.05	1.24	0.08
Cl3(22)	325.50	369.36	1379.46	850.80	1308.70	1186.06	1350.92	201.36	17.50	2.36
Cl3(24)	0.09	0.16	7.87	7.37	11.06	10.03	19.14	4.83	0.06	0.05
Cl3(25)	594.32	922.10	2438.73	399.97	959.91	1064.09	3484.04	205.13	18.33	2.16
Cl3(26)	563.14	984.28	2513.50	567.01	1277.27	1298.85	3955.02	266.62	23.94	2.90
Cl3(27)	21.89	25.61	106.24	63.77	111.68	83.66	98.44	21.23	1.15	0.04
Cl3(28)	1145.62	1386.57	5117.86	2665.37	4080.15	3759.51	5120.15	599.00	45.63	6.60
Cl3(31)	1477.08	1866.28	6407.01	2962.86	5237.77	4983.57	7005.77	689.37	54.62	7.93
Cl3(32)	186.17	198.60	708.03	422.05	731.51	638.45	663.94	102.66	7.30	1.07
Cl3(33)/(20)	454.00	510.24	1976.74	1341.57	2031.99	1801.60	2027.96	281.48	22.85	2.88
Cl3(37)	113.42	101.15	543.50	471.78	575.98	500.82	491.51	96.91	10.86	1.26
Cl4(40)	267.31	308.23	1157.24	662.59	1091.51	1003.76	1175.63	116.20	14.80	1.72
Cl4(41)	82.64	57.33	259.22	295.63	469.80	351.48	179.11	32.05	3.97	0.77
Cl4(42)/(59)	631.55	731.21	2704.30	1489.33	2436.12	2317.97	2833.13	300.93	35.68	3.93
Cl4(43)	73.01	85.43	293.07	151.19	262.90	258.12	291.15	33.27	3.40	0.46
Cl4(44)	1582.49	1914.79	7019.14	3784.38	6380.80	6050.99	7429.27	663.76	71.22	10.09
Cl4(45)	273.38	308.16	1128.81	625.76	1105.76	1036.09	1110.64	121.54	11.74	1.48
Cl4(46)	124.26	131.00	485.90	262.61	469.54	440.92	458.93	54.19	5.18	0.74
Cl4(47)	374.63	452.49	1646.96	872.15	1384.60	1378.14	1733.50	168.88	22.86	2.51
Cl4(48)	210.05	149.11	815.22	824.89	1241.10	1097.39	625.20	105.29	10.58	1.33
Cl4(49)	1246.13	1556.73	5559.76	2685.75	4719.98	4682.80	6451.85	561.43	59.09	7.90
Cl4(51)	68.38	78.62	286.77	153.22	291.57	239.82	272.16	31.27	3.12	0.42
Cl4(52)	1764.96	2293.63	8127.89	3988.65	7062.96	6772.50	9389.47	709.26	75.69	10.10
Cl4(53)	245.47	274.84	1018.61	551.03	1039.03	972.36	1008.68	99.30	10.10	1.41
Cl4(54)	3.32	7.32	12.88	9.74	14.97	10.45	13.44	1.66	0.06	0.05
Cl4(56)	557.64	573.90	2396.99	1617.94	2329.19	2156.97	2117.56	226.40	33.81	3.94
Cl4(60)	79.38	49.16	244.22	362.95	721.52	576.16	253.52	52.01	9.68	1.21
Cl4(64)	749.25	881.65	3193.51	1848.41	3043.88	2873.83	3376.60	323.96	41.66	4.69
Cl4(66)	893.65	810.61	4170.26	3347.46	4670.76	4309.07	3157.91	475.50	62.79	7.23
Cl4(70)	1475.24	1414.89	6330.25	4274.74	6577.04	6174.02	5477.84	640.29	77.70	9.61
Cl4(71)	448.23	505.74	1870.71	1058.44	1705.52	1592.93	1861.58	187.05	23.23	2.92
Cl4(74)	436.18	384.91	1981.63	1817.43	2567.86	2235.55	1521.67	225.69	33.27	3.49
Cl4(77)	64.78	61.79	321.03	271.02	337.94	292.03	242.46	43.10	6.29	0.58
Cl4(81)	0.09	0.16	2.38	3.50	9.24	5.73	2.92	0.78	0.06	0.05
Cl5(82)	117.82	128.84	505.81	337.71	528.46	439.73	423.71	42.29	5.78	0.57
Cl5(83)/(119)	96.61	108.71	413.48	238.21	319.27	304.14	429.35	42.92	5.15	0.64
Cl5(84)	261.62	327.82	1170.73	737.84	1121.16	1134.73	1371.91	116.83	15.41	1.64
Cl5(85)	127.04	145.04	553.99	393.45	605.36	495.52	550.29	55.88	7.70	0.89
Cl5(87)	231.56	208.71	921.32	751.79	1109.55	904.10	659.41	68.23	12.87	1.64
Cl5(91)	136.11	155.74	593.55	328.90	554.40	541.85	663.95	57.58	8.06	0.94
Cl5(92)	106.70	124.71	432.46	238.36	428.45	335.51	458.76	42.14	7.03	0.63
Cl5(95)	462.54	546.28	2114.19	1239.84	2001.98	1885.36	2265.45	199.52	27.69	3.15
Cl5(97)	200.56	192.47	885.96	659.42	965.57	868.94	763.59	88.06	12.16	1.48
Cl5(99)	199.99	194.27	885.43	716.90	1006.82	916.90	739.14	90.02	14.29	1.57
Cl5(100)	3.42	3.78	16.72	8.04	14.24	12.85	22.20	2.03	0.30	0.05

STATION_ID	T175B	T175B	T175B	T175B	T175B	T175B	T175B	T175B	T175B	T175B
FIELD SAMPLE_ID	T175B 3-4FT	T175B 4-5FT	T175B 5-6FT	T175B 6-7FT	T175B 7-8FT	T175B 8-9FT	175B 9-9.85F	75B 9.85-10.7	75B 10.7-11.3	75B 11.3-11.7
SAMPLE DEPTH (from bottom)	3-4	4-5	5-6	6-7	7-8	8-9	9-9.85	9.85-10.7	10.7-11.3	11.3-11.7
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	280.23	269.70	1285.34	1026.99	1407.43	1325.70	1033.20	131.70	19.78	2.38
Cl5(105)	143.37	118.35	499.10	519.72	913.66	747.13	513.40	57.14	11.88	1.55
Cl5(110)	664.95	809.86	3089.59	1810.60	2806.63	2623.71	3291.28	302.76	41.83	4.79
Cl5(114)	0.21	0.35	5.90	24.52	45.55	29.39	10.06	3.05	0.14	0.86
Cl5(115)	5.63	4.14	0.28	21.42	44.62	41.25	19.81	2.51	0.63	0.10
Cl5(118)	243.87	251.66	1240.76	1071.94	1430.38	1298.67	904.38	131.08	19.70	2.12
Cl5(107)/(123)	54.90	62.95	247.53	169.26	228.14	206.14	239.77	25.00	3.91	0.48
Cl5(124)	6.43	5.09	25.87	32.69	59.80	40.69	25.32	4.41	0.08	0.06
Cl5(126)	0.17	0.29	8.10	5.66	9.67	6.05	6.31	1.43	0.11	0.09
Cl6(128)	20.40	27.28	99.73	72.90	96.24	59.53	80.62	7.98	1.61	0.44
Cl6(130)	12.17	18.48	64.76	34.55	41.24	25.75	46.07	3.82	1.17	0.08
Cl6(134)	6.55	10.65	38.76	22.77	30.54	21.40	35.20	3.15	0.86	0.07
Cl6(135)	15.91	24.28	86.73	41.74	52.75	37.21	65.16	6.55	1.57	0.23
Cl6(136)	14.75	19.35	78.10	43.77	55.00	39.88	62.24	6.05	1.28	0.22
Cl6(137)	4.58	4.12	18.06	20.40	30.07	18.74	16.11	2.10	0.68	0.11
Cl6(138)	59.54	66.87	293.57	232.41	288.68	184.09	195.04	22.03	5.16	0.96
Cl6(141)	8.55	6.76	29.72	39.72	59.40	34.16	25.08	3.56	1.09	0.41
Cl6(144)	3.67	4.48	18.13	13.94	18.51	10.41	10.94	1.08	0.33	0.10
Cl6(146)	22.48	31.57	132.70	63.88	60.45	37.47	65.88	7.76	2.23	0.29
Cl6(149)	84.21	108.92	421.84	248.33	298.54	214.51	291.93	31.86	7.48	1.28
Cl6(151)	22.48	30.21	117.22	65.48	70.33	42.32	69.45	7.41	2.28	0.46
Cl6(132)/(153)/(168)	88.32	103.76	462.75	323.32	369.36	269.97	278.77	34.90	8.60	1.62
Cl6(156)	5.56	8.58	24.22	31.58	48.09	25.52	23.18	3.55	0.87	0.18
Cl6(157)	1.81	2.42	9.87	8.22	14.39	7.16	7.81	1.13	0.10	0.08
Cl6(129)/(158)	8.54	6.77	26.33	27.47	43.87	26.52	33.02	3.27	0.75	0.21
Cl6(163)	13.36	26.32	86.67	47.47	67.83	39.16	71.94	6.37	1.55	0.33
Cl6(164)	5.84	9.25	32.25	24.35	30.57	17.36	24.69	2.51	0.73	0.06
Cl6(166)	0.17	0.29	0.26	0.28	4.71	2.02	1.89	0.14	0.11	0.09
Cl6(167)	4.83	5.02	16.98	15.79	20.50	10.99	11.97	1.82	0.80	0.06
Cl6(169)	0.29	0.63	0.36	1.28	0.37	0.17	0.19	0.18	0.15	0.12
Cl7(170)	16.29	22.87	69.32	48.17	61.65	28.72	37.12	3.39	2.08	0.29
Cl7(171)	4.16	6.72	22.52	13.61	14.42	6.74	10.30	1.32	0.46	0.21
Cl7(172)	5.27	7.51	22.22	12.01	12.47	5.92	10.23	0.93	0.48	0.06
Cl7(174)	18.09	26.85	85.59	55.42	51.94	23.13	31.34	4.09	2.18	0.42
Cl7(176)	2.75	4.61	13.15	7.90	6.52	3.00	4.99	0.66	0.35	0.06
Cl7(177)	14.09	24.14	66.59	35.67	34.54	17.39	29.61	3.45	1.66	0.39
Cl7(178)	5.94	8.85	25.11	12.40	11.03	5.23	10.45	1.46	0.57	0.14
Cl7(179)	10.04	14.75	45.87	27.98	21.83	8.45	15.61	2.14	1.04	0.19
Cl7(180)	40.06	49.62	164.12	108.54	120.98	56.70	68.90	9.32	4.66	0.98
Cl7(183)	12.80	16.13	53.10	32.60	29.53	13.21	19.90	2.38	1.26	0.25
Cl7(184)	0.34	0.13	0.52	0.70	1.17	0.37	0.60	0.15	0.05	0.04
Cl7(185)	2.23	3.07	8.84	5.56	5.83	2.77	3.57	0.67	0.08	0.06
Cl7(187)	27.17	42.80	136.24	68.02	55.01	26.78	46.72	6.31	3.03	0.49
Cl7(189)	1.41	2.82	3.39	3.22	4.47	2.82	2.78	0.14	0.11	0.09
Cl7(190)	4.12	4.88	16.84	12.75	14.03	7.31	8.55	1.45	0.61	0.07
Cl7(193)	3.00	4.71	12.18	6.00	6.02	3.33	5.12	0.62	0.04	0.04
Cl8(194)	20.74	39.45	67.91	44.24	41.05	18.03	26.30	3.19	1.61	0.05
Cl8(195)	5.47	13.28	21.73	12.54	14.19	7.36	9.73	1.40	0.66	0.05
Cl8(199)	27.92	40.08	88.42	61.53	46.43	20.54	36.21	4.53	1.83	0.09
Cl8(200)	1.80	5.81	6.44	4.37	4.23	1.98	3.38	0.53	0.20	0.11
Cl8(201)	2.25	2.86	8.54	6.32	7.72	2.94	4.20	0.97	0.33	0.11
Cl8(202)	3.43	4.91	11.96	8.49	6.89	3.12	6.27	1.08	0.37	0.07
Cl8(196)/(203)	17.42	25.61	59.87	40.26	34.66	17.92	24.34	3.30	1.23	0.03
Cl8(205)	1.50	2.06	4.75	3.32	2.66	1.45	2.18	0.03	0.03	0.02
Cl9(206)	46.96	46.92	101.14	100.29	68.60	25.40	38.55	8.74	1.90	0.17
Cl9(207)	2.91	3.54	11.40	11.51	20.57	6.17	7.31	2.78	0.27	0.08
Cl9(208)	10.84	9.42	28.89	28.94	27.54	7.88	15.68	4.74	0.56	0.08
Cl10(209)	275.36	209.41	708.49	1001.25	990.68	244.16	410.63	343.35	31.08	0.87
Sum 117 congeners	22,697	26,463	98,774	58,107	92,716	84,824	100,383	11,095	1,195	154

STATION_ID	T176A	T176A	T176A	T176A	T176A	T176A	T176A	T176A	T176A	T176A
FIELD SAMPLE_ID	T176A 0-1FT	T176A 1-2FT	T176A 2-3FT	T176A 3-4FT	T176A 4.5FT	T176A 5-6FT	T176A 6-7FT	T176A 7-8FT	176A 8-8.77F	76A 8.77-9.55
SAMPLE DEPTH (from bottom)	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-8.77	8.77-9.55
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	67.86	216.83	149.44	282.10	42.65	127.49	37.24	19.79	21.73	44.31
Cl1(1)	0.07	0.09	0.09	0.12	20.50	40.58	27.08	0.08	12.29	7.44
Cl1(3)	0.03	0.05	0.04	0.06	12.02	17.25	15.26	0.04	4.93	4.25
Cl2(4)/(10)	0.12	15.60	16.46	36.37	57.25	114.29	150.09	26.81	87.67	34.45
Cl2(5)	0.11	0.15	0.14	0.20	0.33	0.20	13.48	1.96	5.16	2.94
Cl2(6)	36.83	180.57	48.49	413.30	116.33	377.50	290.10	54.07	107.01	95.23
Cl2(7)	0.06	0.08	0.07	0.11	6.02	7.68	26.97	4.53	9.69	5.43
Cl2(8)	17.73	65.18	16.92	149.79	204.19	329.35	408.11	55.60	169.93	92.69
Cl2(9)	0.08	0.10	0.10	5.26	9.57	11.15	46.32	6.77	16.50	9.51
Cl2(13)	24.79	57.63	16.23	145.05	46.29	92.95	87.49	37.69	41.89	35.79
Cl2(15)	7.69	29.15	20.38	57.12	89.21	82.14	172.05	49.43	57.20	36.82
Cl3(16)	59.21	270.25	59.15	545.93	568.55	959.62	543.18	101.00	258.36	138.79
Cl3(17)	84.92	357.53	88.50	755.28	659.02	1197.81	685.78	140.37	273.92	149.32
Cl3(18)	239.22	1092.40	257.39	2271.32	1921.42	3682.78	1789.72	353.71	905.90	481.00
Cl3(19)	10.30	41.54	35.26	84.46	83.01	168.91	89.49	20.87	49.68	24.16
Cl3(22)	86.51	403.93	80.78	769.20	824.23	1203.39	692.66	147.39	253.69	147.18
Cl3(24)	0.06	0.08	0.07	0.11	0.18	7.38	16.67	3.83	6.13	3.13
Cl3(25)	174.69	640.85	193.28	1677.04	342.21	1423.30	891.02	231.94	349.25	239.05
Cl3(26)	175.75	703.83	192.78	1754.07	498.73	1566.64	1024.38	257.47	403.75	343.51
Cl3(27)	9.17	31.87	24.08	62.97	66.06	99.36	79.12	16.87	32.55	18.20
Cl3(28)	295.71	1266.23	274.01	2613.84	2520.44	3811.05	2184.81	483.97	871.32	519.03
Cl3(31)	386.41	1644.59	378.35	3520.51	2898.00	4948.15	2621.97	591.85	1123.63	637.27
Cl3(32)	44.95	200.74	45.39	406.29	418.05	702.36	350.08	70.98	166.77	82.60
Cl3(33)/(20)	113.94	546.80	110.02	1065.86	1390.18	1827.94	1088.62	216.81	402.54	233.76
Cl3(37)	42.70	131.03	21.41	208.49	438.18	466.96	354.21	72.36	114.79	68.94
Cl4(40)	80.91	328.48	68.50	662.79	661.35	939.86	503.42	117.47	233.88	105.46
Cl4(41)	26.34	104.27	53.74	160.79	328.08	302.85	132.31	39.47	84.12	31.35
Cl4(42)/(59)	182.84	730.96	149.26	1453.42	1483.31	2085.25	1167.24	281.10	486.39	229.20
Cl4(43)	27.60	74.19	16.15	163.89	150.16	252.09	132.58	45.21	50.08	36.51
Cl4(44)	450.67	1888.58	365.85	3735.16	3728.90	5312.37	2736.87	670.58	1257.16	652.01
Cl4(45)	70.96	312.74	63.69	608.87	622.05	972.43	460.52	108.84	233.36	115.27
Cl4(46)	43.98	131.80	28.53	262.79	264.53	403.40	195.18	42.70	98.05	54.13
Cl4(47)	105.54	432.45	91.29	890.73	845.76	1241.07	665.48	167.75	299.93	160.06
Cl4(48)	48.29	239.22	29.10	377.05	843.99	822.23	389.27	78.71	190.32	80.48
Cl4(49)	354.09	1439.68	309.37	2983.75	2599.31	4225.58	2237.01	563.76	1068.75	589.12
Cl4(51)	26.21	79.56	16.35	159.75	158.57	239.14	113.02	38.99	65.27	35.77
Cl4(52)	495.09	2076.50	416.97	4322.11	3932.79	6031.73	3033.77	732.35	1443.60	764.15
Cl4(53)	63.56	289.24	59.23	554.29	558.14	881.08	398.02	88.54	212.76	96.06
Cl4(54)	2.04	3.91	3.44	8.31	9.94	11.32	7.62	2.91	4.88	2.28
Cl4(56)	165.71	659.84	114.63	1155.69	1577.94	1835.46	1005.63	248.91	420.75	198.15
Cl4(60)	42.32	123.01	39.79	177.05	466.10	418.01	202.88	41.40	149.97	53.67
Cl4(64)	218.56	885.12	168.96	1743.52	1805.33	2527.53	1323.10	318.97	587.58	283.54
Cl4(66)	255.49	1117.05	156.23	1771.00	3349.66	3271.36	1849.85	443.50	709.43	339.30
Cl4(70)	429.95	1713.36	290.26	3050.45	4339.07	4972.01	2678.26	661.20	1112.02	489.71
Cl4(71)	126.44	526.06	100.61	1013.11	1054.53	1421.35	752.40	179.53	326.01	153.24
Cl4(74)	128.79	576.51	65.77	903.81	1840.62	1726.45	918.61	203.63	353.99	152.05
Cl4(77)	24.79	94.59	39.96	135.56	252.49	234.22	152.54	44.18	56.61	32.90
Cl4(81)	0.06	1.61	0.07	1.96	5.79	4.73	2.94	0.07	1.77	0.75
Cl5(82)	43.94	154.24	22.08	278.07	375.13	370.55	199.23	49.93	83.74	42.98
Cl5(83)/(119)	32.09	99.45	20.05	213.69	219.88	276.17	174.19	59.06	60.77	36.02
Cl5(84)	83.92	324.45	60.13	664.44	722.19	928.34	521.75	130.35	281.27	128.54
Cl5(85)	41.07	160.59	24.02	304.45	374.33	397.32	231.79	60.59	131.00	55.01
Cl5(87)	72.45	289.36	35.60	510.21	804.61	746.84	361.17	83.42	150.61	68.90
Cl5(91)	39.95	155.79	29.87	316.60	346.38	422.97	252.25	62.97	92.29	43.98
Cl5(92)	41.96	130.28	23.97	239.41	274.24	289.41	178.00	50.51	54.25	46.27
Cl5(95)	144.82	567.36	101.70	1128.35	1230.34	1567.07	864.51	216.75	329.32	195.74
Cl5(97)	64.43	238.06	35.68	452.12	683.96	678.79	395.13	91.23	137.08	57.01
Cl5(99)	64.36	249.37	32.31	444.34	725.99	660.13	379.02	93.69	153.91	72.96
Cl5(100)	1.67	4.11	3.19	8.20	9.46	11.63	8.42	2.38	3.17	1.85

STATION_ID	T176A	T176A	T176A	T176A	T176A	T176A	T176A	T176A	T176A	T176A
FIELD SAMPLE_ID	T176A 0-1FT	T176A 1-2FT	T176A 2-3FT	T176A 3-4FT	T176A 4.5FT	T176A 5-6FT	T176A 6-7FT	T176A 7-8FT	176A 8-8.77F	76A 8.77-9.55
SAMPLE DEPTH (from bottom)	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-8.77	8.77-9.55
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	91.29	345.53	46.64	633.94	1063.69	974.62	544.56	131.28	204.29	104.60
Cl5(105)	61.40	216.29	16.58	335.75	635.71	573.93	283.09	73.25	132.63	62.70
Cl5(110)	228.13	839.76	148.00	1667.24	1842.83	2164.56	1339.03	345.72	489.18	256.44
Cl5(114)	0.14	0.18	0.17	8.92	41.43	21.94	12.39	2.76	8.24	3.62
Cl5(115)	2.91	9.02	1.60	16.73	27.89	20.03	13.87	3.16	6.99	3.17
Cl5(118)	91.72	362.36	36.63	593.00	1107.17	888.38	535.71	134.02	174.67	88.52
Cl5(107)/(123)	20.49	66.68	41.00	131.27	167.18	171.44	119.38	31.94	37.68	20.59
Cl5(124)	2.59	11.17	2.12	17.62	40.19	28.29	17.07	4.17	8.34	3.70
Cl5(126)	0.11	3.02	0.14	4.63	9.65	6.70	5.19	0.12	0.13	0.10
Cl6(128)	9.09	25.76	13.78	50.05	77.80	72.51	39.40	11.57	15.18	9.07
Cl6(130)	6.38	13.27	10.32	27.85	35.58	38.58	20.74	7.36	7.23	4.91
Cl6(134)	3.75	8.81	5.69	18.02	24.26	25.81	15.26	4.58	6.18	3.79
Cl6(135)	7.03	20.19	15.76	40.83	45.84	50.27	29.24	9.49	11.42	7.71
Cl6(136)	7.55	18.46	11.87	37.85	48.12	46.85	25.99	8.63	11.88	7.30
Cl6(137)	2.73	5.92	1.96	11.36	24.47	17.16	8.85	2.64	4.15	2.35
Cl6(138)	24.64	81.83	36.53	145.36	245.49	198.18	102.87	29.17	42.24	25.28
Cl6(141)	4.99	12.99	3.41	25.07	57.62	34.66	16.08	4.66	7.59	4.55
Cl6(144)	1.94	5.31	2.07	10.27	17.54	12.71	5.52	1.76	0.14	0.11
Cl6(146)	9.42	25.87	22.40	52.28	55.06	63.21	34.56	11.35	11.54	7.73
Cl6(149)	34.89	100.60	17.03	206.65	262.97	254.36	139.74	44.16	51.37	31.29
Cl6(151)	9.89	28.46	19.23	56.45	72.52	62.38	33.15	10.77	12.34	8.32
Cl6(132)/(153)/(168)	37.35	116.04	58.49	211.96	343.05	301.28	152.27	46.83	57.43	36.26
Cl6(156)	3.52	6.54	2.05	16.54	38.67	31.20	13.62	3.63	6.14	3.57
Cl6(157)	1.19	2.45	1.04	5.11	10.32	8.95	3.78	0.74	1.74	1.14
Cl6(129)/(158)	5.13	10.23	2.95	16.95	33.69	29.83	14.02	4.78	6.21	3.69
Cl6(163)	7.63	20.69	13.27	46.00	59.82	61.19	30.03	9.25	12.37	7.98
Cl6(164)	3.02	7.05	4.27	17.23	26.19	21.74	11.92	3.41	4.06	2.97
Cl6(166)	0.11	0.15	0.14	0.20	0.33	0.20	0.21	0.12	0.13	0.10
Cl6(167)	3.71	5.25	2.04	7.91	17.01	13.95	6.86	2.88	2.74	1.76
Cl6(169)	0.15	0.31	0.12	0.29	0.29	0.29	0.28	0.12	0.17	0.12
Cl7(170)	6.64	18.85	9.52	40.01	55.42	47.64	17.84	5.54	7.33	5.32
Cl7(171)	2.71	5.76	3.31	10.99	15.52	12.81	5.11	1.66	2.22	1.53
Cl7(172)	3.54	6.34	3.64	11.99	13.43	11.79	5.25	1.69	1.78	1.23
Cl7(174)	7.74	24.84	11.97	45.41	62.72	44.33	18.87	6.47	7.12	4.85
Cl7(176)	2.94	4.13	2.26	7.25	8.99	6.53	2.96	1.16	1.11	0.85
Cl7(177)	7.64	17.54	11.33	34.46	36.48	34.96	16.07	5.34	5.58	3.90
Cl7(178)	3.25	7.42	5.44	13.21	11.81	11.72	6.33	2.36	2.63	1.72
Cl7(179)	5.61	12.99	7.33	23.82	31.46	20.01	9.60	4.18	3.53	2.53
Cl7(180)	19.37	52.98	21.27	118.77	130.60	110.44	39.97	13.72	17.29	11.58
Cl7(183)	7.91	15.44	7.54	27.72	36.60	27.73	11.42	4.21	3.60	2.95
Cl7(184)	0.65	0.59	0.21	0.55	0.82	0.76	0.50	0.22	0.17	0.10
Cl7(185)	0.97	3.00	1.16	5.39	8.01	4.85	1.79	0.92	0.85	0.35
Cl7(187)	13.77	35.49	21.71	65.12	72.19	57.99	26.72	10.23	9.90	7.73
Cl7(189)	0.11	1.46	0.69	3.16	4.47	4.14	4.65	0.12	0.13	0.10
Cl7(190)	2.07	5.16	2.38	10.75	13.80	12.31	4.85	1.39	1.80	1.25
Cl7(193)	1.70	2.91	1.92	6.09	6.63	6.44	2.91	1.10	1.13	0.81
Cl8(194)	9.48	25.72	12.55	49.41	46.91	39.57	14.68	4.88	7.16	5.10
Cl8(195)	3.68	7.84	3.83	13.83	13.86	12.01	5.34	1.98	2.82	1.84
Cl8(199)	15.44	32.20	17.38	57.50	60.41	46.07	23.56	7.79	7.50	5.76
Cl8(200)	1.12	2.48	1.29	4.61	4.93	3.57	1.91	0.66	0.74	0.57
Cl8(201)	3.58	3.62	1.71	5.02	6.16	5.57	3.28	1.05	0.86	0.71
Cl8(202)	2.57	4.08	2.47	6.97	7.72	6.69	3.91	1.31	1.22	0.98
Cl8(196)/(203)	7.82	21.86	10.67	38.61	40.85	32.80	14.71	5.01	6.25	4.71
Cl8(205)	1.30	2.00	0.95	3.47	4.30	3.03	1.02	0.03	0.03	0.02
Cl9(206)	33.27	46.82	20.82	71.81	95.50	61.00	37.85	9.30	8.69	6.17
Cl9(207)	4.07	5.78	1.48	4.95	10.69	13.20	7.94	0.95	0.84	0.87
Cl9(208)	10.17	11.63	5.13	16.51	26.96	23.50	17.22	2.89	2.08	1.62
Cl10(209)	297.87	259.00	113.93	381.50	1003.04	717.32	981.36	83.98	47.36	31.51
Sum 117 congeners	6,972	26,890	5,757	52,891	58,098	77,193	43,135	10,092	18,135	9,635

STATION_ID	T176A	T176A	T176B	T176B	T176B	T176B	T176B	T176B	T176B	T176B
FIELD SAMPLE_ID	.76A 9.55-9.8	76A 9.8-10.5	T176B 0-1FT	T176B 1-2FT	T176B 2-3FT	T176B 3-4FT	T176B 4-5FT	T176B 5-6FT	T176B 6-7FT	T176B 7-8FT
SAMPLE DEPTH (from bottom)	9.55-9.8	9.8-10.55	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	8.30	24.58	477.49	136.49	83.66	135.67	45.70	150.44	16.99	13.01
Cl1(1)	0.07	0.05	0.11	0.09	0.08	20.95	14.72	30.51	13.14	36.57
Cl1(3)	0.03	0.03	0.06	0.05	0.04	13.62	11.39	22.56	7.54	22.60
Cl2(4)/(10)	2.07	2.46	0.20	0.16	0.14	97.37	83.05	120.75	55.15	385.52
Cl2(5)	0.11	0.09	0.18	0.15	0.13	0.23	0.25	4.44	2.92	14.14
Cl2(6)	4.44	3.82	163.73	117.95	105.19	655.04	124.20	130.95	143.94	1008.34
Cl2(7)	0.06	0.28	0.10	0.08	0.07	8.33	7.69	9.51	5.34	25.71
Cl2(8)	4.55	5.18	80.04	53.96	55.51	292.39	219.71	394.74	180.58	731.44
Cl2(9)	0.08	0.44	0.13	0.10	0.09	13.24	12.52	16.01	8.90	42.91
Cl2(13)	2.14	1.03	69.67	44.33	45.45	236.96	52.91	46.46	50.16	228.92
Cl2(15)	3.75	1.85	39.11	21.13	20.01	103.06	97.67	129.31	66.08	259.62
Cl3(16)	11.21	7.41	389.99	211.18	185.87	1048.95	625.57	1420.85	573.29	1569.07
Cl3(17)	15.32	7.98	490.54	298.34	229.68	1409.47	733.19	1339.62	611.12	2252.71
Cl3(18)	37.96	22.56	1610.60	982.60	759.73	4604.51	2090.42	5154.23	2032.32	6858.24
Cl3(19)	1.65	1.27	56.54	32.18	32.77	153.13	103.63	265.72	65.58	305.44
Cl3(22)	19.61	9.25	523.76	287.14	235.14	1347.52	839.92	1690.28	678.43	1892.00
Cl3(24)	0.06	0.05	0.10	0.08	0.07	9.31	9.26	10.25	5.03	16.88
Cl3(25)	25.34	8.14	672.99	454.09	401.65	2756.72	430.82	373.21	592.09	3209.10
Cl3(26)	30.42	10.82	791.67	447.48	402.16	2865.22	577.94	748.10	741.61	3959.37
Cl3(27)	1.52	0.78	45.19	22.47	22.09	108.31	76.47	137.90	49.07	209.06
Cl3(28)	61.39	25.47	1734.73	988.17	844.21	5338.26	2543.29	5016.74	2142.20	6736.64
Cl3(31)	71.92	28.66	2243.64	1229.59	1026.80	6466.04	2923.42	6399.39	2776.26	8722.82
Cl3(32)	9.93	5.45	301.94	186.44	138.51	780.90	463.37	1050.98	405.86	1228.80
Cl3(33)/(20)	26.03	11.90	746.08	394.41	336.44	1957.18	1368.57	2719.38	1131.58	2881.01
Cl3(37)	12.49	3.69	232.06	92.18	87.82	549.52	466.31	922.47	349.80	723.15
Cl4(40)	19.10	5.63	481.81	239.16	185.61	1250.45	702.78	1406.86	665.73	1835.43
Cl4(41)	6.09	2.06	176.77	94.09	68.00	304.89	321.13	852.89	305.19	658.25
Cl4(42)/(59)	41.58	13.56	1016.27	550.66	457.19	2768.65	1422.28	3236.75	1482.60	3881.45
Cl4(43)	4.57	1.28	118.88	60.02	59.12	330.64	132.81	351.21	152.56	399.51
Cl4(44)	93.94	30.63	3025.40	1434.68	1180.12	7263.97	3746.75	8480.02	3995.63	10436.74
Cl4(45)	15.55	6.25	458.30	257.45	208.17	1245.67	656.00	1704.53	638.92	1748.78
Cl4(46)	7.42	2.80	193.44	115.45	99.58	578.97	312.07	706.70	310.15	836.16
Cl4(47)	28.51	9.09	636.69	347.61	316.90	1957.36	916.80	2057.27	836.61	2551.76
Cl4(48)	14.10	4.75	442.31	166.57	151.95	793.80	803.13	2009.56	720.13	1413.45
Cl4(49)	82.21	25.78	2286.36	1146.29	1015.16	6392.13	2913.89	6236.58	3052.42	9236.92
Cl4(51)	4.60	1.68	152.83	75.37	62.29	345.19	152.81	425.12	177.91	478.66
Cl4(52)	106.65	35.46	3275.11	1666.04	1391.48	8786.49	4238.14	9692.06	4257.29	13271.13
Cl4(53)	13.42	5.37	424.02	244.29	189.97	1154.29	570.95	1392.15	687.46	1855.18
Cl4(54)	0.06	0.05	7.65	3.54	3.52	16.64	12.92	29.74	9.77	21.19
Cl4(56)	41.53	11.70	1245.85	503.31	441.16	2707.58	1784.41	3784.68	1494.59	3499.09
Cl4(60)	13.38	3.74	385.88	98.62	97.32	370.63	580.48	1740.68	527.06	1061.07
Cl4(64)	47.35	15.37	1393.41	688.84	598.67	3483.44	1896.10	4272.69	1736.90	5029.29
Cl4(66)	82.82	21.60	2098.75	820.68	705.71	4130.75	3353.75	7352.02	2710.86	5907.41
Cl4(70)	102.75	27.03	2969.00	1295.86	1125.86	6544.88	4245.08	9713.78	3719.91	8752.16
Cl4(71)	28.44	8.78	798.37	396.00	343.90	1915.65	1081.81	2289.35	969.47	2740.10
Cl4(74)	38.97	10.62	1052.89	416.13	353.45	1931.48	1774.91	4391.25	1416.73	3009.87
Cl4(77)	7.79	1.70	182.83	63.75	55.41	250.15	295.50	489.18	188.85	388.64
Cl4(81)	0.06	0.05	2.95	0.08	1.04	3.61	7.17	17.27	5.62	9.62
Cl5(82)	8.53	2.24	281.15	113.58	78.57	556.80	318.08	772.60	295.67	675.89
Cl5(83)/(119)	6.79	1.68	206.69	91.72	58.84	372.86	205.32	418.36	192.10	549.72
Cl5(84)	21.95	7.55	628.40	255.76	279.84	1519.20	868.70	2095.42	831.41	2312.30
Cl5(85)	11.68	2.83	340.00	127.46	114.33	665.72	481.22	924.01	405.76	996.10
Cl5(87)	14.75	3.97	455.91	182.15	156.68	922.42	698.78	1642.12	531.09	1302.13
Cl5(91)	10.10	2.67	237.69	111.41	89.08	656.13	328.49	700.46	339.67	941.17
Cl5(92)	7.32	1.46	171.05	90.19	43.85	453.99	192.71	301.20	219.58	557.52
Cl5(95)	33.69	9.85	877.39	397.06	323.17	2258.54	1177.46	2709.00	1188.76	3098.18
Cl5(97)	14.85	3.73	384.48	161.85	118.84	768.71	591.19	1288.00	512.96	1087.61
Cl5(99)	17.65	4.34	462.66	180.17	163.32	987.62	766.61	1657.22	589.63	1391.14
Cl5(100)	0.40	0.05	5.76	2.77	2.72	16.12	9.56	17.37	7.63	21.65

STATION_ID	T176A	T176A	T176B	T176B	T176B	T176B	T176B	T176B	T176B	T176B
FIELD SAMPLE_ID	76A 9.55-9.8	76A 9.8-10.55	T176B 0-1FT	T176B 1-2FT	T176B 2-3FT	T176B 3-4FT	T176B 4-5FT	T176B 5-6FT	T176B 6-7FT	T176B 7-8FT
SAMPLE DEPTH (from bottom)	9.55-9.8	9.8-10.55	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	26.38	6.73	645.81	299.88	244.96	1541.24	1101.81	2552.92	861.97	2098.83
Cl5(105)	14.98	2.91	427.24	122.71	125.94	587.04	611.52	1461.32	502.71	1055.48
Cl5(110)	49.33	12.84	1308.57	526.74	506.82	3078.77	1839.26	3639.54	1554.35	4208.45
Cl5(114)	0.14	0.11	6.20	0.18	3.13	14.92	35.72	99.88	30.84	48.79
Cl5(115)	0.70	0.28	17.58	5.15	6.42	23.80	30.60	95.03	25.33	61.22
Cl5(118)	25.79	5.27	686.47	217.76	212.80	1244.79	1027.97	2122.19	725.01	1710.17
Cl5(107)/(123)	4.08	0.99	117.69	41.95	40.91	223.39	136.65	245.28	124.32	312.92
Cl5(124)	0.08	0.06	22.73	6.86	6.84	30.81	41.42	97.68	32.49	62.44
Cl5(126)	0.11	0.09	0.18	0.15	0.13	7.63	8.45	12.61	5.41	10.01
Cl6(128)	2.09	0.71	44.73	18.38	19.05	97.94	82.81	143.98	52.71	101.67
Cl6(130)	1.33	0.08	21.24	10.21	10.78	66.87	35.80	62.08	23.76	50.20
Cl6(134)	1.01	0.07	14.88	6.34	6.64	40.23	28.05	47.49	18.75	40.04
Cl6(135)	1.85	0.48	31.49	14.23	15.17	101.92	47.62	75.36	33.45	68.01
Cl6(136)	1.63	0.54	32.56	14.37	15.91	90.87	53.43	86.61	35.85	75.33
Cl6(137)	0.14	0.11	12.41	4.01	4.39	20.61	23.97	51.89	15.19	29.94
Cl6(138)	6.88	1.81	126.15	55.64	56.93	251.04	187.62	397.25	151.38	203.58
Cl6(141)	1.59	0.46	29.04	8.42	9.25	44.84	51.33	103.82	33.00	52.38
Cl6(144)	0.12	0.10	0.20	0.16	0.14	0.25	0.27	0.26	0.15	0.22
Cl6(146)	2.12	0.54	36.45	18.75	20.16	112.57	58.67	78.63	35.18	63.98
Cl6(149)	8.27	2.47	169.90	70.55	64.48	384.97	247.83	348.49	167.47	283.91
Cl6(151)	2.08	0.73	45.04	19.08	20.35	176.75	71.21	100.73	41.12	73.75
Cl6(132)/(153)/(168)	10.24	2.91	210.39	74.69	66.10	487.29	295.36	499.82	213.35	466.03
Cl6(156)	1.25	0.02	13.54	5.64	5.31	28.33	39.55	88.53	24.68	40.91
Cl6(157)	0.10	0.08	8.24	2.51	2.52	11.03	13.72	24.19	8.29	14.22
Cl6(129)/(158)	1.20	0.34	24.67	7.36	8.86	34.02	40.71	70.78	25.98	45.47
Cl6(163)	2.39	0.50	39.32	16.00	16.84	107.03	63.35	100.48	35.81	70.05
Cl6(164)	0.72	0.05	12.92	5.65	6.14	35.00	25.85	42.22	14.99	28.67
Cl6(166)	0.11	0.09	0.18	0.15	0.13	0.23	0.25	5.66	0.14	0.20
Cl6(167)	0.91	0.05	10.30	2.93	4.08	18.10	17.59	32.25	10.37	18.07
Cl6(169)	0.15	0.12	0.14	0.14	0.15	0.29	0.32	0.32	0.48	0.29
Cl7(170)	2.12	0.50	35.35	12.54	13.95	79.36	48.15	93.45	30.98	47.07
Cl7(171)	0.59	0.17	11.02	4.27	4.60	29.37	14.93	22.75	8.35	13.04
Cl7(172)	0.82	0.06	11.00	4.15	5.04	25.35	12.61	18.26	7.71	11.34
Cl7(174)	1.86	0.66	43.82	15.79	17.75	101.62	53.43	0.09	28.88	37.54
Cl7(176)	0.31	0.10	6.90	2.39	2.86	17.43	7.51	9.22	4.17	5.26
Cl7(177)	1.53	0.46	26.14	10.37	12.60	78.77	31.75	45.68	18.76	28.06
Cl7(178)	0.60	0.25	11.93	4.67	5.63	33.74	12.95	15.11	7.71	10.00
Cl7(179)	1.01	0.35	23.43	8.79	9.63	58.62	28.20	30.03	13.81	15.02
Cl7(180)	4.50	1.36	113.49	33.07	35.23	196.37	104.82	141.12	61.37	85.04
Cl7(183)	1.19	0.34	27.31	9.94	10.92	62.54	29.88	41.39	16.74	20.94
Cl7(184)	0.05	0.04	1.13	0.40	0.33	0.64	1.09	1.89	0.50	0.71
Cl7(185)	0.08	0.06	6.24	1.78	2.03	11.37	7.06	8.47	3.39	4.61
Cl7(187)	2.54	0.91	58.69	22.86	25.43	170.86	63.93	76.70	35.02	45.15
Cl7(189)	0.11	0.09	3.47	1.22	1.44	3.58	3.80	7.33	3.42	4.05
Cl7(190)	0.57	0.07	9.50	3.14	3.15	18.63	12.68	21.49	7.17	12.44
Cl7(193)	0.30	0.09	5.27	2.33	2.50	13.96	6.27	9.38	3.75	5.29
Cl8(194)	2.37	0.35	48.67	19.64	19.76	83.23	45.67	60.86	28.19	34.07
Cl8(195)	0.90	0.05	16.94	5.49	6.57	30.58	13.63	21.95	10.03	14.08
Cl8(199)	2.04	0.49	68.99	25.19	28.69	116.44	62.69	71.25	30.28	34.41
Cl8(200)	0.13	0.13	4.75	1.56	1.83	9.65	4.88	5.62	2.61	3.32
Cl8(201)	0.31	0.10	6.82	2.24	2.64	11.12	6.53	10.43	3.66	4.64
Cl8(202)	0.45	0.07	8.55	2.98	3.64	15.82	9.01	9.92	4.26	5.12
Cl8(196)/(203)	1.73	0.45	44.33	15.86	17.06	77.18	41.58	54.89	24.36	30.17
Cl8(205)	0.03	0.02	3.97	1.56	1.59	5.74	3.60	5.33	2.99	3.51
Cl9(206)	2.09	0.52	124.96	42.18	48.30	93.44	95.47	101.54	29.69	37.91
Cl9(207)	0.24	0.08	10.55	2.70	2.68	10.91	11.99	33.95	4.84	8.60
Cl9(208)	0.55	0.14	24.02	9.27	11.12	23.67	27.39	37.38	8.01	10.54
Cl10(209)	16.62	2.14	600.64	247.02	190.80	650.95	935.46	1443.89	175.86	278.57
Sum 117 congeners	1,504	496	42,544	20,353	17,460	105,435	59,352	128,399	53,246	147,381

STATION_ID	T176B	T176B	T176B	T177A	T177A	T177A	T177A	T177A	T177A	T177A
FIELD SAMPLE_ID	176B 8-8.95F	.76B 8.95-9.9	.76B 9.9-10.9	T177A 0-1FT	177A 1-1.45F	177A 1.45-2F	T177-A-WV	177A 3.3-4F	T177A 4-5FT	177A 5-6.15F
SAMPLE DEPTH (from bottom)	8-8.77	8.77-9.55	9.55-9.8	0-1	1-1.45	1.45-2	2-3.3	3.3-4	4-5	5-6.15
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	15.15	25.76	27.55	0.62	8.20	52.01	31.93	44.73	39.17	18.76
Cl1(1)	17.14	11.73	0.08	0.05	0.05	0.09	0.07	14.61	19.24	14.90
Cl1(3)	10.65	6.83	0.04	0.02	0.03	0.04	0.04	11.03	9.08	6.89
Cl2(4)/(10)	120.41	84.08	18.67	0.09	0.09	15.58	0.13	70.64	72.11	76.80
Cl2(5)	7.91	7.02	0.12	0.08	0.08	0.14	0.12	0.44	0.31	5.65
Cl2(6)	449.76	186.11	59.50	0.26	4.78	60.65	27.26	144.86	269.34	210.90
Cl2(7)	16.40	13.48	2.78	0.04	0.04	0.08	0.06	8.41	7.79	11.16
Cl2(8)	363.02	225.23	45.61	0.07	2.34	24.29	20.45	203.77	231.36	239.89
Cl2(9)	27.49	23.12	4.26	0.06	0.06	0.10	0.08	13.82	12.03	19.26
Cl2(13)	152.77	78.14	26.67	0.06	1.69	28.21	10.87	53.07	93.79	64.33
Cl2(15)	151.95	115.34	43.71	0.10	0.83	8.47	6.09	92.81	91.12	96.88
Cl3(16)	641.61	328.63	81.54	0.07	7.53	104.20	63.57	523.78	672.60	344.05
Cl3(17)	897.74	476.20	122.04	0.79	10.76	151.74	77.54	606.77	798.99	443.42
Cl3(18)	2599.79	1175.26	324.95	1.70	28.42	439.27	215.74	1760.84	2596.63	1080.96
Cl3(19)	77.21	51.76	13.99	0.07	1.56	15.39	7.89	77.86	100.78	48.06
Cl3(22)	785.95	398.31	118.29	1.02	9.99	136.99	68.53	652.02	978.93	399.16
Cl3(24)	10.28	9.16	0.07	0.04	0.04	0.08	0.06	8.68	5.67	7.06
Cl3(25)	1697.96	662.18	229.35	0.88	18.23	307.18	119.22	421.66	974.05	593.29
Cl3(26)	1920.69	682.21	256.93	0.91	17.01	300.82	101.91	557.97	1039.42	673.52
Cl3(27)	59.74	40.65	10.95	0.04	0.91	10.61	6.47	57.12	75.70	36.54
Cl3(28)	2849.58	1485.67	404.34	1.54	31.30	489.89	243.05	2179.84	3531.34	1355.47
Cl3(31)	3452.49	1709.83	490.13	2.11	37.12	625.75	287.46	2350.50	4075.63	1586.35
Cl3(32)	435.31	198.09	60.18	0.42	5.78	71.48	37.04	378.25	509.44	218.05
Cl3(33)/(20)	1157.12	642.67	164.10	0.76	15.00	175.84	109.27	1027.74	1490.28	575.12
Cl3(37)	287.03	191.93	59.56	0.07	4.07	46.94	33.26	365.07	513.01	209.56
Cl4(40)	701.89	316.15	100.23	0.41	9.46	121.72	57.97	630.14	730.77	281.05
Cl4(41)	150.25	72.64	22.86	0.04	1.94	24.76	19.19	211.80	262.51	633.42
Cl4(42)/(59)	1556.66	794.16	234.39	0.87	18.60	264.71	127.95	1185.56	1652.60	686.97
Cl4(43)	162.46	88.32	28.54	0.05	1.89	34.41	17.30	157.62	200.19	80.72
Cl4(44)	3772.81	1762.64	572.91	2.28	43.56	682.47	335.59	3202.68	4785.85	1561.30
Cl4(45)	692.38	322.42	92.29	0.52	8.46	127.41	60.26	590.44	729.53	264.15
Cl4(46)	251.53	129.51	45.07	0.07	4.25	55.96	26.77	249.28	353.11	127.41
Cl4(47)	1047.19	550.19	160.55	0.61	12.36	181.18	83.25	807.42	1110.84	422.64
Cl4(48)	413.57	244.18	61.90	0.06	5.43	66.52	53.01	609.19	765.19	177.52
Cl4(49)	3773.14	1713.23	539.16	1.95	36.66	596.27	273.90	2490.01	3964.79	1457.44
Cl4(51)	172.09	85.46	27.92	0.07	2.28	35.18	15.39	153.54	199.89	75.20
Cl4(52)	4891.33	2144.01	675.75	2.68	50.46	847.31	371.47	3566.02	5336.92	1928.30
Cl4(53)	656.25	270.57	86.85	0.45	7.96	102.01	51.20	490.59	670.34	241.12
Cl4(54)	8.19	5.02	2.34	0.04	0.04	1.94	1.00	9.15	11.29	3.86
Cl4(56)	1311.95	723.50	209.86	0.97	17.21	248.19	117.20	1398.75	1889.03	596.92
Cl4(60)	178.60	106.35	39.85	0.07	2.48	32.39	22.44	320.86	439.84	84.34
Cl4(64)	1722.70	896.16	281.29	1.19	21.79	336.49	158.74	1495.36	2069.41	747.33
Cl4(66)	2005.94	1211.39	367.84	1.42	24.67	340.17	216.57	2685.82	3482.08	1069.73
Cl4(70)	3223.75	1853.27	521.20	2.14	38.40	602.26	309.74	3339.17	4654.23	1540.41
Cl4(71)	1007.73	490.00	155.46	0.63	12.94	187.83	90.92	899.66	1260.17	404.89
Cl4(74)	882.86	559.69	153.23	0.65	12.32	145.22	102.55	1320.26	1892.86	486.29
Cl4(77)	119.60	91.48	31.47	0.13	2.38	26.11	19.01	217.22	299.15	87.48
Cl4(81)	1.79	2.25	0.07	0.04	0.04	0.08	0.06	5.73	4.28	0.08
Cl5(82)	244.75	115.63	37.55	0.05	3.47	53.04	27.53	294.42	400.14	105.63
Cl5(83)/(119)	221.32	117.79	40.03	0.07	2.90	43.77	23.59	188.39	283.49	102.76
Cl5(84)	1044.69	451.12	133.52	0.09	9.71	149.80	63.96	761.08	943.19	330.34
Cl5(85)	372.07	152.45	53.86	0.04	4.03	64.02	30.69	348.17	567.02	169.76
Cl5(87)	332.21	169.75	55.07	0.44	5.41	79.16	52.15	477.94	712.05	138.35
Cl5(91)	369.64	174.80	60.03	0.04	4.00	62.33	32.63	253.01	391.61	181.68
Cl5(92)	192.14	96.71	49.24	0.06	2.99	48.11	28.63	217.73	296.14	114.34
Cl5(95)	1232.61	588.77	178.54	0.78	13.76	201.39	101.65	969.37	1418.89	524.76
Cl5(97)	408.78	228.10	72.29	0.47	5.74	77.96	49.15	429.46	663.07	218.29
Cl5(99)	439.86	257.47	77.83	0.43	6.15	80.33	47.58	607.18	789.40	205.62
Cl5(100)	10.87	6.31	2.10	0.04	0.04	1.89	0.85	7.89	9.51	4.89

STATION_ID	T176B	T176B	T176B	T177A	T177A	T177A	T177A	T177A	T177A	T177A
FIELD SAMPLE_ID	176B 8-8.95F	.76B 8.95-9.9	.76B 9.9-10.9	T177A 0-1FT	177A 1-1.45F	177A 1.45-2F	T177-A-WV	177A 3.3-4F	T177A 4-5FT	177A 5-6.15F
SAMPLE DEPTH (from bottom)	8-8.77	8.77-9.55	9.55-9.8	0-1	1-1.45	1.45-2	2-3.3	3.3-4	4-5	5-6.15
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	618.35	392.46	111.41	0.50	8.94	109.16	79.01	922.44	1317.89	356.91
Cl5(105)	223.49	177.67	49.27	0.07	3.29	50.93	28.36	414.02	518.01	135.14
Cl5(110)	1728.45	839.30	290.20	1.10	19.64	298.35	148.55	1418.36	2164.80	745.88
Cl5(114)	7.58	6.24	1.88	0.10	0.10	0.17	0.14	13.44	26.34	4.36
Cl5(115)	14.99	9.19	2.51	0.09	0.09	3.06	1.87	21.66	0.33	0.16
Cl5(118)	545.65	308.20	102.73	0.50	7.44	90.54	58.61	833.05	1181.55	312.00
Cl5(107)/(123)	130.38	63.29	20.68	0.09	1.52	23.24	14.32	126.75	162.58	58.32
Cl5(124)	15.50	9.38	3.30	0.06	0.06	2.38	1.74	32.52	32.46	8.48
Cl5(126)	2.49	0.16	0.12	0.08	0.08	0.14	0.12	0.44	7.04	0.15
Cl6(128)	44.54	25.84	9.25	0.07	1.09	10.11	6.65	57.66	85.84	22.87
Cl6(130)	25.53	14.50	5.49	0.07	0.08	7.89	3.75	27.25	43.79	11.62
Cl6(134)	18.81	11.05	3.92	0.06	0.06	4.52	2.03	20.74	30.07	9.65
Cl6(135)	35.08	21.45	8.27	0.07	0.64	9.73	5.01	35.16	55.91	17.32
Cl6(136)	35.25	20.40	7.58	0.02	0.88	9.28	4.23	38.42	60.09	17.85
Cl6(137)	8.67	5.13	2.30	0.10	0.10	0.17	1.43	17.03	20.12	4.53
Cl6(138)	114.72	69.91	25.21	0.08	2.10	28.86	17.69	176.64	279.15	61.23
Cl6(141)	12.39	8.87	3.48	0.04	0.04	3.62	2.91	30.09	40.60	7.91
Cl6(144)	0.17	0.17	0.13	0.09	0.09	0.15	1.04	0.47	16.62	3.24
Cl6(146)	38.30	24.80	9.03	0.02	0.95	14.61	7.00	43.88	79.14	21.38
Cl6(149)	136.02	87.21	33.93	0.07	2.70	40.90	22.78	168.53	253.64	75.22
Cl6(151)	36.15	22.42	8.94	0.07	0.77	11.96	6.11	44.87	78.18	19.35
Cl6(132)/(153)/(168)	163.24	99.55	36.94	0.06	3.24	45.71	26.21	227.49	392.20	93.39
Cl6(156)	12.79	7.33	4.09	0.02	0.02	3.62	2.15	24.40	31.55	6.52
Cl6(157)	4.58	3.16	0.11	0.07	0.08	2.88	0.69	7.64	10.55	2.17
Cl6(129)/(158)	15.03	9.84	4.42	0.07	0.41	5.53	2.82	28.64	29.32	8.34
Cl6(163)	36.50	21.91	8.62	0.07	0.73	11.93	4.98	41.83	65.91	21.32
Cl6(164)	12.33	7.58	3.17	0.05	0.05	3.98	1.91	17.55	26.41	7.00
Cl6(166)	0.16	0.16	0.12	0.08	0.08	0.14	0.12	0.44	0.31	0.15
Cl6(167)	6.67	5.36	1.83	0.05	0.05	2.63	1.37	14.13	14.54	4.19
Cl6(169)	0.20	0.17	0.16	0.10	0.11	0.20	0.35	0.57	0.34	0.18
Cl7(170)	17.37	11.39	4.94	0.06	0.58	8.19	3.90	33.87	55.11	11.92
Cl7(171)	6.02	3.96	1.52	0.04	0.04	2.91	1.14	11.42	17.47	3.83
Cl7(172)	4.76	3.38	1.58	0.06	0.06	3.29	1.17	8.68	13.39	3.70
Cl7(174)	17.03	12.08	5.13	0.03	0.70	8.90	4.88	35.00	60.72	11.75
Cl7(176)	2.61	2.10	0.89	0.05	0.32	1.95	0.83	4.36	8.75	1.79
Cl7(177)	14.62	10.08	4.44	0.06	0.56	6.48	3.60	19.89	38.36	9.19
Cl7(178)	6.23	4.50	2.27	0.04	0.41	3.98	1.60	8.63	15.82	3.77
Cl7(179)	8.89	6.78	2.90	0.08	0.47	6.02	2.60	15.98	31.86	6.03
Cl7(180)	34.41	25.02	10.69	0.06	1.06	19.40	10.08	72.24	112.49	23.90
Cl7(183)	9.97	7.42	3.10	0.06	0.64	6.59	3.08	18.97	35.09	6.95
Cl7(184)	0.43	0.42	0.06	0.04	0.04	0.63	0.21	1.24	0.44	0.19
Cl7(185)	2.06	1.16	0.65	0.06	0.06	1.16	0.58	4.95	6.62	1.15
Cl7(187)	25.50	18.96	8.26	0.05	1.09	15.54	7.20	39.02	79.06	15.71
Cl7(189)	1.48	0.16	0.12	0.08	0.08	0.14	0.12	3.88	3.99	1.48
Cl7(190)	4.35	2.71	1.45	0.06	0.06	2.61	0.98	8.61	11.47	3.07
Cl7(193)	2.91	1.70	0.93	0.03	0.03	1.67	0.66	4.17	7.06	1.47
Cl8(194)	16.27	12.40	4.81	0.04	1.01	12.94	5.11	30.63	51.27	10.06
Cl8(195)	6.43	4.54	1.74	0.04	0.04	3.77	1.69	10.81	18.90	3.49
Cl8(199)	20.88	17.84	6.61	0.08	1.59	28.33	9.42	43.36	76.73	15.43
Cl8(200)	1.80	1.44	0.56	0.09	0.09	1.25	0.50	4.30	6.03	1.26
Cl8(201)	2.94	2.03	0.78	0.09	0.28	2.36	0.88	5.87	8.25	1.85
Cl8(202)	3.45	3.11	1.13	0.06	0.27	3.48	1.17	6.54	9.68	2.78
Cl8(196)/(203)	15.42	12.24	4.73	0.02	1.09	11.33	4.40	31.44	26.61	5.44
Cl8(205)	1.74	1.44	0.03	0.02	0.02	1.40	0.69	4.10	3.93	0.84
Cl9(206)	24.74	25.94	8.61	0.21	3.75	62.73	22.41	82.08	107.78	23.69
Cl9(207)	4.29	3.66	0.88	0.07	0.26	2.44	1.21	13.00	13.66	4.02
Cl9(208)	8.33	9.17	2.10	0.07	0.95	15.33	5.58	23.23	30.40	8.72
Cl10(209)	248.49	314.06	61.34	0.56	16.22	206.57	120.74	526.72	870.27	247.72
Sum 117 congeners	56,321	28,388	8,610	37	679	10,174	5,096	48,052	70,155	25,840

STATION_ID	T177A	T177A	T177A	T177A	T177B	T177B	T177B	T177B	T177B	T177B
FIELD SAMPLE_ID	T177-A-RQ	177A 6.7-7.3F	77A 7.3-7.65	77A 7.65-8.3	T177B 0-1FT	177B 1-1.4F	177B 1.4-2F	T177B 2-3FT	T177B 3-4FT	T177B 4-5FT
SAMPLE DEPTH (from bottom)	6.15-6.7	6.7-7.3	7.3-7.65	7.65-8.3	0-1	1-1.4	1.4-2	2-3	3-4	4-5
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	14.95	15.49	9.13	2.85	147.24	38.74	266.70	139.77	40.38	34.83
Cl1(1)	9.77	0.08	0.07	0.05	0.06	0.06	0.09	0.08	0.07	0.12
Cl1(3)	6.67	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.03	0.06
Cl2(4)/(10)	101.40	6.94	1.60	0.80	0.11	0.10	0.15	0.13	0.12	84.05
Cl2(5)	6.18	0.13	0.11	0.09	0.10	0.10	0.14	0.12	0.11	0.19
Cl2(6)	115.59	7.88	2.90	1.14	0.30	0.40	14.03	17.88	124.08	733.71
Cl2(7)	12.98	0.07	0.06	0.05	0.06	0.05	0.08	0.07	0.06	7.02
Cl2(8)	235.15	8.68	3.07	2.05	4.47	0.21	16.85	18.29	35.88	317.25
Cl2(9)	19.79	0.09	0.08	0.06	0.07	0.07	0.10	0.09	0.08	11.66
Cl2(13)	42.06	5.14	1.72	0.47	0.07	0.07	5.76	9.24	43.86	268.14
Cl2(15)	110.50	9.71	3.11	0.99	0.13	0.12	4.58	6.44	13.15	91.13
Cl3(16)	263.49	21.84	10.89	5.29	16.60	1.93	76.50	66.02	187.21	1013.65
Cl3(17)	331.50	33.77	14.06	5.40	20.88	2.79	103.58	88.63	215.31	1480.09
Cl3(18)	737.93	72.35	34.03	16.64	48.08	6.49	260.26	246.67	657.76	4564.20
Cl3(19)	52.76	4.60	1.52	0.95	2.35	0.08	12.48	10.35	22.49	127.88
Cl3(22)	290.13	33.67	18.19	6.08	22.09	2.21	88.72	81.05	214.18	1392.91
Cl3(24)	7.26	0.07	0.06	0.05	0.06	0.05	0.08	0.07	0.06	7.27
Cl3(25)	165.22	32.46	14.99	4.25	4.35	2.47	58.28	68.81	519.02	3248.93
Cl3(26)	221.38	42.41	19.56	6.29	9.03	2.95	59.03	70.77	550.01	3480.44
Cl3(27)	28.22	2.58	1.19	0.46	1.11	0.04	7.39	6.87	15.78	94.89
Cl3(28)	872.74	118.49	56.28	17.62	80.63	7.48	316.46	315.49	777.14	5037.98
Cl3(31)	885.58	135.47	57.89	21.24	63.62	8.62	365.22	342.48	1052.91	6580.91
Cl3(32)	155.71	17.98	9.25	3.78	12.20	1.07	53.15	48.42	139.56	744.88
Cl3(33)/(20)	418.49	41.62	22.45	8.94	33.89	3.82	145.85	141.13	316.78	1912.54
Cl3(37)	142.72	21.01	11.88	3.21	11.90	0.08	43.14	40.44	52.73	504.26
Cl4(40)	147.17	30.32	14.65	3.84	19.98	2.02	86.06	81.13	174.43	1131.58
Cl4(41)	58.99	3.79	5.91	1.62	7.78	0.05	0.08	15.37	37.05	236.41
Cl4(42)/(59)	376.38	69.39	37.49	10.68	41.81	4.83	164.30	153.70	396.59	2407.78
Cl4(43)	46.33	6.98	3.10	0.05	4.92	0.06	21.58	21.04	47.58	337.39
Cl4(44)	929.05	156.46	81.79	25.02	110.25	14.82	416.62	393.60	1038.79	6546.27
Cl4(45)	175.69	27.58	14.52	5.17	20.02	2.25	79.83	69.54	173.05	1185.71
Cl4(46)	84.43	12.71	6.47	2.07	8.57	0.65	39.11	32.77	75.09	566.65
Cl4(47)	219.83	49.06	24.96	6.79	28.77	3.87	131.35	110.01	267.65	1728.90
Cl4(48)	204.59	22.49	13.97	4.81	24.36	1.38	57.50	73.60	93.15	558.81
Cl4(49)	803.49	151.33	70.21	21.20	87.28	15.46	387.97	326.30	920.35	5946.85
Cl4(51)	45.61	8.05	4.09	1.38	5.45	0.31	24.09	21.93	48.52	255.95
Cl4(52)	956.81	179.67	91.49	28.78	117.80	22.00	476.61	451.99	936.81	5217.33
Cl4(53)	171.11	25.68	13.05	4.49	17.70	2.08	77.01	68.07	174.11	955.36
Cl4(54)	2.40	0.93	0.06	0.14	0.06	0.05	1.66	0.77	2.88	15.07
Cl4(56)	338.21	64.06	40.76	10.83	45.36	4.74	180.28	185.61	327.57	2180.12
Cl4(60)	49.88	10.11	12.88	4.14	9.44	0.41	0.12	19.31	40.60	303.42
Cl4(64)	446.70	73.66	43.44	12.51	47.83	5.89	193.87	196.75	479.74	3112.35
Cl4(66)	733.75	133.30	77.12	20.53	107.74	10.97	390.84	348.71	425.87	3015.49
Cl4(70)	890.00	156.86	89.57	25.88	124.28	16.26	452.68	432.03	781.75	5118.19
Cl4(71)	258.50	46.86	25.64	7.02	30.99	3.19	116.69	120.43	268.05	1746.94
Cl4(74)	351.28	58.11	37.74	10.15	52.18	4.40	129.38	165.44	213.07	1398.44
Cl4(77)	49.26	11.77	7.32	2.34	8.30	0.84	30.10	28.23	31.18	293.16
Cl4(81)	0.70	0.07	0.06	0.05	0.06	0.05	0.08	0.07	0.06	2.34
Cl5(82)	79.58	9.02	7.97	2.69	8.71	0.67	23.95	31.89	66.07	377.57
Cl5(83)/(119)	51.59	11.19	6.08	1.80	7.81	1.87	34.40	26.54	54.95	409.14
Cl5(84)	193.13	35.40	21.19	5.62	22.92	4.15	74.82	63.19	186.86	1352.25
Cl5(85)	88.72	13.03	11.40	3.94	9.89	1.12	18.42	34.58	78.64	553.15
Cl5(87)	114.51	15.35	14.66	5.34	20.10	2.04	32.73	52.78	102.78	586.41
Cl5(91)	90.90	16.60	9.50	2.50	11.27	1.66	43.03	36.74	84.35	546.75
Cl5(92)	64.02	11.48	7.38	1.76	8.72	1.72	37.14	29.54	81.81	501.35
Cl5(95)	274.68	54.66	31.00	9.04	39.28	8.99	138.80	123.84	307.29	2008.56
Cl5(97)	144.28	23.16	14.82	4.61	20.29	2.32	53.67	59.52	100.10	625.01
Cl5(99)	153.70	30.68	17.85	6.07	26.84	3.55	69.37	68.30	107.93	734.32
Cl5(100)	2.37	0.57	0.06	0.05	0.06	0.05	0.08	1.08	2.07	14.84

STATION_ID	T177A	T177A	T177A	T177A	T177B	T177B	T177B	T177B	T177B	T177B
FIELD SAMPLE_ID	T177-A-RQ	177A 6.7-7.3F	77A 7.3-7.65	77A 7.65-8.3	T177B 0-1FT	177B 1-1.4F	177B 1.4-2F	T177B 2-3FT	T177B 3-4FT	T177B 4-5FT
SAMPLE DEPTH (from bottom)	6.15-6.7	6.7-7.3	7.3-7.65	7.65-8.3	0-1	1-1.4	1.4-2	2-3	3-4	4-5
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	236.27	42.57	26.50	8.22	39.07	6.89	128.98	125.10	174.44	1091.67
Cl5(105)	81.49	15.40	13.51	6.13	14.76	1.63	16.84	34.78	58.56	455.86
Cl5(110)	344.39	75.68	45.60	14.29	52.34	11.15	198.84	196.62	391.58	3001.21
Cl5(114)	3.85	0.16	0.14	0.48	0.13	0.12	0.17	0.15	0.14	14.66
Cl5(115)	2.87	0.14	0.12	0.09	0.11	0.10	0.15	0.13	0.12	0.20
Cl5(118)	195.05	38.09	24.80	9.42	35.67	4.63	96.08	114.50	135.06	992.98
Cl5(107)/(123)	39.63	6.45	4.21	1.39	5.74	1.05	17.41	14.61	28.66	226.98
Cl5(124)	6.00	1.03	0.08	0.06	0.99	0.07	0.10	2.06	3.43	20.19
Cl5(126)	1.50	0.13	0.11	0.09	0.10	0.10	0.14	0.12	0.11	4.66
Cl6(128)	11.68	3.09	1.87	0.82	2.47	0.61	7.84	6.99	11.95	85.81
Cl6(130)	5.81	1.09	1.13	0.29	3.00	0.35	5.47	4.09	8.45	60.06
Cl6(134)	4.45	1.31	0.96	0.07	1.46	0.07	3.61	2.63	4.83	38.70
Cl6(135)	7.59	2.78	1.69	0.43	1.99	0.64	8.12	5.36	12.47	89.40
Cl6(136)	7.41	2.64	1.54	0.51	4.77	1.06	8.53	6.16	10.84	80.04
Cl6(137)	2.83	0.92	0.14	0.25	2.25	0.12	0.17	1.37	2.05	14.87
Cl6(138)	31.80	8.45	6.30	2.49	11.11	1.67	21.54	22.24	34.54	308.40
Cl6(141)	4.33	1.30	1.48	0.68	0.06	0.05	0.08	3.01	4.70	34.17
Cl6(144)	1.76	0.35	0.35	0.10	0.55	0.19	0.15	1.31	2.13	16.46
Cl6(146)	10.21	3.36	1.92	0.50	2.96	0.75	13.39	9.35	14.61	105.89
Cl6(149)	54.61	11.98	8.17	2.45	11.64	3.13	32.68	25.66	48.01	345.85
Cl6(151)	9.46	3.24	2.35	0.40	3.61	0.51	9.22	7.98	14.98	111.58
Cl6(132)/(153)/(168)	49.55	14.95	10.38	3.58	15.99	3.28	42.08	35.76	51.54	438.20
Cl6(156)	4.36	1.27	0.93	0.83	3.39	0.02	0.03	2.17	2.76	23.39
Cl6(157)	1.20	0.12	0.11	0.36	2.23	0.09	0.13	0.77	1.04	8.34
Cl6(129)/(158)	4.52	1.40	1.03	0.56	1.68	0.33	3.06	3.03	4.16	29.35
Cl6(163)	7.92	3.35	2.09	0.68	2.68	1.24	10.26	6.11	12.97	98.20
Cl6(164)	3.55	1.04	0.65	0.29	1.96	0.22	2.62	2.35	3.64	27.66
Cl6(166)	0.13	0.13	0.11	0.09	0.10	0.10	0.14	0.12	0.11	0.19
Cl6(167)	2.00	0.56	0.69	0.45	2.36	0.06	0.09	1.67	1.69	10.88
Cl6(169)	0.19	0.17	0.15	0.11	0.14	0.12	0.18	0.16	0.15	0.21
Cl7(170)	4.97	1.84	2.13	0.91	2.91	0.37	4.36	5.47	7.95	56.52
Cl7(171)	1.39	0.53	0.39	0.29	0.64	0.05	1.77	1.58	2.90	20.61
Cl7(172)	1.24	0.46	0.32	0.26	2.64	0.22	2.04	2.39	3.17	17.67
Cl7(174)	5.23	2.33	1.90	0.72	2.91	0.49	6.02	6.16	10.31	71.21
Cl7(176)	0.83	0.50	0.32	0.14	2.80	0.24	1.79	1.31	1.94	13.92
Cl7(177)	4.21	1.84	1.36	0.62	1.66	0.18	4.98	4.04	8.05	60.14
Cl7(178)	1.43	0.95	0.60	0.23	1.17	0.27	5.43	2.73	3.89	26.86
Cl7(179)	2.38	1.45	1.27	0.40	2.86	0.39	4.13	3.98	6.33	44.91
Cl7(180)	10.68	4.59	4.77	2.17	6.40	0.75	10.65	13.49	21.00	116.23
Cl7(183)	3.25	1.27	1.13	0.53	4.79	0.30	3.85	4.51	6.32	44.99
Cl7(184)	0.06	0.06	0.05	0.04	0.57	0.04	0.82	0.50	0.28	0.09
Cl7(185)	0.71	0.09	0.18	0.11	0.07	0.07	0.59	0.09	1.24	7.89
Cl7(187)	6.64	3.53	2.91	1.05	4.46	0.83	11.21	9.52	16.58	113.77
Cl7(189)	0.81	0.13	0.11	0.26	0.10	0.10	0.14	0.12	0.11	2.29
Cl7(190)	1.42	0.42	0.42	0.22	0.77	0.07	0.75	1.63	2.10	12.82
Cl7(193)	0.60	0.45	0.12	0.03	0.97	0.04	1.09	0.88	1.29	9.04
Cl8(194)	4.18	1.81	1.80	0.98	3.47	0.64	8.59	9.37	12.60	57.06
Cl8(195)	1.76	0.30	0.06	0.45	0.74	0.05	2.17	1.51	3.80	20.78
Cl8(199)	5.66	2.71	2.03	0.84	9.17	1.51	34.59	26.64	18.15	80.67
Cl8(200)	0.56	0.40	0.13	0.10	0.56	0.11	0.70	0.90	1.33	6.68
Cl8(201)	0.82	0.49	0.20	0.10	1.62	0.11	1.64	1.49	1.52	7.97
Cl8(202)	1.43	0.69	0.45	0.16	1.55	0.35	4.37	2.75	2.20	11.10
Cl8(196)/(203)	3.99	1.00	1.05	1.00	2.51	0.19	4.22	4.41	5.26	27.16
Cl8(205)	0.89	0.03	0.03	0.23	1.23	0.02	0.99	0.94	0.91	3.89
Cl9(206)	8.96	4.07	2.52	0.79	29.55	3.79	73.22	72.72	30.65	66.28
Cl9(207)	2.15	0.79	0.23	0.11	2.03	0.17	2.28	1.70	1.65	7.46
Cl9(208)	6.06	1.57	0.64	0.21	7.62	1.13	22.17	17.19	6.95	17.10
Cl10(209)	333.72	77.21	34.90	2.76	216.65	24.80	327.62	273.82	93.11	396.92
Sum 117 congeners	15,383	2,492	1,364	431	1,967	264	6,786	6,532	14,376	92,732

STATION_ID	T177B	T177B	T177B	T177B	T177B	T177B	T178A	T178A	T178A	T178A
FIELD SAMPLE_ID	T177B 5-6FT	T177B 6-7FT	T177B 7-8FT	T177-B-QPO	T177-B-NML	77B 14.1-15.1	T178A 0-1FT	T178A 1-2FT	T178A 2-3FT	T178A 3-4FT
SAMPLE DEPTH (from bottom)	5-6	6-7	7-8	8-11	11-14.1	14.1-15.1	0-1	1-2	2-3	3-4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	41.45	22.52	17.99	18.74	38.25	7.84	0.51	0.14	0.41	1.26
Cl1(1)	21.28	29.82	43.68	30.49	2.99	0.07	0.05	0.05	0.05	0.06
Cl1(3)	8.97	16.91	22.19	19.42	2.77	0.04	0.03	0.03	0.03	0.03
Cl2(4)/(10)	92.40	115.23	265.31	166.90	17.77	0.13	0.09	0.09	0.09	0.10
Cl2(5)	3.57	5.14	13.70	18.88	1.45	0.12	0.08	0.08	0.09	0.09
Cl2(6)	142.28	120.00	518.38	823.06	53.06	1.37	0.06	0.06	0.07	0.07
Cl2(7)	8.74	8.64	23.26	35.15	2.91	0.06	0.04	0.05	0.05	0.05
Cl2(8)	422.78	568.93	790.04	663.90	47.13	1.81	0.08	0.08	0.08	0.09
Cl2(9)	13.01	15.36	39.40	41.51	4.62	0.08	0.06	0.06	0.06	0.06
Cl2(13)	53.70	43.44	120.66	298.90	31.87	0.63	0.06	0.06	0.06	0.06
Cl2(15)	117.20	120.70	199.69	269.16	41.65	1.58	0.10	0.10	0.10	0.11
Cl3(16)	1024.65	1958.40	1538.89	883.78	87.31	5.50	0.08	0.08	0.08	0.09
Cl3(17)	1025.29	1621.33	1626.48	1264.75	127.18	6.93	0.04	0.05	0.05	0.05
Cl3(18)	3748.52	6794.61	5392.77	3428.34	306.60	17.34	0.06	0.06	0.07	0.07
Cl3(19)	120.78	284.53	364.68	119.31	14.59	0.89	0.07	0.07	0.07	0.08
Cl3(22)	1289.18	2204.58	1659.92	1098.69	123.62	9.72	0.06	0.06	0.06	0.06
Cl3(24)	10.30	9.72	14.51	20.13	1.53	0.06	0.04	0.05	0.05	0.05
Cl3(25)	625.69	751.72	1504.17	2811.43	243.53	7.83	0.04	0.05	0.05	0.05
Cl3(26)	848.90	1208.83	2115.04	3054.20	286.92	10.84	0.14	0.06	0.07	0.07
Cl3(27)	86.72	208.31	125.60	82.17	11.84	0.72	0.04	0.04	0.04	0.04
Cl3(28)	3944.59	6565.83	5527.51	3681.86	392.31	28.96	0.08	0.08	0.08	0.09
Cl3(31)	4577.20	8516.20	7305.62	4843.56	530.49	30.75	0.04	0.04	0.04	0.04
Cl3(32)	724.80	1535.81	1052.96	628.18	59.62	4.98	0.03	0.03	0.03	0.04
Cl3(33)/(20)	2210.21	3717.20	2742.30	1547.80	184.71	11.41	0.08	0.08	0.08	0.09
Cl3(37)	747.20	1175.85	791.92	399.34	55.60	5.45	0.07	0.07	0.07	0.08
Cl4(40)	984.50	2003.41	1289.02	765.00	79.19	8.05	0.08	0.13	0.09	0.09
Cl4(41)	530.88	1240.27	801.48	155.04	29.24	3.69	0.04	0.05	0.05	0.05
Cl4(42)/(59)	2080.56	3781.78	3107.73	2164.76	230.00	20.04	0.06	0.13	0.06	0.06
Cl4(43)	221.76	404.45	329.12	292.51	30.82	2.10	0.05	0.05	0.05	0.06
Cl4(44)	5038.19	9989.57	8189.29	5070.03	592.68	47.28	0.06	0.25	0.07	0.20
Cl4(45)	1038.47	1830.91	1632.24	851.27	86.13	7.69	0.04	0.05	0.05	0.05
Cl4(46)	448.24	865.97	662.01	401.41	41.27	3.58	0.08	0.08	0.08	0.09
Cl4(47)	1240.55	2400.56	1930.70	1193.78	147.27	13.53	0.06	0.10	0.06	0.06
Cl4(48)	1143.76	2519.89	1747.70	553.05	61.05	8.04	0.06	0.06	0.06	0.06
Cl4(49)	4062.91	7915.27	6676.09	4577.24	530.22	38.35	0.05	0.09	0.05	0.13
Cl4(51)	239.68	521.66	528.15	293.93	30.99	2.27	0.07	0.07	0.07	0.08
Cl4(52)	6035.07	8363.27	5247.72	5798.93	662.98	52.24	0.20	0.28	0.04	0.22
Cl4(53)	842.94	2042.55	1448.85	878.44	92.34	7.34	0.04	0.04	0.04	0.04
Cl4(54)	11.87	26.30	22.33	11.81	1.81	0.32	0.04	0.05	0.05	0.05
Cl4(56)	2457.86	4295.22	2961.88	1337.50	173.75	21.87	0.08	0.16	0.08	0.12
Cl4(60)	919.92	2331.50	1176.32	210.25	40.52	7.85	0.07	0.07	0.07	0.08
Cl4(64)	2669.38	4990.17	3783.40	2218.92	270.50	24.01	0.03	0.18	0.03	0.07
Cl4(66)	4584.47	8321.33	5388.21	2117.71	322.01	41.54	0.06	0.30	0.06	0.07
Cl4(70)	6116.27	11036.24	8142.73	3159.21	488.61	46.83	0.06	0.28	0.07	0.07
Cl4(71)	1547.04	2760.68	2040.47	1220.53	156.77	13.96	0.06	0.06	0.06	0.06
Cl4(74)	2569.10	4918.90	2998.60	1004.50	144.52	20.52	0.04	0.04	0.04	0.04
Cl4(77)	426.98	608.36	364.48	194.17	29.06	3.92	0.13	0.14	0.14	0.15
Cl4(81)	7.79	17.11	11.24	2.75	0.06	0.06	0.04	0.05	0.05	0.05
Cl5(82)	510.57	977.80	687.28	293.14	45.63	4.35	0.05	0.05	0.05	0.06
Cl5(83)/(119)	318.87	595.75	378.35	359.16	36.63	3.04	0.07	0.07	0.07	0.08
Cl5(84)	1126.35	2243.95	1547.90	1108.89	111.42	12.29	0.09	0.10	0.10	0.11
Cl5(85)	690.43	1534.23	1068.74	503.60	57.57	5.62	0.04	0.05	0.05	0.05
Cl5(87)	981.76	2081.65	1215.88	500.58	61.06	8.95	0.09	0.10	0.10	0.11
Cl5(91)	470.07	996.52	853.66	531.43	57.21	4.89	0.04	0.04	0.04	0.04
Cl5(92)	340.48	665.03	503.23	249.91	56.66	2.79	0.06	0.06	0.06	0.06
Cl5(95)	1727.64	3573.09	2785.42	1691.86	206.70	16.96	0.05	0.05	0.05	0.06
Cl5(97)	927.58	1679.64	1025.15	487.96	62.25	7.38	0.03	0.03	0.03	0.04
Cl5(99)	1060.06	2090.27	1373.86	516.01	73.38	9.75	0.05	0.05	0.05	0.06
Cl5(100)	10.70	19.63	20.99	15.26	1.94	0.06	0.04	0.05	0.05	0.05

STATION_ID	T177B	T177B	T177B	T177B	T177B	T177B	T178A	T178A	T178A	T178A
FIELD SAMPLE_ID	T177B 5-6FT	T177B 6-7FT	T177B 7-8FT	T177-B-QPO	T177-B-NML	77B 14.1-15.1	T178A 0-1FT	T178A 1-2FT	T178A 2-3FT	T178A 3-4FT
SAMPLE DEPTH (from bottom)	5-6	6-7	7-8	8-11	11-14.1	14.1-15.1	0-1	1-2	2-3	3-4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	1770.74	3186.08	1661.38	730.42	101.36	14.93	0.10	0.10	0.10	0.11
Cl5(105)	971.01	2138.60	1112.27	366.26	52.13	7.92	0.07	0.07	0.07	0.08
Cl5(110)	2777.77	5617.93	3559.54	2038.96	275.28	24.54	0.08	0.08	0.08	0.09
Cl5(114)	44.38	114.82	59.16	10.77	2.40	0.61	0.10	0.10	0.10	0.11
Cl5(115)	0.25	85.85	52.46	21.63	3.07	0.13	0.09	0.09	0.09	0.10
Cl5(118)	1558.34	3671.60	1863.86	708.04	100.27	12.78	0.06	0.06	0.06	0.06
Cl5(107)/(123)	172.91	491.55	343.37	179.97	24.09	1.99	0.09	0.10	0.10	0.11
Cl5(124)	49.57	125.41	74.02	18.54	2.71	0.82	0.06	0.06	0.06	0.06
Cl5(126)	8.31	14.62	12.14	2.84	0.12	0.37	0.08	0.08	0.09	0.09
Cl6(128)	94.91	539.67	106.37	56.95	8.35	1.10	0.08	0.08	0.08	0.09
Cl6(130)	43.95	234.67	51.48	31.31	5.53	0.37	0.08	0.08	0.08	0.09
Cl6(134)	30.12	102.02	37.78	24.05	3.78	0.54	0.06	0.06	0.07	0.07
Cl6(135)	57.01	230.11	62.23	44.42	9.48	1.10	0.07	0.07	0.07	0.08
Cl6(136)	62.21	245.00	71.71	115.51	7.56	1.05	0.02	0.02	0.02	0.02
Cl6(137)	27.62	125.11	35.60	10.13	1.93	0.39	0.10	0.10	0.10	0.11
Cl6(138)	349.93	1400.09	413.15	115.00	23.82	4.68	0.08	0.08	0.09	0.09
Cl6(141)	58.47	428.10	63.48	16.04	4.24	1.53	0.04	0.05	0.05	0.05
Cl6(144)	20.34	69.37	21.22	7.12	1.24	0.13	0.09	0.09	0.09	0.10
Cl6(146)	67.59	290.57	68.18	48.66	9.72	1.38	0.02	0.02	0.02	0.02
Cl6(149)	293.31	986.25	326.99	196.86	35.47	6.09	0.07	0.07	0.07	0.08
Cl6(151)	80.26	217.68	75.36	42.70	10.48	1.86	0.08	0.08	0.08	0.09
Cl6(132)/(153)/(168)	411.90	1658.23	406.26	191.99	33.26	7.40	0.06	0.06	0.07	0.07
Cl6(156)	46.77	353.81	56.85	16.34	2.90	0.63	0.02	0.02	0.02	0.02
Cl6(157)	13.89	70.03	18.64	5.37	1.30	0.09	0.08	0.08	0.08	0.09
Cl6(129)/(158)	47.35	319.15	63.34	17.79	3.64	0.50	0.07	0.07	0.07	0.08
Cl6(163)	65.19	350.09	80.59	45.87	8.28	1.39	0.07	0.07	0.07	0.08
Cl6(164)	28.51	119.13	28.97	15.38	2.85	0.35	0.05	0.05	0.05	0.06
Cl6(166)	0.23	12.19	3.60	0.15	0.12	0.13	0.08	0.08	0.09	0.09
Cl6(167)	19.15	93.50	24.89	7.60	1.47	0.33	0.05	0.05	0.05	0.06
Cl6(169)	0.32	0.85	0.50	0.38	0.31	0.16	0.11	0.11	0.11	0.12
Cl7(170)	58.73	244.57	57.95	23.84	5.72	1.69	0.06	0.06	0.06	0.06
Cl7(171)	16.42	61.72	15.52	7.52	1.73	0.34	0.04	0.05	0.05	0.05
Cl7(172)	15.41	42.12	12.69	6.32	1.41	0.49	0.06	0.06	0.06	0.06
Cl7(174)	58.99	194.53	42.41	21.53	6.41	1.99	0.03	0.03	0.03	0.04
Cl7(176)	8.72	24.16	5.89	3.72	1.25	0.28	0.05	0.05	0.05	0.06
Cl7(177)	35.37	109.82	29.58	21.90	6.00	1.39	0.06	0.06	0.06	0.06
Cl7(178)	14.08	33.27	10.79	8.54	2.38	0.51	0.04	0.05	0.05	0.05
Cl7(179)	32.98	61.03	18.11	11.88	3.79	0.94	0.08	0.08	0.09	0.09
Cl7(180)	119.24	453.55	99.53	57.12	13.16	4.54	0.06	0.06	0.06	0.06
Cl7(183)	34.84	100.61	27.39	13.62	3.70	1.22	0.06	0.06	0.06	0.06
Cl7(184)	1.32	1.39	1.04	0.40	0.06	0.06	0.04	0.04	0.04	0.04
Cl7(185)	7.41	20.79	5.05	2.17	0.82	0.36	0.06	0.06	0.06	0.06
Cl7(187)	71.30	250.98	49.79	36.00	10.66	2.48	0.05	0.05	0.05	0.06
Cl7(189)	4.05	15.80	9.62	2.02	0.72	0.24	0.08	0.08	0.09	0.09
Cl7(190)	13.53	52.46	15.84	6.51	1.23	0.33	0.06	0.06	0.07	0.07
Cl7(193)	7.01	17.53	5.88	3.47	1.02	0.16	0.03	0.03	0.03	0.04
Cl8(194)	52.49	114.22	39.94	19.99	4.72	1.71	0.04	0.05	0.05	0.05
Cl8(195)	17.85	42.65	14.39	7.50	1.68	0.64	0.04	0.05	0.05	0.05
Cl8(199)	75.42	123.12	42.61	25.01	6.34	1.29	0.08	0.08	0.09	0.09
Cl8(200)	5.48	11.04	3.79	2.06	0.63	0.44	0.09	0.10	0.10	0.11
Cl8(201)	7.95	13.44	5.02	3.33	0.87	0.36	0.09	0.10	0.10	0.11
Cl8(202)	10.67	14.62	5.51	4.36	1.07	0.26	0.06	0.06	0.07	0.07
Cl8(196)/(203)	25.33	54.48	36.50	17.71	4.38	1.15	0.03	0.03	0.03	0.03
Cl8(205)	3.78	8.72	3.24	1.79	0.03	0.21	0.02	0.02	0.02	0.02
Cl9(206)	121.40	90.10	43.46	29.58	5.71	0.80	0.08	0.08	0.09	0.09
Cl9(207)	16.66	23.60	9.30	5.03	0.58	0.09	0.08	0.08	0.08	0.09
Cl9(208)	33.81	27.30	11.55	11.73	1.63	0.27	0.07	0.07	0.07	0.08
Cl10(209)	928.38	913.61	263.76	435.94	62.83	2.85	0.04	0.08	0.05	0.07
Sum 117 congeners	86,222	163,653	117,380	72,839	8,532	741	7	9	7	8

STATION_ID	T178A	T178A	T178A	T178A	T178B	T178B	T178B	T178B	T178B	T178B
FIELD SAMPLE_ID	T178A 4-5FT	178A 5-6.05F	.78A 6.05-7.1	178A 7.1-8.1F	T178B 0-1FT	T178B 1-2FT	T178B 2-3FT	T178B 3-4FT	T178B 4-5FT	T178B 5-6FT
SAMPLE DEPTH (from bottom)	4-5	5-6.05	6.05-7.1	7.1-8.1	0-1	1-2	2-3	3-4	4-5	5-6
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	5.87	9.86	11.67	10.71	2.13	60.22	177.65	380.17	126.29	49.18
Cl1(1)	0.05	0.06	0.06	0.08	0.05	0.07	0.08	0.10	0.13	0.23
Cl1(3)	0.03	0.03	0.03	0.04	0.02	0.03	0.04	0.05	0.06	0.11
Cl2(4)/(10)	0.09	1.79	5.67	9.30	0.52	9.79	15.16	14.13	28.62	125.02
Cl2(5)	0.09	0.10	0.10	0.13	0.08	0.11	0.13	0.16	0.21	0.37
Cl2(6)	0.07	1.06	18.08	11.95	0.91	13.25	25.99	254.53	373.37	301.09
Cl2(7)	0.05	0.05	0.05	0.07	0.04	0.06	0.07	0.09	5.33	10.22
Cl2(8)	0.08	0.99	12.42	16.61	0.64	12.93	23.35	81.99	223.96	287.01
Cl2(9)	0.06	0.07	0.07	1.32	0.06	0.08	0.09	0.11	11.04	17.90
Cl2(13)	0.06	0.07	7.18	5.61	0.24	6.65	10.08	107.51	128.01	136.18
Cl2(15)	0.11	0.12	5.53	10.17	0.10	4.14	5.10	37.60	96.39	151.53
Cl3(16)	0.08	2.33	29.19	36.52	1.66	52.67	79.57	369.30	715.54	862.13
Cl3(17)	0.05	2.65	40.30	54.74	2.74	61.86	83.04	522.13	1039.82	1003.39
Cl3(18)	0.07	6.97	102.40	97.43	7.30	159.82	236.79	1531.82	2953.06	2902.43
Cl3(19)	0.07	0.08	4.19	5.49	0.33	7.39	11.95	65.25	117.79	164.29
Cl3(22)	0.06	2.89	35.32	53.68	2.72	55.35	92.08	519.12	1041.91	1121.08
Cl3(24)	0.05	0.05	0.05	0.07	0.04	0.06	0.07	2.05	6.56	10.40
Cl3(25)	0.05	6.54	70.96	49.35	3.86	59.15	105.50	1158.86	1527.68	1104.60
Cl3(26)	0.07	6.26	69.94	53.15	3.88	61.64	100.80	1198.89	1540.58	1215.25
Cl3(27)	0.04	0.04	3.26	3.51	0.04	5.30	8.20	49.51	106.76	126.51
Cl3(28)	0.08	9.56	135.20	163.27	9.34	196.88	309.22	1861.55	3767.27	3878.77
Cl3(31)	0.04	13.00	169.10	178.09	11.53	240.46	353.96	2452.54	4314.01	4513.00
Cl3(32)	0.03	1.38	23.24	27.00	1.53	41.42	55.44	281.70	567.68	624.29
Cl3(33)/(20)	0.08	4.24	50.61	63.61	4.34	94.46	138.07	682.53	1466.76	1846.56
Cl3(37)	0.07	1.58	22.04	34.33	1.07	31.40	47.17	172.44	359.17	671.71
Cl4(40)	0.09	1.79	40.33	46.47	2.06	47.22	73.14	506.07	1010.31	1032.08
Cl4(41)	0.05	0.05	4.34	8.31	0.72	12.61	10.53	97.15	254.41	431.75
Cl4(42)/(59)	0.06	4.66	72.58	76.30	3.64	103.05	176.68	896.36	1705.02	2130.07
Cl4(43)	0.05	0.06	10.52	12.43	0.47	15.24	23.79	111.92	238.08	229.25
Cl4(44)	0.07	14.53	175.43	204.32	13.05	259.99	421.82	2430.99	4655.85	4836.13
Cl4(45)	0.05	2.63	35.59	40.48	2.35	46.24	65.24	418.57	846.44	924.14
Cl4(46)	0.08	0.09	16.43	18.95	1.04	25.62	38.63	194.37	377.96	383.40
Cl4(47)	0.06	3.64	53.98	56.48	2.98	73.39	113.48	617.43	1168.12	1357.66
Cl4(48)	0.06	1.53	21.23	27.92	1.52	43.34	57.51	242.63	675.36	944.35
Cl4(49)	0.05	12.11	163.98	191.87	10.46	230.15	360.77	2154.01	4083.15	4467.02
Cl4(51)	0.07	0.08	9.41	11.20	0.64	15.21	23.79	106.03	216.39	212.72
Cl4(52)	0.04	14.26	215.90	236.18	14.76	316.71	468.80	2969.80	5588.97	6298.23
Cl4(53)	0.04	2.02	33.41	37.80	2.01	41.36	69.03	405.26	808.89	849.27
Cl4(54)	0.05	0.05	0.05	0.07	0.04	0.06	0.07	5.49	14.48	15.80
Cl4(56)	0.08	4.53	59.00	79.29	4.99	107.75	167.72	813.14	1716.82	2576.18
Cl4(60)	0.07	0.08	8.24	19.17	0.78	12.90	12.47	167.14	272.26	557.02
Cl4(64)	0.03	5.62	78.23	98.17	6.32	124.81	197.41	1187.90	2253.07	2600.22
Cl4(66)	0.06	8.05	115.47	161.02	9.03	214.85	340.13	1146.92	3138.96	4534.11
Cl4(70)	0.07	11.10	165.54	227.22	12.93	278.20	440.33	2119.47	4364.09	5503.69
Cl4(71)	0.06	3.76	45.96	51.59	3.13	74.74	114.35	682.35	1260.03	1585.23
Cl4(74)	0.04	2.61	43.16	65.12	4.48	85.96	136.45	631.06	1474.12	2373.84
Cl4(77)	0.14	0.16	10.18	16.46	0.75	20.69	30.26	111.12	286.08	427.65
Cl4(81)	0.05	0.05	0.05	0.07	0.04	0.06	0.07	0.09	2.69	6.76
Cl5(82)	0.05	0.06	11.00	16.49	1.04	22.63	29.80	208.53	421.10	541.72
Cl5(83)/(119)	0.07	0.08	15.09	17.88	0.55	20.23	32.15	156.15	296.86	344.59
Cl5(84)	0.10	2.47	52.89	39.06	2.88	78.24	69.98	637.96	1214.44	1201.79
Cl5(85)	0.05	0.05	18.76	24.54	1.52	27.98	33.67	315.70	538.27	755.12
Cl5(87)	0.10	0.98	16.68	25.56	1.67	41.93	56.70	332.28	705.39	943.13
Cl5(91)	0.04	1.28	20.61	25.69	1.17	28.40	43.86	216.27	434.91	536.07
Cl5(92)	0.06	1.05	16.01	21.38	0.77	21.54	31.08	218.49	417.28	539.78
Cl5(95)	0.05	3.89	58.86	68.16	4.06	76.03	128.70	722.94	1331.95	1839.00
Cl5(97)	0.03	1.23	26.57	36.00	1.68	45.00	55.90	310.95	698.72	905.89
Cl5(99)	0.05	1.77	30.15	42.47	2.24	42.21	62.76	315.87	805.19	1096.80
Cl5(100)	0.05	0.05	0.61	0.85	0.04	0.92	1.16	5.73	11.74	14.41

STATION_ID	T178A	T178A	T178A	T178A	T178B	T178B	T178B	T178B	T178B	T178B
FIELD SAMPLE_ID	T178A 4-5FT	T178A 5-6.05F	.78A 6.05-7.1	178A 7.1-8.1F	T178B 0-1FT	T178B 1-2FT	T178B 2-3FT	T178B 3-4FT	T178B 4-5FT	T178B 5-6FT
SAMPLE DEPTH (from bottom)	4-5	5-6.05	6.05-7.1	7.1-8.1	0-1	1-2	2-3	3-4	4-5	5-6
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	0.11	2.81	42.18	50.57	3.64	80.86	118.21	491.83	1215.18	1746.03
Cl5(105)	0.07	1.81	14.21	25.37	1.21	25.93	28.03	263.36	481.80	762.64
Cl5(110)	0.08	6.84	89.67	111.31	6.19	134.29	203.94	1051.54	2008.45	2823.77
Cl5(114)	0.11	0.12	0.12	0.16	0.10	0.14	0.16	0.19	6.27	27.85
Cl5(115)	0.09	0.10	0.67	1.05	0.09	1.18	1.07	12.02	22.61	22.55
Cl5(118)	0.06	2.49	36.32	53.29	3.04	70.61	99.32	418.84	965.65	1619.91
Cl5(107)/(123)	0.10	0.56	5.86	7.23	0.90	8.40	12.21	64.09	136.57	179.12
Cl5(124)	0.06	0.07	0.07	1.79	0.06	0.08	0.09	10.46	27.11	50.58
Cl5(126)	0.09	0.10	0.10	0.13	0.08	0.11	0.13	0.16	0.21	0.37
Cl6(128)	0.08	0.09	3.03	4.83	0.29	6.09	8.88	34.04	77.88	130.51
Cl6(130)	0.08	0.09	2.15	2.68	0.07	3.34	6.37	22.84	45.94	65.22
Cl6(134)	0.07	0.07	1.39	1.52	0.06	2.27	2.71	12.49	27.92	40.79
Cl6(135)	0.07	0.08	2.28	4.41	0.23	3.87	7.22	35.12	67.20	81.45
Cl6(136)	0.02	0.21	2.38	3.09	0.26	4.84	6.67	30.94	72.79	91.55
Cl6(137)	0.11	0.12	0.12	0.16	0.10	0.14	0.16	6.02	16.92	28.92
Cl6(138)	0.09	0.90	8.60	13.30	0.73	14.96	23.45	116.96	252.21	396.40
Cl6(141)	0.05	0.05	0.58	2.07	0.04	0.06	2.17	15.98	31.90	67.11
Cl6(144)	0.09	0.10	0.11	0.78	0.09	0.88	0.90	7.63	17.34	26.57
Cl6(146)	0.02	0.02	3.46	5.25	0.39	6.77	11.67	43.52	90.81	113.36
Cl6(149)	0.07	0.89	11.30	17.20	0.68	18.83	29.03	133.53	276.54	338.76
Cl6(151)	0.08	0.27	3.02	4.94	0.18	5.57	8.24	44.29	95.24	117.95
Cl6(132)/(153)/(168)	0.07	0.89	14.03	21.04	0.98	23.77	38.35	162.23	352.54	535.45
Cl6(156)	0.02	0.02	1.49	3.21	0.02	0.03	0.03	7.36	17.51	39.88
Cl6(157)	0.08	0.09	0.09	0.12	0.07	0.10	0.12	6.90	8.81	17.02
Cl6(129)/(158)	0.07	0.08	1.92	3.25	0.07	2.38	3.25	19.12	25.62	40.46
Cl6(163)	0.07	0.45	3.36	4.87	0.19	5.72	7.65	35.19	84.24	95.35
Cl6(164)	0.05	0.06	0.06	1.18	0.05	1.87	3.01	10.52	24.39	39.69
Cl6(166)	0.09	0.10	0.10	0.13	0.08	0.11	0.13	0.16	3.44	0.37
Cl6(167)	0.05	0.06	0.06	0.08	0.05	1.72	0.08	5.36	13.24	22.31
Cl6(169)	0.11	0.13	0.13	0.17	0.10	0.15	0.17	0.21	0.27	2.98
Cl7(170)	0.06	0.07	1.90	2.63	0.06	2.54	5.01	25.98	57.05	84.45
Cl7(171)	0.05	0.05	0.83	0.91	0.04	1.05	1.73	9.65	21.57	27.71
Cl7(172)	0.06	0.07	0.69	1.03	0.14	1.37	2.34	10.11	17.95	20.95
Cl7(174)	0.03	0.04	1.63	2.63	0.27	4.15	5.80	35.03	77.20	97.93
Cl7(176)	0.05	0.06	0.32	0.64	0.05	1.41	1.66	6.09	11.34	14.35
Cl7(177)	0.06	0.07	1.64	2.57	0.06	3.41	5.00	27.61	53.84	61.62
Cl7(178)	0.05	0.05	0.83	0.99	0.04	1.87	3.81	13.38	20.21	23.24
Cl7(179)	0.09	0.10	1.02	1.82	0.22	2.77	4.36	21.99	41.21	50.10
Cl7(180)	0.06	0.07	3.74	6.59	0.66	8.82	11.65	69.53	116.10	209.22
Cl7(183)	0.06	0.07	1.04	1.87	0.18	3.69	5.60	24.21	45.29	60.98
Cl7(184)	0.04	0.04	0.05	0.06	0.04	0.56	0.69	0.99	0.10	0.84
Cl7(185)	0.06	0.07	0.32	0.28	0.06	0.08	0.09	3.70	9.06	11.03
Cl7(187)	0.05	0.31	3.01	5.14	0.38	6.89	11.16	58.67	105.10	126.42
Cl7(189)	0.09	0.10	0.10	0.13	0.08	0.11	0.13	2.34	3.17	5.71
Cl7(190)	0.07	0.07	0.08	0.92	0.06	0.94	1.51	6.89	13.49	17.67
Cl7(193)	0.03	0.04	0.36	0.05	0.03	0.98	0.05	5.35	8.76	9.67
Cl8(194)	0.05	0.05	1.85	3.09	0.04	5.74	7.19	36.71	52.03	70.24
Cl8(195)	0.05	0.05	0.73	0.73	0.04	1.65	2.48	12.02	21.42	26.45
Cl8(199)	0.09	0.47	2.49	3.29	0.47	13.24	23.33	52.90	65.98	93.83
Cl8(200)	0.10	0.11	0.36	0.15	0.09	0.62	0.84	4.44	7.03	8.20
Cl8(201)	0.10	0.11	0.55	0.15	0.23	1.27	2.11	5.48	7.37	9.67
Cl8(202)	0.07	0.07	0.71	0.92	0.06	2.21	2.97	8.15	10.63	12.91
Cl8(196)/(203)	0.03	0.03	2.00	1.90	0.02	1.83	4.34	17.98	28.64	36.77
Cl8(205)	0.02	0.02	0.02	0.03	0.02	0.03	0.77	2.41	2.81	6.16
Cl9(206)	0.09	1.01	4.23	5.59	0.91	41.59	74.90	105.96	60.98	125.02
Cl9(207)	0.08	0.09	0.51	0.73	0.07	1.22	2.21	6.46	10.19	14.99
Cl9(208)	0.07	0.46	1.24	1.19	0.21	11.69	16.07	21.35	19.39	36.33
Cl10(209)	0.05	2.55	28.99	45.66	5.28	191.76	290.21	392.73	505.16	919.00
Sum 117 congeners	8	194	2,761	3,317	199	4,409	6,702	36,871	71,539	85,775

STATION_ID	T178B	T178B	T178B	T178B	T178C	T178C	T178C	T178C	T178C	T178C
FIELD SAMPLE_ID	T178B 6-7FT	T178-B-SRQ	78B 10-10.5	78B 10.5-11	178C 0.5-1F	T178C 1-2FT	T178C 2-3FT	T178C 3-4FT	T178C 4-5FT	T178C 5-6FT
SAMPLE DEPTH (from bottom)	6-7	7-10	10-10.5	10.5-11	0.5-1	1-2	2-3	3-4	4-5	5-6
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	27.54	57.58	2.62	2.55	75.66	278.28	323.96	83.76	53.02	185.72
Cl1(1)	61.86	18.15	0.06	0.08	0.07	0.07	0.07	0.06	0.07	0.07
Cl1(3)	24.94	11.41	0.03	0.04	0.03	0.03	0.03	0.03	0.04	0.04
Cl2(4)/(10)	215.88	74.44	0.11	1.86	0.12	0.12	0.12	0.11	0.13	0.13
Cl2(5)	15.58	5.74	0.10	0.14	0.11	0.11	0.11	0.10	0.12	0.12
Cl2(6)	537.25	147.54	0.95	1.43	0.09	0.08	0.09	5.56	53.36	0.09
Cl2(7)	32.40	10.41	0.05	0.07	0.06	0.06	0.06	0.05	0.06	0.07
Cl2(8)	611.49	226.14	0.92	2.69	0.10	6.13	8.87	10.26	37.35	102.18
Cl2(9)	52.12	16.39	0.07	0.09	0.08	0.08	0.08	0.07	0.08	0.08
Cl2(13)	160.37	39.66	0.07	0.09	0.08	0.08	0.08	0.07	32.89	78.33
Cl2(15)	178.04	83.05	0.12	0.17	0.14	0.13	0.14	0.12	13.04	37.76
Cl3(16)	1337.92	354.92	2.74	4.47	10.24	25.98	34.41	34.39	123.77	397.10
Cl3(17)	1533.55	447.67	2.63	4.10	10.86	30.82	46.58	35.15	180.15	542.30
Cl3(18)	5460.35	1281.26	7.33	11.12	26.72	61.48	90.42	86.14	560.23	1604.27
Cl3(19)	214.16	61.67	0.08	0.12	0.09	0.09	5.10	5.30	24.64	56.05
Cl3(22)	1786.34	442.96	3.16	4.75	14.00	30.30	43.12	38.86	178.18	524.33
Cl3(24)	18.43	6.24	0.05	0.07	0.06	0.06	0.06	0.05	0.06	0.07
Cl3(25)	1858.89	383.69	3.32	4.00	0.06	0.06	10.94	24.71	273.76	788.44
Cl3(26)	2078.46	473.40	4.05	4.99	0.09	9.53	19.02	27.11	290.55	759.29
Cl3(27)	130.60	35.76	0.55	0.06	0.05	0.05	0.05	3.88	18.70	57.20
Cl3(28)	5287.62	1459.81	9.78	14.26	39.73	89.25	122.36	111.21	658.69	1954.65
Cl3(31)	7542.18	1744.06	11.79	16.20	37.63	78.81	136.87	120.90	759.56	2332.32
Cl3(32)	998.07	258.89	1.84	2.58	5.95	17.55	24.09	24.57	98.39	305.56
Cl3(33)/(20)	2806.91	665.53	4.74	7.19	21.00	44.51	60.18	48.62	237.01	792.55
Cl3(37)	848.09	207.04	1.78	2.72	10.28	18.45	23.91	21.19	68.72	209.92
Cl4(40)	1521.07	329.76	3.05	3.66	9.58	28.34	33.95	37.31	160.04	463.62
Cl4(41)	700.09	117.67	0.88	2.15	0.06	11.47	12.64	0.05	44.48	124.40
Cl4(42)/(59)	3184.34	851.19	5.95	8.53	27.97	45.74	68.04	48.48	296.56	935.42
Cl4(43)	386.16	108.95	0.06	0.08	0.07	0.07	10.57	10.04	51.76	110.07
Cl4(44)	8760.91	2017.24	14.41	22.23	70.28	128.80	165.01	141.18	800.46	2424.06
Cl4(45)	1536.50	370.28	2.49	4.19	10.22	27.03	37.73	34.98	141.61	442.30
Cl4(46)	661.18	188.64	1.14	1.76	0.10	12.07	16.72	16.28	65.61	209.00
Cl4(47)	2066.96	513.63	3.53	5.86	19.39	40.80	55.15	40.91	243.96	657.19
Cl4(48)	1429.21	423.97	2.48	3.99	14.62	37.29	45.06	25.74	114.31	405.90
Cl4(49)	7096.53	1702.65	11.77	18.15	46.94	99.18	144.65	130.65	724.73	2051.41
Cl4(51)	351.52	91.64	0.08	0.12	0.09	6.24	9.42	9.22	53.47	109.24
Cl4(52)	10530.13	2307.22	15.89	24.82	58.43	138.27	207.28	158.46	1014.86	2987.99
Cl4(53)	1404.04	354.10	2.07	3.42	8.90	22.44	33.64	30.71	136.88	396.16
Cl4(54)	26.92	6.12	0.05	0.07	0.06	0.06	0.06	0.05	0.06	0.07
Cl4(56)	3223.53	734.65	5.83	9.08	26.60	58.34	77.71	59.16	309.61	956.81
Cl4(60)	1432.09	170.09	1.85	2.93	0.09	16.06	12.38	6.47	46.86	186.83
Cl4(64)	4106.10	1024.97	7.08	11.03	26.66	61.83	82.54	68.48	394.69	1253.56
Cl4(66)	5493.66	1609.86	11.07	17.07	60.02	126.48	172.50	128.83	499.06	1517.54
Cl4(70)	8438.70	2057.63	14.24	20.86	69.45	144.93	196.92	163.85	749.56	2345.48
Cl4(71)	2346.04	560.74	3.67	5.93	15.60	39.34	46.51	37.31	249.48	681.00
Cl4(74)	3271.26	28.11	5.06	9.02	27.79	61.23	74.67	48.23	244.42	822.56
Cl4(77)	518.72	97.86	0.99	1.62	5.93	10.38	15.41	11.22	42.29	123.97
Cl4(81)	10.82	2.37	0.05	0.07	0.06	0.06	0.06	0.05	0.06	0.07
Cl5(82)	801.59	195.82	1.03	2.90	0.07	11.82	13.76	9.54	62.44	193.89
Cl5(83)/(119)	459.45	174.03	0.08	0.12	6.72	10.07	14.85	13.04	54.73	130.51
Cl5(84)	1808.67	482.16	2.99	4.63	17.19	33.04	42.24	42.17	174.07	440.42
Cl5(85)	1189.14	196.18	0.78	3.08	6.65	13.40	15.88	9.61	84.70	258.52
Cl5(87)	1504.79	321.32	2.28	4.47	12.13	23.35	27.39	14.76	106.60	320.97
Cl5(91)	807.85	226.85	1.67	2.71	7.24	13.88	18.03	17.61	73.45	204.73
Cl5(92)	759.06	121.69	1.22	2.51	8.69	14.67	16.96	13.93	61.96	131.19
Cl5(95)	2862.64	741.69	5.23	11.77	30.34	48.37	63.32	45.75	245.06	689.51
Cl5(97)	1306.34	334.92	2.20	3.75	14.13	26.11	32.17	21.97	105.55	332.87
Cl5(99)	1539.01	348.05	2.28	4.87	20.90	37.63	43.42	29.57	124.59	364.81
Cl5(100)	22.18	6.27	0.05	0.07	0.06	0.06	0.06	0.05	2.13	5.76

STATION_ID	T178B	T178B	T178B	T178B	T178C	T178C	T178C	T178C	T178C	T178C
FIELD SAMPLE_ID	T178B 6-7FT	T178-B-SRQ	l78B 10-10.5F	l78B 10.5-11F	178C 0.5-1F	T178C 1-2FT	T178C 2-3FT	T178C 3-4FT	T178C 4-5FT	T178C 5-6FT
SAMPLE DEPTH (from bottom)	6-7	7-10	10-10.5	10.5-11	0.5-1	1-2	2-3	3-4	4-5	5-6
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	2189.62	557.58	4.93	11.26	32.88	58.17	73.47	48.17	189.85	595.50
Cl5(105)	1523.01	222.69	2.23	3.75	9.52	20.64	18.91	9.16	74.51	247.36
Cl5(110)	3738.12	878.25	7.68	13.77	44.31	71.42	103.91	75.54	356.31	1067.96
Cl5(114)	77.99	12.13	0.12	0.17	0.14	0.13	0.14	0.12	0.15	6.63
Cl5(115)	95.56	16.25	0.11	0.15	0.12	0.12	0.12	0.11	0.13	0.13
Cl5(118)	2012.22	468.00	3.85	7.64	29.68	54.01	63.36	39.09	165.11	456.74
Cl5(107)/(123)	221.22	112.85	0.11	0.16	0.13	5.59	6.83	4.93	22.89	55.30
Cl5(124)	81.65	20.48	0.07	0.09	0.08	0.08	0.08	0.07	5.12	13.27
Cl5(126)	9.86	4.97	0.10	0.14	0.11	0.11	0.11	0.10	0.12	0.12
Cl6(128)	134.68	68.00	0.09	0.13	0.10	0.10	0.10	0.09	10.91	28.20
Cl6(130)	62.35	17.87	0.09	0.13	0.10	0.10	0.10	0.09	9.35	17.62
Cl6(134)	41.33	12.26	0.08	0.10	0.09	3.16	0.09	0.08	4.21	10.10
Cl6(135)	81.84	21.17	0.08	1.69	2.44	3.37	4.36	3.18	10.39	24.33
Cl6(136)	89.14	22.43	0.47	2.04	6.24	5.95	5.32	4.05	10.45	26.31
Cl6(137)	42.34	13.12	0.12	0.17	0.14	0.13	0.14	0.12	0.15	6.75
Cl6(138)	394.33	118.51	1.46	7.51	11.78	16.14	17.74	10.70	36.12	101.06
Cl6(141)	75.26	21.16	0.53	2.68	0.06	0.06	0.06	0.05	5.12	16.95
Cl6(144)	27.01	6.24	0.11	0.91	0.12	0.12	0.12	0.11	2.33	7.24
Cl6(146)	83.06	27.68	0.37	1.20	5.18	4.64	6.54	4.83	15.71	31.66
Cl6(149)	328.75	99.46	1.92	9.89	12.32	14.40	17.54	14.00	47.56	110.77
Cl6(151)	95.05	25.36	0.68	3.62	3.32	4.67	5.71	3.58	13.34	33.61
Cl6(132)/(153)/(168)	455.76	137.19	2.34	12.77	17.13	20.24	24.23	17.78	57.67	142.33
Cl6(156)	64.36	25.83	0.02	0.03	0.03	0.03	0.03	0.02	2.89	8.58
Cl6(157)	20.85	9.87	0.09	0.13	0.10	0.10	0.10	0.09	0.11	0.11
Cl6(129)/(158)	67.81	23.87	0.08	1.07	0.09	0.09	0.09	0.08	4.24	14.96
Cl6(163)	86.49	22.68	0.49	2.70	4.31	4.87	5.11	4.55	11.68	33.31
Cl6(164)	39.09	11.20	0.06	0.08	0.07	0.07	0.07	0.06	4.02	9.66
Cl6(166)	3.38	0.14	0.10	0.14	0.11	0.11	0.11	0.10	0.12	0.12
Cl6(167)	22.53	14.50	0.06	0.08	0.07	0.07	0.07	0.06	0.07	6.82
Cl6(169)	0.24	1.68	0.13	0.18	0.15	0.14	0.15	0.13	2.48	0.16
Cl7(170)	70.49	18.75	0.07	3.59	4.25	4.17	0.08	0.07	7.08	23.46
Cl7(171)	20.59	5.22	0.05	1.24	0.06	0.06	0.06	0.05	2.80	7.01
Cl7(172)	13.62	5.40	0.07	0.81	0.08	0.08	0.08	0.07	2.43	6.80
Cl7(174)	59.85	14.25	0.65	4.08	3.40	3.52	3.47	2.28	10.43	28.18
Cl7(176)	8.69	2.17	0.06	0.90	4.97	3.67	2.41	1.24	1.91	4.54
Cl7(177)	43.29	11.44	0.54	2.46	4.23	3.24	2.68	2.45	8.60	18.52
Cl7(178)	13.10	3.91	0.05	0.84	2.49	1.95	2.27	2.24	4.10	8.39
Cl7(179)	28.68	6.10	0.39	2.42	4.14	3.97	3.21	1.71	6.51	15.68
Cl7(180)	159.05	53.41	1.38	9.91	8.76	10.20	7.98	5.59	20.87	55.91
Cl7(183)	37.81	10.42	0.07	3.11	9.97	7.13	3.98	2.34	6.86	17.20
Cl7(184)	0.70	0.43	0.05	0.06	1.17	0.85	0.05	0.45	0.05	0.55
Cl7(185)	7.02	1.76	0.07	0.09	0.08	0.08	0.08	0.07	0.08	3.62
Cl7(187)	69.78	17.89	0.79	5.09	6.82	6.81	6.24	5.11	16.54	42.08
Cl7(189)	4.94	3.92	0.10	0.14	0.11	0.11	0.11	0.10	0.12	0.12
Cl7(190)	15.61	4.98	0.08	0.68	0.09	1.04	0.09	0.08	2.06	5.60
Cl7(193)	7.58	1.92	0.04	0.05	1.51	0.04	0.04	0.04	1.65	3.23
Cl8(194)	50.52	11.21	0.05	2.13	3.64	3.58	4.59	2.81	11.78	26.84
Cl8(195)	21.86	3.92	0.05	0.07	0.06	0.06	0.06	0.05	4.06	9.54
Cl8(199)	53.97	12.77	0.10	2.04	9.39	10.62	13.93	10.94	20.58	46.20
Cl8(200)	4.86	1.27	0.11	0.16	0.13	0.13	0.13	0.11	1.64	2.90
Cl8(201)	7.69	1.98	0.11	0.16	0.13	0.13	0.13	0.11	1.77	3.80
Cl8(202)	8.22	1.98	0.08	0.10	2.25	2.65	2.36	1.89	2.52	5.41
Cl8(196)/(203)	18.35	10.57	0.03	0.04	4.75	4.73	4.03	2.99	5.34	13.71
Cl8(205)	6.89	1.91	0.02	0.03	0.03	0.03	0.03	0.02	0.03	0.03
Cl9(206)	70.90	14.16	0.10	0.97	30.18	30.71	38.98	25.19	35.90	83.68
Cl9(207)	14.11	3.14	0.09	0.13	3.64	2.39	1.49	1.23	1.96	3.31
Cl9(208)	20.65	4.50	0.08	0.12	9.20	9.27	11.48	7.93	8.88	16.65
Cl10(209)	582.16	186.17	1.41	2.92	304.01	342.24	333.19	156.44	111.35	261.67
Sum 117 congeners	128,935	30,683	225	430	1,401	2,505	3,231	2,499	12,451	36,609

STATION_ID	T178C	T178C	T178C	T178C	T178C	T179A	T179A	T179A	T179A	T179A
FIELD SAMPLE_ID	T178C 6-7FT	T178-C-SRQ	T178-C-PON	T178-C-MLKJ	78C 16.6-17.6	T179A 0-1FT	T179A 1-2FT	T179A 2-3FT	T179A 3-4FT	T179A 4-5FT
SAMPLE DEPTH (from bottom)	6-7	7-10	10-13	13-16.16	16.6-17.6	0-1	1-2	2-3	3-4	4-5
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	107.18	216.27	205.49	15.13	8.24	0.16	0.22	0.21	0.23	0.21
Cl1(1)	0.08	0.10	51.02	21.88	0.08	0.05	0.05	0.05	0.06	0.05
Cl1(3)	0.04	0.05	39.70	14.92	0.04	0.03	0.03	0.03	0.03	0.03
Cl2(4)/(10)	0.15	83.36	255.45	98.29	0.14	0.09	0.09	0.09	0.10	0.09
Cl2(5)	0.14	0.17	18.27	11.21	0.13	0.08	0.09	0.09	0.09	0.09
Cl2(6)	129.83	812.11	269.32	638.56	2.19	0.06	0.07	0.07	0.07	0.07
Cl2(7)	0.07	8.54	34.74	20.94	0.07	0.05	0.05	0.05	0.05	0.05
Cl2(8)	56.35	383.14	959.08	501.45	2.35	0.08	0.08	0.08	0.08	0.08
Cl2(9)	0.09	13.77	41.32	36.56	0.09	0.06	0.06	0.06	0.06	0.06
Cl2(13)	56.95	351.24	74.64	283.89	0.09	0.06	0.06	0.06	0.06	0.06
Cl2(15)	19.77	91.84	278.36	125.62	2.28	0.10	0.10	0.11	0.11	0.11
Cl3(16)	217.44	1127.48	2054.06	1043.13	7.06	0.08	0.08	0.08	0.08	0.08
Cl3(17)	312.84	1276.75	2175.70	1290.21	8.73	0.05	0.05	0.05	0.05	0.05
Cl3(18)	956.54	4332.47	8310.82	3340.88	22.92	0.06	0.07	0.07	0.07	0.07
Cl3(19)	37.02	263.49	431.78	142.98	1.42	0.07	0.07	0.07	0.08	0.07
Cl3(22)	310.53	1323.68	2782.74	1101.06	11.80	0.06	0.06	0.06	0.06	0.06
Cl3(24)	0.07	6.87	24.69	12.75	0.07	0.05	0.05	0.05	0.05	0.05
Cl3(25)	742.28	2561.48	883.80	2026.33	10.13	0.05	0.05	0.05	0.05	0.05
Cl3(26)	732.30	2682.98	1528.80	2444.61	13.62	0.06	0.07	0.07	0.07	0.07
Cl3(27)	27.74	127.22	289.95	110.71	0.06	0.04	0.04	0.04	0.04	0.04
Cl3(28)	1116.72	4552.15	8133.75	3982.20	34.95	0.08	0.08	0.08	0.08	0.08
Cl3(31)	1552.00	5860.00	10082.35	4821.62	38.12	0.04	0.04	0.04	0.04	0.04
Cl3(32)	169.99	696.52	1605.52	676.90	6.25	0.03	0.03	0.03	0.03	0.03
Cl3(33)/(20)	424.76	1815.59	4245.47	1751.64	14.37	0.08	0.08	0.08	0.08	0.08
Cl3(37)	99.86	468.58	1439.94	541.24	7.46	0.07	0.07	0.07	0.08	0.07
Cl4(40)	270.91	1033.53	2249.79	837.69	10.47	0.08	0.09	0.09	0.09	0.09
Cl4(41)	68.33	282.14	1423.59	250.10	5.47	0.05	0.05	0.05	0.05	0.05
Cl4(42)/(59)	602.54	2411.97	4940.72	2126.26	23.86	0.06	0.06	0.06	0.06	0.06
Cl4(43)	77.95	264.33	526.41	196.20	0.08	0.05	0.05	0.05	0.06	0.05
Cl4(44)	1458.70	6269.08	13427.37	5609.01	57.53	0.06	0.07	0.07	0.07	0.07
Cl4(45)	254.69	1005.16	2463.76	1105.67	9.16	0.05	0.05	0.05	0.05	0.05
Cl4(46)	110.75	477.07	895.78	399.88	4.75	0.08	0.08	0.08	0.08	0.08
Cl4(47)	394.65	1444.38	2835.39	1352.58	15.26	0.06	0.06	0.06	0.06	0.06
Cl4(48)	131.60	768.54	3310.29	680.75	10.15	0.06	0.06	0.06	0.06	0.06
Cl4(49)	1345.91	4912.27	9572.71	4770.13	46.38	0.05	0.05	0.05	0.06	0.05
Cl4(51)	66.38	285.05	556.91	330.71	2.24	0.07	0.07	0.07	0.08	0.07
Cl4(52)	1793.91	6945.67	14497.48	6289.81	65.19	0.04	0.04	0.04	0.04	0.04
Cl4(53)	233.06	1042.14	2334.56	970.89	8.06	0.04	0.04	0.04	0.04	0.04
Cl4(54)	4.66	13.95	42.97	11.46	0.07	0.05	0.05	0.05	0.05	0.05
Cl4(56)	547.69	1677.02	4682.09	1647.90	24.95	0.08	0.08	0.08	0.08	0.08
Cl4(60)	73.72	314.85	2094.36	290.07	9.80	0.07	0.07	0.07	0.08	0.07
Cl4(64)	743.10	2909.37	6664.50	2546.69	28.74	0.03	0.03	0.03	0.03	0.03
Cl4(66)	731.18	3057.44	10268.13	3041.08	45.89	0.06	0.06	0.06	0.06	0.06
Cl4(70)	1211.67	4578.38	13680.87	4110.84	55.56	0.06	0.07	0.07	0.07	0.07
Cl4(71)	426.69	1682.47	3633.33	1453.48	16.47	0.06	0.06	0.06	0.06	0.06
Cl4(74)	325.08	1379.04	6057.19	1485.51	23.98	0.04	0.04	0.04	0.04	0.04
Cl4(77)	56.93	190.07	636.07	251.81	4.31	0.14	0.14	0.14	0.15	0.14
Cl4(81)	0.07	19.60	22.34	3.41	0.07	0.05	0.05	0.05	0.05	0.05
Cl5(82)	116.05	403.95	1066.92	293.99	5.30	0.05	0.05	0.05	0.06	0.05
Cl5(83)/(119)	88.99	359.23	630.01	255.28	4.60	0.07	0.07	0.07	0.08	0.07
Cl5(84)	271.72	1179.24	2520.01	957.21	12.22	0.10	0.10	0.10	0.10	0.10
Cl5(85)	167.77	370.69	1345.98	437.70	7.66	0.05	0.05	0.05	0.05	0.05
Cl5(87)	172.23	742.97	2331.18	602.93	10.02	0.10	0.10	0.10	0.10	0.10
Cl5(91)	129.45	564.99	1246.67	462.41	6.25	0.04	0.04	0.04	0.04	0.04
Cl5(92)	147.15	390.57	664.29	405.01	5.92	0.06	0.06	0.06	0.06	0.06
Cl5(95)	473.24	1886.08	4309.95	1785.77	22.36	0.05	0.05	0.05	0.06	0.05
Cl5(97)	175.13	558.53	2018.61	764.07	9.62	0.03	0.03	0.03	0.03	0.03
Cl5(99)	169.33	671.64	2259.69	574.16	11.81	0.05	0.05	0.05	0.06	0.05
Cl5(100)	3.50	29.84	28.91	30.59	0.07	0.05	0.05	0.05	0.05	0.05

STATION_ID	T178C	T178C	T178C	T178C	T178C	T179A	T179A	T179A	T179A	T179A
FIELD SAMPLE_ID	T178C 6-7FT	T178-C-SRQ	T178-C-PON	T178-C-MLKJ	78C 16.6-17.6	T179A 0-1FT	T179A 1-2FT	T179A 2-3FT	T179A 3-4FT	T179A 4-5FT
SAMPLE DEPTH (from bottom)	6-7	7-10	10-13	13-16.16	16.6-17.6	0-1	1-2	2-3	3-4	4-5
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	273.74	1079.14	3537.25	931.23	20.08	0.10	0.10	0.11	0.11	0.11
Cl5(105)	132.27	381.05	1936.32	351.60	9.56	0.07	0.07	0.07	0.08	0.07
Cl5(110)	613.93	2267.49	4816.65	2073.44	30.27	0.08	0.08	0.08	0.08	0.08
Cl5(114)	0.17	10.10	149.70	15.36	0.17	0.10	0.10	0.11	0.11	0.11
Cl5(115)	0.15	13.80	119.76	24.02	0.14	0.09	0.09	0.09	0.10	0.09
Cl5(118)	210.28	681.66	2686.42	801.75	15.48	0.06	0.06	0.06	0.06	0.06
Cl5(107)/(123)	38.02	219.81	567.68	169.48	1.37	0.10	0.10	0.10	0.10	0.10
Cl5(124)	0.09	23.46	159.25	26.29	0.09	0.06	0.06	0.06	0.06	0.06
Cl5(126)	0.14	2.92	18.05	5.32	0.13	0.08	0.09	0.09	0.09	0.09
Cl6(128)	24.11	92.60	220.18	67.70	0.12	0.08	0.08	0.08	0.08	0.08
Cl6(130)	15.32	61.77	92.41	34.72	0.12	0.08	0.08	0.08	0.08	0.08
Cl6(134)	7.78	31.09	56.83	23.81	0.10	0.06	0.07	0.07	0.07	0.07
Cl6(135)	21.26	77.39	91.39	46.69	1.81	0.07	0.07	0.07	0.08	0.07
Cl6(136)	16.84	67.07	108.18	44.75	1.59	0.02	0.02	0.02	0.02	0.02
Cl6(137)	4.17	14.57	75.60	12.63	0.17	0.10	0.10	0.11	0.11	0.11
Cl6(138)	62.99	235.47	585.32	149.59	6.89	0.08	0.09	0.09	0.09	0.09
Cl6(141)	9.65	31.79	164.17	21.33	2.20	0.05	0.05	0.05	0.05	0.05
Cl6(144)	5.06	15.03	39.75	8.91	0.14	0.09	0.09	0.09	0.10	0.09
Cl6(146)	25.87	107.78	99.33	43.27	1.65	0.02	0.02	0.02	0.02	0.02
Cl6(149)	71.31	374.32	386.11	183.70	7.66	0.07	0.07	0.07	0.08	0.07
Cl6(151)	23.39	97.78	120.64	40.01	2.89	0.08	0.08	0.08	0.08	0.08
Cl6(132)/(153)/(168)	87.28	439.61	726.93	223.96	10.52	0.06	0.07	0.07	0.07	0.07
Cl6(156)	0.03	21.77	130.80	19.36	0.03	0.02	0.02	0.02	0.02	0.02
Cl6(157)	0.12	6.95	26.52	5.94	0.12	0.08	0.08	0.08	0.08	0.08
Cl6(129)/(158)	10.17	24.64	109.10	23.22	1.69	0.07	0.07	0.07	0.08	0.07
Cl6(163)	23.58	83.87	133.48	47.47	2.26	0.07	0.07	0.07	0.08	0.07
Cl6(164)	6.84	26.45	54.37	17.41	0.08	0.05	0.05	0.05	0.06	0.05
Cl6(166)	0.14	0.17	5.45	1.75	0.13	0.08	0.09	0.09	0.09	0.09
Cl6(167)	0.08	13.58	37.92	9.59	0.08	0.05	0.05	0.05	0.06	0.05
Cl6(169)	5.46	1.38	1.73	0.19	0.18	0.11	0.11	0.11	0.12	0.11
Cl7(170)	15.32	81.81	145.62	26.09	2.31	0.06	0.06	0.06	0.06	0.06
Cl7(171)	5.59	20.62	25.12	7.82	0.69	0.05	0.05	0.05	0.05	0.05
Cl7(172)	6.35	18.35	20.75	6.68	0.09	0.06	0.06	0.06	0.06	0.06
Cl7(174)	17.47	93.66	99.46	24.50	2.51	0.03	0.03	0.03	0.03	0.03
Cl7(176)	3.37	14.42	11.85	3.77	0.39	0.05	0.05	0.05	0.06	0.05
Cl7(177)	13.57	79.49	57.23	22.37	2.15	0.06	0.06	0.06	0.06	0.06
Cl7(178)	6.83	25.82	18.14	8.14	0.53	0.05	0.05	0.05	0.05	0.05
Cl7(179)	11.21	47.05	39.00	11.90	1.32	0.08	0.09	0.09	0.09	0.09
Cl7(180)	39.41	193.78	291.33	70.68	6.55	0.06	0.06	0.06	0.06	0.06
Cl7(183)	13.26	53.51	52.93	15.57	1.77	0.06	0.06	0.06	0.06	0.06
Cl7(184)	0.06	0.59	1.40	0.40	0.06	0.04	0.04	0.04	0.04	0.04
Cl7(185)	2.23	7.78	11.12	2.50	0.09	0.06	0.06	0.06	0.06	0.06
Cl7(187)	31.39	139.37	114.85	35.78	3.34	0.05	0.05	0.05	0.06	0.05
Cl7(189)	0.14	3.47	7.20	2.58	0.13	0.08	0.09	0.09	0.09	0.09
Cl7(190)	3.70	14.18	23.34	6.55	0.10	0.06	0.07	0.07	0.07	0.07
Cl7(193)	2.83	10.36	10.21	3.66	0.05	0.03	0.03	0.03	0.03	0.03
Cl8(194)	21.09	101.47	124.52	21.79	0.07	0.05	0.05	0.05	0.05	0.05
Cl8(195)	7.38	20.56	23.54	7.74	0.07	0.05	0.05	0.05	0.05	0.05
Cl8(199)	34.09	103.24	109.43	28.61	0.13	0.08	0.09	0.09	0.09	0.09
Cl8(200)	2.34	7.12	7.14	2.32	0.16	0.10	0.10	0.10	0.10	0.10
Cl8(201)	2.79	8.63	9.23	3.08	0.16	0.10	0.10	0.10	0.10	0.10
Cl8(202)	5.08	10.86	10.53	4.62	0.10	0.06	0.07	0.07	0.07	0.07
Cl8(196)/(203)	9.86	79.24	82.11	18.40	0.04	0.03	0.03	0.03	0.03	0.03
Cl8(205)	0.03	3.65	5.26	1.98	0.03	0.02	0.02	0.02	0.02	0.02
Cl9(206)	53.57	110.24	157.20	28.24	0.13	0.08	0.09	0.09	0.09	0.09
Cl9(207)	3.28	7.34	18.73	4.52	0.12	0.08	0.08	0.08	0.08	0.08
Cl9(208)	13.56	18.54	31.16	10.33	0.11	0.07	0.07	0.07	0.08	0.07
Cl10(209)	207.88	565.03	1289.99	334.69	2.65	0.28	0.05	0.05	0.05	0.05
Sum 117 congeners	22,032	87,306	191,306	77,510	892	8	7	8	8	8

STATION_ID	T179A	T179A	T179B	T179B	T179B	T179B	T179B	T179B	T179B	T179B
FIELD SAMPLE_ID	T179-A-UTSF	179A 8.4-9.4F	T179B 0-1FT	T179B 1-2FT	T179B 2-3FT	T179B 3-4FT	T179B 4-5FT	T179-B-UTS	T179-B-RQP	T179-B-ON
SAMPLE DEPTH (from bottom)	5-8.4	8.4-9.4	0-1	1-2	2-3	3-4	4-5	5-8	8-11	11-12.5
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	6.34	11.87	10.04	27.57	173.46	125.01	261.27	149.33	87.01	18.20
Cl1(1)	0.06	0.06	0.06	0.06	0.08	0.07	0.09	51.29	31.43	0.07
Cl1(3)	0.03	0.03	0.03	0.03	0.04	0.04	0.04	26.21	18.11	0.03
Cl2(4)/(10)	0.10	1.23	0.10	0.11	0.14	0.13	0.16	143.95	108.77	5.22
Cl2(5)	0.09	0.10	0.10	0.10	0.13	0.12	0.14	10.18	13.51	0.11
Cl2(6)	0.07	0.08	1.48	0.08	16.10	49.08	174.43	643.68	193.51	8.44
Cl2(7)	0.05	0.05	0.05	0.05	0.07	0.06	0.08	22.79	24.81	0.61
Cl2(8)	0.08	0.51	1.65	2.22	28.96	27.03	65.41	448.45	331.19	14.15
Cl2(9)	0.06	0.07	0.07	0.07	0.09	0.08	0.10	37.13	40.24	0.85
Cl2(13)	0.06	0.07	0.07	0.07	0.09	18.99	61.63	165.64	87.26	3.36
Cl2(15)	0.11	0.12	0.12	0.12	6.55	5.30	27.37	163.15	148.07	8.76
Cl3(16)	0.08	1.54	2.47	5.30	87.73	86.27	287.71	1302.28	500.59	26.74
Cl3(17)	0.46	2.42	3.77	7.31	113.68	133.77	366.68	1361.34	675.20	33.31
Cl3(18)	0.63	5.78	11.96	16.87	302.73	386.83	1243.74	4689.06	1682.83	73.70
Cl3(19)	0.08	0.08	0.08	1.16	17.04	16.24	48.13	167.57	100.27	4.00
Cl3(22)	0.06	2.00	4.96	6.57	122.08	130.91	386.64	1658.70	688.50	42.69
Cl3(24)	0.05	0.05	0.05	0.05	0.07	0.06	0.08	16.79	14.65	0.06
Cl3(25)	0.05	0.05	5.87	0.05	53.75	206.17	712.40	2118.00	559.83	38.24
Cl3(26)	0.07	1.21	7.08	3.50	72.93	202.10	742.51	2542.43	703.98	50.58
Cl3(27)	0.04	0.05	0.04	0.05	9.71	10.82	33.38	113.51	73.57	3.44
Cl3(28)	0.84	7.47	14.75	22.41	433.63	469.33	1508.96	5417.23	2104.48	110.79
Cl3(31)	1.04	8.64	18.75	23.41	451.82	574.79	1925.38	6359.65	2372.16	129.78
Cl3(32)	0.04	1.56	2.01	3.30	62.68	77.79	214.62	814.21	353.44	22.09
Cl3(33)/(20)	0.74	3.36	6.19	10.59	166.98	184.09	561.07	2267.12	1104.44	60.60
Cl3(37)	0.08	2.74	1.94	4.18	53.39	44.15	142.71	679.81	375.21	23.96
Cl4(40)	0.09	0.10	0.10	1.70	86.39	96.40	304.46	1231.26	496.38	36.65
Cl4(41)	0.05	0.05	1.00	0.05	10.16	28.10	96.64	457.51	158.72	15.05
Cl4(42)/(59)	0.06	4.44	7.28	13.37	188.37	228.89	541.13	2725.99	1164.80	72.79
Cl4(43)	0.06	0.06	0.06	0.06	27.36	33.22	82.11	346.47	138.79	9.21
Cl4(44)	1.33	11.08	21.11	36.62	516.30	593.84	1993.39	7499.37	3539.84	178.35
Cl4(45)	0.05	1.38	3.89	5.81	88.98	94.69	305.82	1310.65	550.57	33.71
Cl4(46)	0.08	0.09	2.41	3.42	47.43	52.23	137.84	572.63	216.33	15.47
Cl4(47)	0.06	3.98	5.18	9.40	143.58	163.85	478.16	1638.88	781.16	49.62
Cl4(48)	0.06	0.07	1.82	4.79	88.73	81.97	186.64	1166.94	556.84	32.64
Cl4(49)	0.84	10.70	16.76	29.34	452.96	517.68	1727.85	6104.41	2463.10	133.44
Cl4(51)	0.08	0.08	0.08	1.40	32.83	32.35	74.45	349.69	136.10	10.06
Cl4(52)	1.39	12.73	22.43	39.90	602.78	708.30	2527.42	8265.59	3796.17	189.14
Cl4(53)	0.04	1.59	3.32	4.43	72.19	82.10	296.86	1259.50	458.24	30.68
Cl4(54)	0.05	0.05	0.05	0.05	0.07	0.06	4.38	22.10	9.85	0.74
Cl4(56)	0.58	4.87	8.22	13.64	243.33	240.63	732.27	2397.16	1219.91	70.93
Cl4(60)	0.08	0.08	1.57	0.08	4.82	31.62	167.21	516.37	304.56	25.37
Cl4(64)	0.41	4.81	9.67	15.79	242.96	284.55	910.83	3442.96	1447.81	81.77
Cl4(66)	1.33	11.89	15.83	32.96	544.74	413.64	1077.27	4735.85	2471.63	124.17
Cl4(70)	1.63	13.55	19.88	38.25	661.62	596.09	1851.62	6447.70	3623.89	159.13
Cl4(71)	0.06	3.21	5.81	9.19	145.43	165.59	530.87	2117.89	862.38	52.55
Cl4(74)	0.04	3.82	7.26	12.84	223.91	175.81	578.89	2353.45	1294.33	67.64
Cl4(77)	0.15	0.16	1.65	3.13	45.78	32.56	96.59	358.15	203.56	9.79
Cl4(81)	0.05	0.05	0.05	0.05	0.07	0.06	0.08	6.37	3.91	0.06
Cl5(82)	0.06	0.06	0.06	0.06	41.37	49.20	158.71	578.44	274.44	13.32
Cl5(83)/(119)	0.08	0.96	0.08	4.36	43.24	39.50	104.63	335.56	204.37	10.76
Cl5(84)	0.11	2.66	3.77	9.21	114.12	101.41	327.76	1318.12	584.84	39.94
Cl5(85)	0.05	0.05	0.05	0.05	43.85	54.99	219.33	670.43	365.19	17.72
Cl5(87)	0.11	1.41	2.56	4.13	52.26	67.45	251.99	1025.14	447.37	25.73
Cl5(91)	0.04	0.45	0.88	3.28	51.87	47.49	145.94	672.32	329.51	16.92
Cl5(92)	0.06	0.97	1.62	3.53	49.47	36.00	160.84	429.69	208.03	11.21
Cl5(95)	0.41	4.09	5.92	16.60	173.50	175.57	588.06	2219.18	975.77	56.97
Cl5(97)	0.04	2.06	3.14	5.90	80.27	80.41	235.87	1123.73	498.81	24.59
Cl5(99)	0.42	2.67	3.17	9.05	92.12	87.55	261.94	972.17	590.81	27.34
Cl5(100)	0.05	0.05	0.05	0.05	0.98	0.06	2.26	19.53	9.88	0.52

STATION_ID	T179A	T179A	T179B	T179B	T179B	T179B	T179B	T179B	T179B	T179B
FIELD SAMPLE_ID	T179-A-UTSF	179A 8.4-9.4F	T179B 0-1FT	T179B 1-2FT	T179B 2-3FT	T179B 3-4FT	T179B 4-5FT	T179-B-UTS	T179-B-RQP	T179-B-ON
SAMPLE DEPTH (from bottom)	5-8.4	8.4-9.4	0-1	1-2	2-3	3-4	4-5	5-8	8-11	11-12.5
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	0.44	4.92	6.01	18.42	182.49	150.14	456.31	1672.52	802.74	40.58
Cl5(105)	0.08	1.35	2.21	3.16	35.67	53.01	219.24	725.26	399.27	20.44
Cl5(110)	0.64	6.52	9.99	24.44	266.74	284.32	856.93	2931.00	1508.73	66.33
Cl5(114)	0.11	0.12	0.12	0.12	0.15	0.14	0.18	26.71	16.49	1.11
Cl5(115)	0.10	0.11	0.10	0.11	0.14	0.13	0.16	31.00	24.04	1.30
Cl5(118)	0.06	3.66	4.48	12.96	158.16	117.10	394.36	1513.52	788.11	34.27
Cl5(107)/(123)	0.11	0.11	0.88	1.18	15.09	13.96	46.36	339.12	158.97	5.87
Cl5(124)	0.06	0.07	0.07	0.07	0.09	0.08	10.51	48.36	25.89	1.36
Cl5(126)	0.09	0.10	0.10	0.10	0.13	0.12	0.14	7.29	3.58	0.11
Cl6(128)	0.08	0.09	0.09	1.62	10.33	9.24	31.95	102.25	40.06	2.36
Cl6(130)	0.08	0.09	0.09	0.09	7.08	4.82	15.56	52.09	20.57	1.45
Cl6(134)	0.07	0.08	0.07	0.08	3.05	3.61	7.66	39.64	16.30	1.13
Cl6(135)	0.08	0.08	0.08	0.99	8.06	8.10	24.26	81.27	29.56	2.26
Cl6(136)	0.02	0.50	0.22	1.82	7.95	8.57	22.83	81.90	30.98	2.26
Cl6(137)	0.11	0.12	0.12	0.12	0.15	0.14	5.84	25.95	11.70	0.86
Cl6(138)	0.09	1.27	0.81	5.60	28.29	28.74	87.50	354.60	126.96	7.60
Cl6(141)	0.05	0.05	0.05	0.05	2.56	5.11	13.58	48.97	21.40	1.77
Cl6(144)	0.10	0.11	0.10	0.23	1.11	2.10	4.66	22.95	8.29	0.59
Cl6(146)	0.02	0.02	0.02	1.80	15.17	13.65	30.65	100.04	33.35	2.68
Cl6(149)	0.08	1.48	1.42	6.24	34.22	36.51	89.85	411.36	153.26	10.73
Cl6(151)	0.08	0.09	0.09	1.51	10.60	10.98	31.85	142.03	34.76	3.09
Cl6(132)/(153)/(168)	0.07	1.83	1.39	7.77	51.18	48.58	123.83	431.98	172.18	12.38
Cl6(156)	0.02	0.02	0.02	0.02	0.03	2.97	7.48	31.77	13.94	0.98
Cl6(157)	0.08	0.09	0.09	0.09	0.12	0.11	6.37	10.05	4.69	0.23
Cl6(129)/(158)	0.08	0.08	0.08	0.08	3.50	6.34	14.57	37.23	19.23	1.19
Cl6(163)	0.08	0.08	0.44	1.83	10.90	10.02	25.81	81.16	27.91	2.46
Cl6(164)	0.06	0.06	0.06	0.06	3.31	2.69	8.46	33.15	13.25	0.96
Cl6(166)	0.09	0.10	0.10	0.10	0.13	0.12	0.14	0.25	0.17	0.11
Cl6(167)	0.06	0.06	0.06	0.06	3.04	0.07	6.62	17.35	6.79	0.50
Cl6(169)	0.12	0.13	0.13	0.13	0.16	0.15	14.36	1.30	0.40	0.29
Cl7(170)	0.06	0.07	0.07	0.67	7.81	8.39	23.27	55.94	17.94	1.86
Cl7(171)	0.05	0.05	0.05	0.05	1.85	1.82	6.83	20.16	5.37	0.62
Cl7(172)	0.06	0.07	0.07	0.07	3.44	4.03	6.60	16.37	4.85	0.49
Cl7(174)	0.04	0.34	0.24	1.15	6.95	8.92	28.13	72.96	18.11	2.26
Cl7(176)	0.06	0.14	0.12	0.49	1.95	1.98	4.75	11.96	2.96	0.43
Cl7(177)	0.06	0.07	0.07	0.75	5.98	5.06	19.01	50.78	13.52	1.68
Cl7(178)	0.05	0.20	0.05	0.87	3.17	4.20	9.78	19.78	5.21	0.74
Cl7(179)	0.09	0.36	0.21	0.84	4.92	5.73	16.57	41.70	9.62	1.30
Cl7(180)	0.06	0.67	0.77	2.38	12.71	19.49	56.78	221.48	38.97	4.58
Cl7(183)	0.06	0.24	0.07	1.07	5.44	6.73	18.33	43.58	11.22	1.41
Cl7(184)	0.04	0.05	0.04	0.05	0.52	0.71	0.79	0.99	0.46	0.05
Cl7(185)	0.06	0.07	0.07	0.07	0.77	1.16	3.93	8.43	2.10	2.19
Cl7(187)	0.06	0.55	0.47	2.00	12.63	15.32	41.72	100.47	24.92	3.41
Cl7(189)	0.09	0.10	0.10	0.10	0.13	0.12	0.14	3.25	1.41	0.11
Cl7(190)	0.07	0.08	0.07	0.08	1.09	1.64	5.86	13.53	4.39	0.51
Cl7(193)	0.04	0.04	0.04	0.04	0.05	0.04	49.65	7.58	2.63	0.30
Cl8(194)	0.05	0.57	0.05	1.34	7.63	11.46	27.96	45.84	12.52	1.40
Cl8(195)	0.05	0.05	0.05	0.05	2.41	3.23	10.32	17.22	5.10	0.68
Cl8(199)	0.09	1.89	0.65	3.93	24.44	30.62	37.83	67.69	18.16	1.96
Cl8(200)	0.11	0.11	0.11	0.11	0.91	1.56	2.77	6.43	1.70	0.21
Cl8(201)	0.11	0.11	0.11	0.11	1.49	1.62	3.98	8.69	3.00	0.30
Cl8(202)	0.07	0.27	0.07	0.36	3.46	3.78	5.41	11.04	3.70	0.35
Cl8(196)/(203)	0.03	0.03	0.03	0.90	3.85	5.95	12.94	48.05	11.58	1.57
Cl8(205)	0.02	0.02	0.02	0.02	0.03	0.03	0.03	2.69	1.18	0.03
Cl9(206)	0.43	6.04	1.28	12.90	50.15	96.06	61.25	70.69	21.03	1.57
Cl9(207)	0.08	0.09	0.09	0.36	1.86	2.43	5.02	10.91	5.33	0.24
Cl9(208)	0.15	1.37	0.37	3.69	16.16	21.35	15.64	23.82	9.11	0.48
Cl10(209)	1.81	24.59	8.52	56.43	294.92	278.65	294.41	1177.59	475.07	15.57
Sum 117 congeners	22	205	304	622	8,551	9,382	28,991	107,493	47,939	2,579

STATION_ID	T179B	T179C	T179C	T179C	T179C	T179C	T179C	T179C	T179C	T179C
FIELD SAMPLE_ID	79B 12.5-13.5	179C 1.15-2F	T179C 2-3FT	T179C 3-4FT	T179C 4-5FT	T179C 5-6FT	T179-C-UT	T179-C-SRQ	T179-C-PON	T179-C-MLK
SAMPLE DEPTH (from bottom)	12.5-13.5	1.15-2	2-3	3-4	4-5	5-6	6-7.15	7.15-10	10-13	13-16
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	9.36	119.65	251.19	60.44	111.55	42.51	59.59	148.59	122.75	60.29
Cl1(1)	0.07	0.07	0.08	0.07	0.07	0.07	0.06	0.11	38.30	24.79
Cl1(3)	0.03	0.03	0.04	0.03	0.04	0.03	0.03	0.06	22.63	14.27
Cl2(4)/(10)	1.96	0.12	0.13	0.12	0.13	0.12	0.11	93.94	161.06	131.75
Cl2(5)	0.11	0.11	0.12	0.11	0.12	0.11	0.10	0.18	10.96	14.20
Cl2(6)	4.43	0.09	0.09	0.09	6.27	3.43	65.15	582.51	246.18	501.82
Cl2(7)	0.06	0.06	0.07	0.06	0.06	0.06	0.05	8.34	21.54	25.77
Cl2(8)	5.07	0.10	5.38	2.43	11.59	9.08	36.09	283.04	565.88	499.82
Cl2(9)	0.08	0.08	0.08	0.08	0.08	0.08	0.07	16.45	34.62	41.56
Cl2(13)	2.13	0.08	0.08	0.08	0.08	0.08	29.65	200.70	76.37	175.28
Cl2(15)	3.79	0.14	0.15	0.14	0.14	0.13	11.54	107.29	198.64	219.25
Cl3(16)	15.21	7.07	20.50	7.10	46.50	33.93	137.76	906.88	1382.89	827.42
Cl3(17)	20.49	8.59	28.13	10.24	54.46	43.03	183.56	1313.96	1491.99	1131.10
Cl3(18)	48.16	17.24	74.57	25.20	131.21	106.22	554.63	4697.01	5407.92	3599.29
Cl3(19)	2.35	0.09	0.10	0.10	6.25	5.72	21.68	138.86	229.88	109.30
Cl3(22)	26.27	8.09	27.27	8.71	50.09	36.68	182.79	1355.49	1649.99	1107.40
Cl3(24)	0.06	0.06	0.07	0.06	0.06	0.06	0.05	9.06	16.75	14.74
Cl3(25)	26.99	0.06	0.07	4.61	36.04	19.09	286.63	2284.32	694.57	1978.43
Cl3(26)	36.66	4.16	9.19	5.74	36.77	22.85	290.14	2471.46	1053.57	2362.51
Cl3(27)	1.44	0.05	0.06	0.05	3.47	0.05	14.84	104.39	136.33	82.44
Cl3(28)	76.77	25.81	72.91	31.18	190.67	132.76	605.24	5431.74	5775.24	4313.88
Cl3(31)	96.92	28.39	79.66	34.25	212.35	141.45	783.11	7097.54	7444.42	5694.43
Cl3(32)	13.21	3.46	15.58	5.48	32.60	22.82	100.29	726.83	996.88	611.03
Cl3(33)/(20)	35.47	15.72	44.06	15.02	80.54	61.29	249.03	1936.65	2824.26	1771.22
Cl3(37)	15.23	3.34	12.43	4.31	29.22	19.53	58.24	515.44	850.13	504.09
Cl4(40)	0.11	5.05	13.64	6.60	50.65	28.99	134.37	1039.11	1343.69	859.36
Cl4(41)	7.94	0.06	0.07	0.06	0.06	7.41	41.64	308.24	732.83	247.71
Cl4(42)/(59)	43.23	11.83	49.42	9.90	74.84	52.83	303.29	2417.17	2942.41	2085.08
Cl4(43)	4.16	0.07	2.04	0.07	7.90	7.79	37.08	280.89	320.23	234.30
Cl4(44)	110.75	44.90	105.88	45.45	239.33	157.20	846.99	7785.35	9470.36	6138.35
Cl4(45)	19.72	7.96	21.97	8.79	45.22	31.00	146.02	1070.94	1428.86	842.87
Cl4(46)	9.09	0.10	7.99	1.65	21.92	13.00	59.47	474.45	641.91	360.67
Cl4(47)	33.83	13.69	36.15	13.69	66.61	50.76	188.42	1534.53	1826.02	1280.27
Cl4(48)	17.10	9.06	31.50	0.08	36.56	32.36	109.91	896.81	1883.19	731.29
Cl4(49)	106.57	35.30	84.52	38.50	223.60	132.19	638.19	6286.55	6685.00	5158.79
Cl4(51)	5.15	1.14	6.16	1.24	11.85	8.43	38.36	277.88	378.73	239.04
Cl4(52)	131.11	44.51	124.52	53.11	282.53	175.76	921.50	8723.48	10101.92	6838.10
Cl4(53)	18.15	6.01	19.49	6.65	43.53	29.70	136.63	1002.25	1352.45	829.38
Cl4(54)	0.06	0.06	0.07	0.06	0.06	0.06	2.58	17.22	27.09	12.22
Cl4(56)	47.85	21.43	55.56	18.54	105.57	68.10	261.24	2197.14	3057.76	1779.00
Cl4(60)	16.96	0.09	11.22	0.10	4.60	5.97	49.29	466.14	1231.98	358.44
Cl4(64)	56.77	18.47	55.69	18.74	105.06	78.82	375.99	2873.06	3712.97	2477.14
Cl4(66)	91.79	43.71	106.22	37.28	219.94	144.33	442.67	4193.03	7385.40	3221.37
Cl4(70)	110.74	48.83	124.21	48.61	283.30	181.57	692.90	6497.90	10011.05	4882.42
Cl4(71)	35.60	11.57	33.85	10.27	58.94	47.90	226.23	1774.42	2237.16	1461.94
Cl4(74)	45.08	18.92	58.82	14.64	89.09	61.93	222.06	1844.70	3663.08	1604.06
Cl4(77)	8.88	5.23	8.96	3.09	18.88	12.91	30.02	267.39	501.18	229.18
Cl4(81)	0.06	0.06	0.07	0.06	0.06	0.06	0.05	3.59	12.07	3.00
Cl5(82)	9.97	0.07	8.05	2.39	15.87	10.44	54.95	445.65	746.04	385.56
Cl5(83)/(119)	8.76	1.21	9.38	4.44	20.74	10.27	40.41	359.03	414.51	341.73
Cl5(84)	31.69	10.62	30.35	12.62	44.04	30.94	137.68	1093.52	1451.18	1009.44
Cl5(85)	12.41	5.12	10.81	3.21	12.91	0.06	70.02	665.81	910.58	551.21
Cl5(87)	18.45	9.83	20.16	6.92	23.84	21.11	100.14	921.81	1499.08	624.73
Cl5(91)	13.60	3.76	12.28	4.25	24.89	14.77	62.28	519.50	790.86	524.55
Cl5(92)	9.28	6.36	12.19	4.01	24.40	13.21	42.18	389.00	449.42	381.76
Cl5(95)	46.26	21.89	55.92	21.15	76.79	52.86	226.03	1889.76	2554.38	1690.30
Cl5(97)	18.15	10.12	24.61	7.50	33.33	23.96	85.90	834.19	1297.56	709.13
Cl5(99)	0.07	15.59	33.05	9.51	44.98	31.05	94.26	867.32	1577.86	743.46
Cl5(100)	0.06	0.06	0.07	0.06	0.06	0.06	1.65	15.63	18.78	13.56

STATION_ID	T179B	T179C	T179C	T179C	T179C	T179C	T179C	T179C	T179C	T179C
FIELD SAMPLE_ID	79B 12.5-13.5	179C 1.15-2F	T179C 2-3FT	T179C 3-4FT	T179C 4-5FT	T179C 5-6FT	T179-C-UT	T179-C-SRQ	T179-C-PON	T179-C-MLK
SAMPLE DEPTH (from bottom)	12.5-13.5	1.15-2	2-3	3-4	4-5	5-6	6-7.15	7.15-10	10-13	13-16
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	35.35	25.11	55.05	21.28	73.77	46.00	149.91	1244.52	2189.66	982.08
Cl5(105)	17.79	8.32	17.23	5.26	10.71	11.61	64.28	669.59	1258.69	503.11
Cl5(110)	60.04	34.04	65.54	30.89	129.59	75.53	290.19	2758.96	3386.64	2353.08
Cl5(114)	0.14	0.14	0.15	0.14	0.14	0.13	1.26	12.13	64.32	14.01
Cl5(115)	0.12	0.12	0.13	0.12	0.13	0.12	2.79	26.54	68.86	24.99
Cl5(118)	28.49	22.21	46.13	14.98	65.19	38.58	118.17	1141.16	2078.80	903.94
Cl5(107)/(123)	3.65	2.80	0.14	1.61	7.40	4.17	22.12	229.18	350.68	158.52
Cl5(124)	0.08	0.08	0.08	0.08	0.08	0.08	3.21	29.60	81.33	23.11
Cl5(126)	0.11	0.11	0.12	0.11	0.12	0.11	0.10	4.83	9.26	3.36
Cl6(128)	2.23	0.10	4.33	2.54	5.65	2.52	7.98	80.56	112.85	52.10
Cl6(130)	1.76	0.10	0.11	0.10	4.22	0.10	5.01	53.56	51.78	28.61
Cl6(134)	0.80	1.25	0.95	0.09	2.29	0.08	3.42	34.52	41.14	22.11
Cl6(135)	3.46	1.71	2.75	1.56	5.34	2.55	7.66	86.94	72.39	42.66
Cl6(136)	2.66	4.72	4.92	2.15	5.74	2.44	7.61	75.70	78.36	41.31
Cl6(137)	0.72	1.79	0.15	0.14	0.14	0.13	1.82	17.00	35.99	11.20
Cl6(138)	10.61	8.93	19.25	6.33	17.32	8.83	26.18	301.67	392.88	141.44
Cl6(141)	3.07	0.06	0.07	0.06	0.06	0.06	4.41	39.60	74.75	19.06
Cl6(144)	1.08	0.12	0.47	0.12	0.13	0.12	0.11	19.24	26.10	8.52
Cl6(146)	3.57	2.14	3.69	1.79	9.10	4.06	9.95	105.10	83.21	45.52
Cl6(149)	15.77	9.07	18.51	6.39	20.15	10.37	36.22	395.37	375.74	238.43
Cl6(151)	5.23	1.72	4.16	1.92	6.34	3.50	10.66	110.91	94.87	45.34
Cl6(132)/(153)/(168)	18.42	12.51	26.35	8.96	29.12	14.46	42.11	426.64	483.91	241.22
Cl6(156)	1.17	4.37	4.17	0.03	0.03	0.03	2.22	20.70	49.34	14.37
Cl6(157)	0.10	0.10	0.11	0.10	0.11	0.10	0.83	7.25	14.16	5.09
Cl6(129)/(158)	1.24	0.09	2.04	0.10	0.10	0.09	3.73	34.54	57.55	22.26
Cl6(163)	5.64	2.56	4.89	1.73	5.30	2.98	7.70	78.93	73.86	38.67
Cl6(164)	1.22	0.07	0.08	0.07	0.07	0.07	2.78	26.87	35.01	16.29
Cl6(166)	0.11	0.11	0.12	0.11	0.12	0.11	0.10	0.18	2.90	1.16
Cl6(167)	0.07	0.07	0.08	0.07	0.07	0.07	1.36	12.68	19.66	7.94
Cl6(169)	1.34	0.15	0.16	0.15	0.15	0.14	0.09	0.62	0.16	0.19
Cl7(170)	3.59	2.61	2.86	0.08	2.66	2.11	5.32	53.92	57.58	20.56
Cl7(171)	1.22	0.06	0.07	0.06	0.72	0.82	1.99	21.86	17.48	7.20
Cl7(172)	0.98	0.08	0.08	0.08	1.72	0.90	1.94	18.07	13.49	5.92
Cl7(174)	5.25	2.31	2.87	0.82	3.21	2.73	7.69	78.59	62.36	21.95
Cl7(176)	0.88	3.83	1.93	0.40	1.12	0.54	1.32	14.70	9.45	3.79
Cl7(177)	3.75	0.08	1.88	0.52	2.77	1.96	5.32	24.23	41.44	18.69
Cl7(178)	1.20	1.20	1.25	0.63	2.33	1.03	2.57	26.34	14.99	7.64
Cl7(179)	2.96	2.79	2.70	0.87	2.54	1.58	4.57	49.83	33.09	11.71
Cl7(180)	11.12	6.76	8.20	2.67	6.63	4.92	15.00	143.38	134.55	44.03
Cl7(183)	3.31	4.86	3.06	0.80	2.66	1.60	4.77	50.57	36.77	13.75
Cl7(184)	0.05	0.86	0.32	0.05	0.46	0.05	0.21	0.85	1.00	0.46
Cl7(185)	0.12	0.08	0.08	0.08	0.08	0.08	0.87	9.11	7.25	2.34
Cl7(187)	7.61	4.34	5.32	1.98	7.06	3.79	11.55	123.03	77.56	32.85
Cl7(189)	0.11	0.11	0.12	0.11	0.12	0.11	0.36	2.92	3.83	1.29
Cl7(190)	0.78	0.09	0.09	0.09	0.77	0.08	1.36	13.51	13.35	5.16
Cl7(193)	0.62	0.04	0.84	0.04	0.76	0.04	0.97	8.65	5.98	3.55
Cl8(194)	2.53	2.53	2.91	0.06	3.62	3.28	7.15	54.21	41.58	15.81
Cl8(195)	1.43	0.06	0.07	0.06	1.15	0.06	2.35	19.45	14.93	6.20
Cl8(199)	3.25	7.85	7.53	3.40	13.98	7.87	11.96	76.10	56.40	22.99
Cl8(200)	0.88	0.13	0.14	0.13	0.13	0.52	0.82	7.16	4.94	2.04
Cl8(201)	0.69	2.42	1.45	0.13	1.07	0.13	1.06	9.02	7.12	3.09
Cl8(202)	0.63	1.38	1.40	0.46	2.23	1.35	1.58	11.98	8.69	4.12
Cl8(196)/(203)	1.70	1.82	1.50	0.03	1.80	1.91	6.50	53.15	40.71	16.58
Cl8(205)	0.03	1.26	0.03	0.03	0.03	0.03	0.50	3.61	2.85	1.47
Cl9(206)	2.92	26.11	15.76	7.86	34.76	24.21	18.03	64.20	65.24	22.84
Cl9(207)	0.10	2.32	1.07	0.10	1.28	0.10	0.95	8.10	10.95	3.95
Cl9(208)	0.92	7.74	5.51	1.99	10.35	6.35	4.99	18.75	21.04	8.46
Cl10(209)	10.09	226.92	156.26	30.11	202.37	77.02	54.71	598.57	834.95	323.25
Sum 117 congeners	1,817	1,011	2,073	731	3,948	2,571	11,442	100,125	127,293	81,247

STATION_ID	T179C	T179C	T180A	T180A	T180A	T180A	T180A	T180A	T180A	T180B
FIELD SAMPLE_ID	T179-C-JIH	79C 18.5-19.5	T180A 0-1FT	T180A 1-2FT	T180A 2-3FT	T180A 3-4FT	180A 4-4.8F	180A 4.8-5.6F	180A 5.6-6.6F	T180B 0-1FT
SAMPLE DEPTH (from bottom)	16-18.5	18.5-19.5	0-1	1-2	2-3	3-4	4-4.8	4.8-5.6	5.6-6.6	0-1
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	42.57	7.15	4.86	5.16	13.96	14.04	19.96	15.60	14.04	2.02
Cl1(1)	7.29	0.08	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05
Cl1(3)	3.39	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02
Cl2(4)/(10)	72.11	0.89	0.10	0.11	3.14	2.95	4.54	9.06	7.29	0.61
Cl2(5)	2.71	0.13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.08
Cl2(6)	123.01	2.50	0.07	0.08	0.07	0.08	0.08	0.08	0.07	0.06
Cl2(7)	5.02	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04
Cl2(8)	169.16	2.62	0.09	0.09	0.09	0.10	0.09	0.10	0.09	0.07
Cl2(9)	8.58	0.09	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.05
Cl2(13)	28.56	1.17	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.05
Cl2(15)	60.75	2.32	0.12	0.12	0.12	0.13	0.12	0.13	0.12	0.09
Cl3(16)	322.35	11.03	0.09	0.09	0.09	0.10	0.09	0.10	0.09	0.07
Cl3(17)	302.20	12.14	0.05	0.05	0.05	0.06	0.05	2.23	0.05	1.06
Cl3(18)	1052.92	37.88	0.07	0.08	0.07	0.08	0.08	3.69	1.18	2.41
Cl3(19)	60.56	1.38	0.08	0.08	0.08	0.09	0.08	0.09	0.08	0.06
Cl3(22)	372.08	19.02	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.78
Cl3(24)	3.43	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04
Cl3(25)	358.09	13.16	0.05	0.05	0.05	0.06	0.05	0.06	0.05	1.34
Cl3(26)	426.39	18.68	0.07	0.08	0.07	0.08	0.08	0.08	0.07	2.05
Cl3(27)	23.76	0.91	0.04	0.05	0.04	0.05	0.05	0.05	0.04	0.04
Cl3(28)	1038.78	51.85	0.09	0.09	0.09	0.10	0.09	3.94	2.35	3.37
Cl3(31)	1340.40	60.92	0.04	0.05	0.04	0.05	0.05	5.58	2.29	3.64
Cl3(32)	199.58	9.09	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.66
Cl3(33)/(20)	512.75	25.30	0.09	0.09	0.09	0.10	0.09	3.32	0.09	1.71
Cl3(37)	152.59	11.07	0.08	0.08	0.08	0.09	0.08	0.09	0.08	0.06
Cl4(40)	239.12	19.43	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.08
Cl4(41)	118.36	9.37	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04
Cl4(42)/(59)	615.73	30.30	0.07	0.07	0.07	0.07	0.07	0.07	2.72	1.75
Cl4(43)	63.87	3.74	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05
Cl4(44)	1550.02	84.71	0.07	0.08	0.07	0.08	0.08	16.70	8.39	4.51
Cl4(45)	258.73	16.20	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.81
Cl4(46)	113.94	6.99	0.09	0.09	0.09	0.10	0.09	0.10	0.09	0.07
Cl4(47)	338.22	24.88	0.07	0.07	0.07	0.07	0.07	3.27	2.01	1.23
Cl4(48)	281.65	18.04	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.05
Cl4(49)	1167.98	70.52	0.06	0.06	0.06	0.06	0.06	8.31	5.38	3.62
Cl4(51)	85.30	4.11	0.08	0.08	0.08	0.09	0.08	0.09	0.08	0.06
Cl4(52)	1665.16	106.66	0.04	0.05	0.04	0.05	0.05	9.79	6.05	4.74
Cl4(53)	284.80	14.86	0.04	0.05	0.04	0.05	0.05	0.05	0.04	0.72
Cl4(54)	4.92	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04
Cl4(56)	494.01	37.78	0.09	0.09	0.09	0.10	0.09	2.89	0.09	1.73
Cl4(60)	188.36	17.78	0.08	0.08	0.08	0.09	0.08	2.17	1.38	0.06
Cl4(64)	663.63	45.21	0.03	0.03	0.03	0.03	0.03	2.26	2.14	2.38
Cl4(66)	979.12	67.68	0.07	0.07	0.07	0.07	0.07	8.53	4.86	2.93
Cl4(70)	1331.20	77.34	0.07	0.08	0.07	0.08	0.08	8.19	4.62	3.39
Cl4(71)	382.15	27.96	0.07	0.07	0.07	0.07	0.07	1.98	0.07	1.19
Cl4(74)	529.05	37.74	0.04	0.05	0.04	0.05	0.05	0.05	0.04	1.04
Cl4(77)	60.85	5.42	0.15	0.16	0.16	0.17	0.16	0.17	0.16	0.12
Cl4(81)	1.72	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04
Cl5(82)	110.40	6.49	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05
Cl5(83)/(119)	71.75	3.05	0.08	0.08	0.08	0.09	0.08	1.58	0.08	0.06
Cl5(84)	279.34	15.84	0.11	0.11	0.11	0.12	0.11	2.60	1.43	0.72
Cl5(85)	127.11	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04
Cl5(87)	247.00	13.04	0.11	0.11	0.11	0.12	0.11	1.99	2.05	0.79
Cl5(91)	140.68	7.21	0.04	0.05	0.04	0.05	0.05	1.15	1.12	0.04
Cl5(92)	78.59	6.85	0.07	0.07	0.07	0.07	0.07	2.05	1.48	0.47
Cl5(95)	456.45	28.95	0.06	0.06	0.06	0.06	0.06	5.05	3.79	1.38
Cl5(97)	180.27	11.71	0.04	0.04	0.04	0.04	0.04	2.60	2.18	0.80
Cl5(99)	223.30	13.95	0.06	0.06	0.06	0.06	0.06	3.80	3.27	0.73
Cl5(100)	3.13	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04

STATION_ID	T179C	T179C	T180A	T180A	T180A	T180A	T180A	T180A	T180A	T180B
FIELD SAMPLE_ID	T179-C-JIH	79C 18.5-19.5	T180A 0-1FT	T180A 1-2FT	T180A 2-3FT	T180A 3-4FT	180A 4-4.8F	180A 4.8-5.6F	180A 5.6-6.6F	T180B 0-1FT
SAMPLE DEPTH (from bottom)	16-18.5	18.5-19.5	0-1	1-2	2-3	3-4	4-4.8	4.8-5.6	5.6-6.6	0-1
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	310.27	23.22	0.12	0.12	0.12	0.13	0.12	6.81	5.43	1.11
Cl5(105)	195.29	11.99	0.08	0.08	0.08	0.09	0.08	2.87	2.21	0.44
Cl5(110)	529.48	37.77	0.09	0.09	0.09	0.10	0.09	9.45	7.46	1.72
Cl5(114)	12.20	0.16	0.12	0.12	0.12	0.13	0.12	0.13	0.12	0.09
Cl5(115)	12.66	0.14	0.10	0.11	0.10	0.11	0.11	0.11	0.10	0.08
Cl5(118)	262.88	18.37	0.07	0.07	0.07	0.07	0.07	6.43	4.92	1.03
Cl5(107)/(123)	37.49	1.84	0.11	0.11	0.11	0.12	0.11	0.12	0.11	0.09
Cl5(124)	10.60	0.70	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.05
Cl5(126)	1.74	0.13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.08
Cl6(128)	15.56	1.47	0.09	0.09	0.09	0.10	0.09	1.42	2.58	0.07
Cl6(130)	7.93	0.12	0.09	0.09	0.09	0.10	0.09	0.10	0.09	0.07
Cl6(134)	4.37	0.10	0.07	0.08	0.07	0.08	0.08	0.08	0.07	0.06
Cl6(135)	10.34	1.22	0.08	0.08	0.08	0.09	0.08	0.09	0.64	0.06
Cl6(136)	10.18	1.09	0.02	0.02	0.02	0.02	0.02	1.42	1.04	0.02
Cl6(137)	5.54	0.16	0.12	0.12	0.12	0.13	0.12	0.13	0.12	0.09
Cl6(138)	48.33	4.31	0.10	0.10	0.10	0.10	0.10	3.09	2.98	0.08
Cl6(141)	9.63	1.11	0.05	0.05	0.05	0.06	0.05	0.06	1.11	0.04
Cl6(144)	3.20	0.14	0.10	0.11	0.10	0.11	0.11	0.11	0.10	0.08
Cl6(146)	11.94	0.69	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Cl6(149)	63.08	4.36	0.08	0.08	0.08	0.09	0.08	3.28	3.47	0.36
Cl6(151)	12.38	1.40	0.09	0.09	0.09	0.10	0.09	0.10	0.86	0.07
Cl6(132)/(153)/(168)	61.58	6.37	0.07	0.08	0.07	0.08	0.08	4.21	4.69	0.40
Cl6(156)	8.36	0.79	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Cl6(157)	2.94	0.12	0.09	0.09	0.09	0.10	0.09	0.10	0.09	0.07
Cl6(129)/(158)	9.27	0.11	0.08	0.08	0.08	0.09	0.08	0.09	0.08	0.06
Cl6(163)	11.43	1.46	0.08	0.08	0.08	0.09	0.08	1.27	1.04	0.06
Cl6(164)	4.48	0.08	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05
Cl6(166)	0.12	0.13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.08
Cl6(167)	4.32	0.08	0.06	0.06	0.06	0.06	0.06	0.06	1.23	0.05
Cl6(169)	0.01	0.17	0.13	0.13	0.13	0.14	0.13	0.14	0.13	0.10
Cl7(170)	8.48	1.11	0.07	0.07	0.07	0.07	0.07	0.07	0.68	0.05
Cl7(171)	2.58	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04
Cl7(172)	2.36	0.09	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.05
Cl7(174)	7.65	1.22	0.04	0.04	0.04	0.04	0.04	0.70	1.10	0.03
Cl7(176)	1.35	0.08	0.06	0.06	0.06	0.06	0.06	0.85	0.49	0.05
Cl7(177)	5.86	0.82	0.07	0.07	0.07	0.07	0.07	0.07	0.61	0.05
Cl7(178)	2.25	0.29	0.05	0.05	0.05	0.06	0.05	0.61	0.53	0.04
Cl7(179)	3.48	0.63	0.10	0.10	0.10	0.10	0.10	0.67	0.89	0.08
Cl7(180)	18.72	2.88	0.07	0.07	0.07	0.07	0.07	0.92	2.20	0.05
Cl7(183)	6.04	0.73	0.07	0.07	0.07	0.07	0.07	0.07	0.86	0.05
Cl7(184)	0.39	0.06	0.04	0.05	0.04	0.05	0.05	0.26	0.04	0.04
Cl7(185)	0.96	0.09	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.05
Cl7(187)	10.37	1.73	0.06	0.06	0.06	0.06	0.06	0.95	1.53	0.05
Cl7(189)	1.25	0.13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.08
Cl7(190)	2.32	0.10	0.07	0.08	0.07	0.08	0.08	0.08	0.07	0.06
Cl7(193)	1.19	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03
Cl8(194)	6.19	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.81	0.04
Cl8(195)	2.36	0.07	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.04
Cl8(199)	6.88	0.13	0.10	0.10	0.10	0.10	0.10	3.11	2.03	0.08
Cl8(200)	0.76	0.15	0.11	0.11	0.11	0.12	0.11	0.12	0.11	0.09
Cl8(201)	1.13	0.15	0.11	0.11	0.11	0.12	0.11	0.12	0.35	0.09
Cl8(202)	1.07	0.10	0.07	0.08	0.07	0.08	0.08	1.35	0.79	0.06
Cl8(196)/(203)	6.38	0.77	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02
Cl8(205)	0.47	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Cl9(206)	6.59	0.78	0.10	0.10	0.10	0.10	1.03	10.89	6.80	0.18
Cl9(207)	0.99	0.12	0.09	0.09	0.09	0.10	0.09	0.10	0.20	0.07
Cl9(208)	1.80	0.24	0.08	0.08	0.08	0.09	0.08	3.44	2.20	0.06
Cl10(209)	26.75	2.86	0.05	0.05	0.46	1.15	3.37	50.79	31.85	0.60
Sum 117 congeners	21,797	1,252	8	8	12	13	17	233	164	63

STATION_ID	T180B	T180B	T180B	T180B	T180B	T180B	T180C	T180C	T180C	T180C
FIELD SAMPLE_ID	T180B 1-2FT	T180B 2-3FT	T180B 3-4FT	T180B 4-5FT	T180-B-UTS	T180-B-RQ	T180C 0-1FT	T180C 1-2FT	T180C 2-3FT	T180C 3-4FT
SAMPLE DEPTH (from bottom)	1-2	2-3	3-4	4-5	5-8.2	8.2-9.2	0-1	1-2	2-3	3-4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	14.29	19.99	1191.36	23.47	28.82	2.11	69.60	166.22	124.37	83.80
Cl1(1)	0.06	0.08	0.08	0.07	0.08	0.06	0.06	0.07	0.07	0.06
Cl1(3)	0.03	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.04	0.03
Cl2(4)/(10)	2.40	5.27	12.79	11.06	13.09	0.10	6.94	9.92	18.34	14.53
Cl2(5)	0.10	0.12	0.13	0.12	0.72	0.09	0.10	0.12	0.12	0.10
Cl2(6)	2.07	10.75	43.82	43.31	19.88	0.71	1.78	7.28	14.52	38.78
Cl2(7)	0.05	0.07	0.07	0.06	1.38	0.05	0.05	0.06	0.06	0.05
Cl2(8)	2.26	14.58	34.71	28.60	29.14	1.03	3.79	9.62	19.87	24.96
Cl2(9)	0.07	0.08	0.09	0.08	2.63	0.06	0.07	0.08	0.08	0.07
Cl2(13)	1.08	3.72	13.91	14.98	7.45	0.06	0.07	0.08	5.66	14.42
Cl2(15)	0.99	6.96	20.92	16.72	17.84	0.55	0.12	0.15	4.69	6.27
Cl3(16)	6.42	30.79	61.74	66.96	50.79	2.05	13.35	38.37	68.80	81.52
Cl3(17)	9.33	42.80	90.80	86.20	61.72	2.32	16.79	53.18	108.55	104.37
Cl3(18)	24.15	93.33	237.50	260.65	164.97	6.20	42.88	145.47	263.46	293.94
Cl3(19)	1.14	4.55	10.57	9.58	9.92	0.32	1.93	6.02	10.91	13.74
Cl3(22)	9.65	45.59	81.50	90.95	69.51	2.78	16.96	45.86	84.19	89.48
Cl3(24)	0.05	0.07	0.07	0.06	1.23	0.05	0.05	0.06	0.06	0.05
Cl3(25)	10.84	47.37	123.90	153.74	65.29	2.28	10.01	33.51	66.07	143.81
Cl3(26)	13.14	60.10	161.90	188.88	83.48	3.01	10.89	33.39	65.23	141.79
Cl3(27)	1.11	3.29	8.54	7.29	6.90	0.26	0.04	0.05	7.48	9.35
Cl3(28)	29.94	118.13	293.38	325.89	211.32	7.63	54.80	165.58	293.25	322.50
Cl3(31)	35.39	144.30	359.23	404.23	252.57	8.91	58.44	172.65	327.81	381.23
Cl3(32)	4.24	23.69	51.90	53.59	34.61	1.48	8.66	28.48	52.18	55.29
Cl3(33)/(20)	14.76	64.39	121.30	136.65	95.50	4.01	27.02	69.28	122.46	139.14
Cl3(37)	3.92	22.71	51.13	54.08	29.03	1.55	9.18	25.32	42.89	43.27
Cl4(40)	6.45	36.89	67.38	78.24	52.19	1.86	13.63	43.76	66.62	79.73
Cl4(41)	0.05	11.96	17.18	23.22	18.16	0.87	4.10	0.06	8.89	20.80
Cl4(42)/(59)	17.53	71.66	163.80	185.73	122.59	4.52	31.08	99.05	166.51	187.05
Cl4(43)	0.06	8.98	19.95	24.37	14.49	0.48	3.56	11.02	20.20	24.91
Cl4(44)	43.45	184.62	410.39	495.49	290.51	10.93	81.28	243.04	412.96	434.32
Cl4(45)	8.26	35.14	69.31	72.17	46.23	2.04	13.65	40.88	74.84	83.13
Cl4(46)	2.69	15.96	33.30	38.04	25.19	0.88	5.47	18.85	36.94	43.74
Cl4(47)	12.68	61.87	115.61	130.86	72.51	2.72	23.14	78.27	121.14	117.73
Cl4(48)	6.69	30.20	47.80	56.36	39.90	1.92	15.77	32.13	58.55	54.30
Cl4(49)	37.62	153.21	383.42	438.30	253.99	8.61	64.56	210.73	367.03	398.81
Cl4(51)	1.80	9.31	20.47	21.87	15.64	0.53	3.10	10.37	20.42	25.41
Cl4(52)	48.16	203.37	478.78	580.87	325.47	12.66	89.03	266.82	469.17	538.07
Cl4(53)	6.75	31.81	62.06	71.50	42.57	1.79	12.12	38.55	65.59	73.88
Cl4(54)	0.05	0.07	0.07	0.06	1.46	0.14	0.05	0.06	0.06	0.05
Cl4(56)	16.28	70.73	143.56	175.43	101.37	4.18	33.14	99.51	169.58	167.80
Cl4(60)	2.93	20.15	29.21	40.83	30.33	1.56	4.85	7.03	11.27	21.39
Cl4(64)	20.04	88.23	194.45	225.28	137.85	5.47	35.19	109.60	189.39	208.14
Cl4(66)	33.17	134.71	287.38	322.94	214.28	7.94	71.89	211.40	353.34	288.60
Cl4(70)	42.06	180.14	369.33	439.12	269.91	10.36	88.95	265.37	447.83	419.91
Cl4(71)	11.27	58.17	108.20	131.04	81.63	3.17	21.45	58.56	108.35	126.50
Cl4(74)	12.81	69.51	108.08	131.55	84.29	4.08	33.63	77.00	141.12	136.79
Cl4(77)	2.84	12.56	25.87	28.24	16.61	0.57	5.71	16.17	27.54	25.56
Cl4(81)	0.05	0.07	0.07	0.06	0.07	0.05	0.05	0.06	0.06	0.05
Cl5(82)	3.18	14.26	27.81	34.19	19.82	1.04	5.58	11.90	26.11	35.71
Cl5(83)/(119)	3.33	11.56	28.31	32.91	19.82	0.80	6.37	20.45	33.08	31.82
Cl5(84)	9.61	44.12	97.63	89.82	57.06	2.15	15.44	60.13	98.31	90.65
Cl5(85)	3.73	18.74	38.01	47.96	26.90	1.16	7.05	14.26	28.52	39.44
Cl5(87)	4.25	22.72	43.78	60.94	35.90	2.45	10.39	19.63	42.77	51.65
Cl5(91)	4.17	19.26	42.89	47.26	30.27	1.06	7.51	22.01	38.83	46.03
Cl5(92)	3.68	15.98	34.99	38.21	24.67	1.23	8.21	22.06	34.26	33.40
Cl5(95)	15.49	70.76	112.19	146.32	91.01	6.36	28.40	85.05	128.35	129.36
Cl5(97)	5.99	26.00	57.22	57.72	35.68	2.02	12.99	29.95	57.07	53.48
Cl5(99)	7.27	31.25	64.61	58.41	38.11	2.01	18.73	40.73	72.08	65.92
Cl5(100)	0.05	0.63	1.26	1.56	0.97	0.05	0.05	0.78	1.72	1.35

STATION_ID	T180B	T180B	T180B	T180B	T180B	T180B	T180C	T180C	T180C	T180C
FIELD SAMPLE_ID	T180B 1-2FT	T180B 2-3FT	T180B 3-4FT	T180B 4-5FT	T180-B-UTS	T180-B-RQ	T180C 0-1FT	T180C 1-2FT	T180C 2-3FT	T180C 3-4FT
SAMPLE DEPTH (from bottom)	1-2	2-3	3-4	4-5	5-8.2	8.2-9.2	0-1	1-2	2-3	3-4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	13.66	49.87	77.62	94.67	61.54	6.06	28.80	70.45	113.23	92.17
Cl5(105)	3.96	21.81	37.33	48.03	29.72	1.88	8.04	11.25	19.46	34.41
Cl5(110)	22.57	88.37	187.69	223.98	133.13	6.82	41.28	127.74	202.00	192.08
Cl5(114)	0.12	0.15	0.16	0.15	1.86	0.11	0.12	0.15	0.14	0.12
Cl5(115)	0.26	1.16	1.45	2.56	1.63	0.13	0.58	0.79	1.99	1.76
Cl5(118)	10.26	40.78	65.57	82.84	52.93	3.45	25.03	54.02	99.50	77.08
Cl5(107)/(123)	1.33	7.44	15.94	19.91	10.92	0.57	5.75	11.59	12.05	18.20
Cl5(124)	0.07	1.06	1.74	3.39	1.89	0.14	0.07	0.08	0.08	1.72
Cl5(126)	0.10	1.87	0.13	0.12	0.13	0.09	0.10	0.12	0.12	0.10
Cl6(128)	0.09	3.44	4.33	7.53	4.53	0.96	2.60	5.18	8.45	8.18
Cl6(130)	0.09	2.40	3.04	4.73	2.87	0.45	0.09	5.98	5.66	4.71
Cl6(134)	0.08	1.27	2.31	2.94	1.93	0.53	1.45	2.71	2.88	2.66
Cl6(135)	1.04	2.93	5.70	7.57	5.01	1.54	1.45	5.39	7.59	6.59
Cl6(136)	0.93	2.74	5.52	6.69	4.24	1.85	3.33	5.79	7.68	6.49
Cl6(137)	0.12	0.81	1.97	1.29	1.04	0.19	2.27	0.15	0.14	0.12
Cl6(138)	3.16	10.33	21.25	25.65	13.86	7.26	7.80	15.90	23.51	23.48
Cl6(141)	0.05	2.25	2.74	3.94	3.12	3.23	0.05	3.11	0.06	3.82
Cl6(144)	0.11	0.13	1.35	1.25	1.11	0.82	0.10	0.13	0.13	2.02
Cl6(146)	0.89	3.26	7.45	8.71	5.89	1.46	2.43	8.52	11.79	9.13
Cl6(149)	3.28	12.89	26.12	31.38	22.53	11.03	7.88	20.74	30.93	30.42
Cl6(151)	0.95	3.11	7.27	9.33	6.44	4.16	2.26	5.58	8.34	8.89
Cl6(132)/(153)/(168)	4.22	15.88	30.65	38.18	24.31	14.37	10.76	27.09	38.27	35.83
Cl6(156)	0.02	1.28	2.36	2.46	1.86	0.79	2.11	1.84	2.14	1.25
Cl6(157)	0.09	0.11	0.12	0.11	0.55	0.08	5.09	0.11	0.11	0.09
Cl6(129)/(158)	0.84	1.16	2.69	3.15	2.42	1.04	0.08	0.10	0.10	3.60
Cl6(163)	0.97	2.63	6.71	7.21	5.52	2.44	2.39	5.35	9.01	7.26
Cl6(164)	0.06	0.08	1.90	2.58	1.74	0.79	0.06	0.07	2.77	2.26
Cl6(166)	0.10	0.12	0.13	0.12	0.13	0.09	0.10	0.12	0.12	0.10
Cl6(167)	0.06	1.41	1.29	1.96	0.96	0.30	2.76	1.80	0.07	1.25
Cl6(169)	0.13	0.16	0.17	0.16	0.16	0.02	0.13	0.16	0.15	0.13
Cl7(170)	0.07	2.47	4.16	5.77	4.11	4.50	1.69	2.82	5.67	4.91
Cl7(171)	0.05	0.83	1.17	2.05	1.34	1.39	1.17	0.72	1.41	1.76
Cl7(172)	0.07	0.97	1.47	1.62	1.11	0.96	2.02	1.81	2.05	2.13
Cl7(174)	0.63	2.52	4.94	5.65	5.27	5.99	1.82	3.15	5.97	6.55
Cl7(176)	0.39	0.65	0.87	1.05	0.91	0.80	2.33	1.69	2.01	1.49
Cl7(177)	0.66	2.06	4.19	4.71	4.06	3.48	1.44	3.18	3.82	5.27
Cl7(178)	0.43	1.22	2.04	2.31	1.74	1.07	0.57	4.15	3.24	2.71
Cl7(179)	0.56	1.41	2.84	3.29	2.81	2.51	2.38	3.12	4.10	4.72
Cl7(180)	1.63	5.62	9.41	13.04	10.35	12.73	4.99	7.34	10.12	13.34
Cl7(183)	0.58	2.00	2.87	3.74	3.15	3.54	4.18	3.52	5.67	4.59
Cl7(184)	0.05	0.19	0.06	0.27	0.05	0.04	0.41	0.81	0.77	0.24
Cl7(185)	0.07	0.28	0.38	0.77	0.61	0.77	0.07	0.08	0.85	0.72
Cl7(187)	1.38	3.98	7.37	9.36	7.78	6.56	3.72	8.33	11.05	11.51
Cl7(189)	0.10	0.12	0.13	0.12	0.13	0.20	0.10	0.12	0.12	0.10
Cl7(190)	0.08	0.80	1.36	1.52	1.05	1.17	0.07	0.09	1.06	1.22
Cl7(193)	0.04	0.05	1.07	1.20	0.59	0.55	0.67	0.64	1.13	1.28
Cl8(194)	0.96	1.55	4.16	4.60	3.67	2.57	2.05	4.06	5.95	6.76
Cl8(195)	0.05	0.07	1.09	2.53	1.28	1.15	1.38	0.90	2.34	2.19
Cl8(199)	2.40	3.74	5.06	6.12	4.41	2.77	5.22	19.33	21.18	17.34
Cl8(200)	0.12	0.14	0.15	0.67	0.49	0.47	0.11	0.14	0.95	0.69
Cl8(201)	0.12	0.42	0.73	1.11	0.62	0.43	1.85	1.34	1.47	1.43
Cl8(202)	0.30	0.55	0.89	1.39	0.76	0.46	1.46	3.33	2.99	2.08
Cl8(196)/(203)	0.72	1.82	2.85	4.34	3.61	2.85	1.17	2.56	3.36	3.31
Cl8(205)	0.02	0.03	0.03	0.03	0.03	0.18	1.30	0.69	0.03	0.02
Cl9(206)	4.75	7.85	5.35	7.52	4.66	0.63	21.45	41.60	47.38	41.97
Cl9(207)	0.09	0.56	0.57	0.94	0.63	0.10	2.14	1.85	2.07	1.16
Cl9(208)	1.39	2.22	1.65	2.45	1.38	0.12	6.00	14.16	15.67	11.12
Cl10(209)	26.87	48.67	51.50	82.11	37.29	0.73	177.64	353.20	322.45	151.10
Sum 117 congeners	682	2,881	6,125	7,094	4,374	285	1,474	3,987	6,569	6,852

STATION_ID	T180C	T180C	T180C	T180C	T180C	T180C	T180D	T180D	T180D	T180D
FIELD SAMPLE_ID	T180C 4-5FT	T180-C-UTS	T180-C-RQP	180-C-ONMI	T180-C-KJI	30C 16.6-17.6	T180D 0-1FT	T180D 1-2FT	T180D 2-3FT	T180D 3-4FT
SAMPLE DEPTH (from bottom)	4-5	5-8	8-11	11-14	14-16.6	16.6-17.6	0-1	1-2	2-3	3-4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	279.07	188.25	66.23	70.52	20.66	5.25	1.03	8.44	37.04	122.53
Cl1(1)	0.08	0.13	36.65	67.93	2.44	0.07	0.05	0.06	0.06	0.07
Cl1(3)	0.04	0.07	19.92	8.27	1.02	0.03	0.02	0.03	0.03	0.04
Cl2(4)/(10)	19.93	0.23	208.62	250.93	11.12	0.46	0.08	1.06	9.65	12.49
Cl2(5)	0.12	0.22	11.60	7.04	0.53	0.11	0.08	0.09	0.10	0.12
Cl2(6)	102.43	468.71	301.80	112.56	11.83	1.34	0.06	0.07	1.88	17.95
Cl2(7)	0.07	0.12	20.59	10.48	0.81	0.06	0.04	0.05	0.05	0.06
Cl2(8)	59.30	323.82	465.65	302.85	22.08	1.37	0.07	0.08	2.69	21.17
Cl2(9)	0.09	0.15	34.11	17.38	1.34	0.08	0.05	0.06	0.07	0.08
Cl2(13)	43.49	143.63	68.32	19.47	4.65	0.51	0.05	0.06	0.07	6.54
Cl2(15)	16.69	79.38	193.55	51.72	11.65	1.08	0.09	0.11	0.12	5.01
Cl3(16)	211.04	867.85	1095.35	488.51	46.28	4.52	0.74	0.08	8.70	74.28
Cl3(17)	278.95	1120.70	1114.84	419.34	43.71	4.71	0.82	0.05	15.06	101.96
Cl3(18)	885.10	3494.08	3524.93	1454.13	132.40	15.15	2.03	0.07	36.43	272.33
Cl3(19)	33.61	173.36	184.10	92.08	7.08	1.05	0.06	0.08	0.08	11.94
Cl3(22)	262.09	1256.47	1242.37	350.91	63.15	7.11	0.89	0.06	12.48	88.54
Cl3(24)	0.07	0.12	13.92	4.50	0.50	0.06	0.39	0.05	0.05	0.06
Cl3(25)	430.19	1746.14	769.64	223.25	46.21	5.75	0.97	0.05	10.85	74.03
Cl3(26)	432.70	1776.42	1044.70	319.32	71.09	8.18	0.96	0.07	9.27	69.12
Cl3(27)	23.33	123.35	110.67	31.40	4.95	0.75	0.04	0.04	1.28	8.10
Cl3(28)	941.67	3915.89	3871.21	975.62	187.62	21.87	2.17	0.08	38.42	324.10
Cl3(31)	1158.86	4823.71	4797.96	1191.13	220.63	24.55	3.00	0.04	42.52	354.29
Cl3(32)	154.13	658.18	640.07	246.43	33.84	3.56	0.30	0.03	7.80	61.04
Cl3(33)/(20)	403.85	1643.97	1999.55	499.19	77.16	8.83	1.05	0.08	19.16	137.22
Cl3(37)	89.75	429.77	660.86	119.15	32.31	4.35	0.06	0.08	5.86	47.57
Cl4(40)	237.32	874.40	1000.82	233.82	44.60	6.65	0.08	0.09	7.21	73.59
Cl4(41)	58.42	330.52	477.93	122.58	20.73	2.44	0.04	0.05	0.05	5.91
Cl4(42)/(59)	524.74	2089.55	2311.25	486.66	100.59	13.11	1.10	0.06	23.01	173.02
Cl4(43)	66.05	264.96	301.89	64.34	10.58	0.99	0.05	0.06	0.06	23.69
Cl4(44)	1335.09	5198.71	6030.46	1276.21	249.17	34.39	3.36	0.07	57.95	437.53
Cl4(45)	262.70	931.58	1013.15	269.48	42.55	5.49	0.84	0.05	9.86	81.05
Cl4(46)	105.24	435.31	469.05	114.77	18.87	2.15	0.07	0.08	4.53	38.65
Cl4(47)	352.18	1280.89	1367.01	279.11	59.79	8.60	0.80	0.06	17.82	136.80
Cl4(48)	198.53	837.61	1355.75	257.86	39.23	5.27	0.55	0.06	7.05	61.04
Cl4(49)	1078.73	4315.29	4460.70	949.58	208.90	27.89	2.89	0.06	45.87	382.23
Cl4(51)	59.96	238.80	290.74	67.99	11.52	1.50	0.06	0.08	2.86	23.85
Cl4(52)	1584.87	6030.92	6423.99	1440.38	269.84	36.95	3.90	0.04	55.65	497.24
Cl4(53)	218.93	895.60	1032.93	264.99	37.49	4.87	0.56	0.04	9.44	71.63
Cl4(54)	0.07	13.26	16.89	8.13	0.90	0.06	0.04	0.05	0.05	0.06
Cl4(56)	528.29	1814.08	2134.03	372.07	92.22	14.37	1.50	0.08	21.67	193.38
Cl4(60)	100.24	329.67	792.13	121.88	39.79	5.10	0.42	0.08	0.08	10.95
Cl4(64)	625.80	2369.74	2818.11	579.15	120.11	17.18	1.69	0.03	22.86	208.64
Cl4(66)	818.12	3238.12	4710.81	758.29	203.12	27.81	2.29	0.06	44.68	374.98
Cl4(70)	1272.08	4585.24	5966.05	1003.13	244.55	33.01	3.29	0.07	54.44	476.59
Cl4(71)	376.39	1453.72	1605.80	306.06	68.31	9.33	0.98	0.06	13.67	113.17
Cl4(74)	432.59	1646.19	2484.27	379.23	95.97	13.30	1.15	0.04	17.73	145.44
Cl4(77)	58.69	235.68	315.93	45.40	16.05	2.27	0.12	0.15	4.43	29.99
Cl4(81)	0.07	3.49	9.61	0.91	0.06	0.06	0.04	0.05	0.05	0.06
Cl5(82)	102.40	368.55	400.48	85.62	19.59	2.85	0.53	0.06	3.49	26.63
Cl5(83)/(119)	55.88	294.54	300.94	66.87	15.03	1.79	0.06	0.08	4.15	34.81
Cl5(84)	242.15	987.29	1194.54	177.85	46.33	7.14	0.65	0.10	11.24	95.91
Cl5(85)	122.31	441.76	519.61	96.47	24.42	4.59	0.04	0.05	3.19	26.13
Cl5(87)	164.49	716.20	997.49	150.22	37.58	5.59	0.42	0.10	5.38	42.71
Cl5(91)	110.74	466.82	609.14	99.28	23.22	3.12	0.04	0.04	4.84	42.15
Cl5(92)	74.46	314.81	377.10	74.74	16.98	2.01	0.24	0.06	5.01	35.49
Cl5(95)	385.23	1627.76	1935.57	319.23	72.31	13.00	1.10	0.06	19.58	139.13
Cl5(97)	154.30	647.12	895.61	136.41	35.73	5.46	0.65	0.03	7.63	62.53
Cl5(99)	179.93	666.44	1008.05	141.23	39.19	5.70	0.67	0.06	9.31	69.34
Cl5(100)	3.23	12.96	15.67	2.61	0.64	0.06	0.04	0.05	0.05	1.77

STATION_ID	T180C	T180C	T180C	T180C	T180C	T180C	T180D	T180D	T180D	T180D
FIELD SAMPLE_ID	T180C 4-5FT	T180-C-UTS	T180-C-RQP	180-C-ONMI	T180-C-KJI	30C 16.6-17.6	T180D 0-1FT	T180D 1-2FT	T180D 2-3FT	T180D 3-4FT
SAMPLE DEPTH (from bottom)	4-5	5-8	8-11	11-14	14-16.6	16.6-17.6	0-1	1-2	2-3	3-4
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	258.91	1068.04	1475.03	251.61	54.05	12.40	0.94	0.11	18.42	110.76
Cl5(105)	118.40	436.23	744.76	117.86	34.32	4.82	0.61	0.08	3.00	19.89
Cl5(110)	544.90	1972.79	2259.19	380.48	97.29	18.20	1.60	0.08	27.36	216.45
Cl5(114)	3.27	8.73	51.88	6.89	2.24	0.14	0.09	0.11	0.12	0.15
Cl5(115)	7.62	21.98	55.39	7.51	2.41	0.12	0.08	0.10	0.81	1.53
Cl5(118)	215.87	879.30	1171.33	199.09	48.14	8.62	0.82	0.06	14.00	101.61
Cl5(107)/(123)	29.53	144.98	134.69	48.01	9.19	1.61	0.65	0.10	1.44	21.26
Cl5(124)	7.32	27.62	62.48	7.47	2.10	0.50	0.05	0.06	0.07	0.08
Cl5(126)	2.58	5.10	7.05	1.92	0.11	0.11	0.08	0.09	0.10	0.12
Cl6(128)	16.67	64.77	121.14	15.21	4.00	0.64	0.07	0.08	2.26	8.48
Cl6(130)	11.57	39.11	38.08	7.78	2.15	0.36	0.07	0.08	2.14	6.60
Cl6(134)	5.62	27.11	30.77	4.75	1.43	0.09	0.06	0.07	0.70	3.13
Cl6(135)	14.98	59.98	54.32	9.11	3.30	1.32	0.06	0.08	1.17	7.83
Cl6(136)	14.68	57.77	59.21	8.69	2.81	1.29	0.02	0.02	1.93	7.88
Cl6(137)	3.65	14.50	29.70	5.90	1.07	0.14	0.09	0.11	0.92	2.24
Cl6(138)	52.14	232.87	224.44	40.89	11.65	4.36	0.22	0.09	4.88	25.74
Cl6(141)	11.96	33.04	58.60	8.50	2.78	1.48	0.04	0.05	0.05	1.89
Cl6(144)	4.80	16.24	19.68	2.76	0.86	0.48	0.08	0.10	0.11	1.48
Cl6(146)	19.72	75.52	58.18	11.95	3.49	0.88	0.02	0.02	1.63	13.34
Cl6(149)	56.35	316.49	252.44	71.39	15.38	5.69	0.28	0.08	5.64	32.89
Cl6(151)	22.98	87.94	70.15	10.86	4.25	2.05	0.07	0.08	1.28	9.15
Cl6(132)/(153)/(168)	86.75	331.04	343.72	62.62	17.86	7.69	0.45	0.07	7.81	43.20
Cl6(156)	5.31	15.93	38.37	10.78	2.01	0.54	0.02	0.02	0.02	0.03
Cl6(157)	3.40	6.47	12.06	4.85	0.60	0.10	0.07	0.08	0.09	0.11
Cl6(129)/(158)	9.80	26.79	39.72	12.14	2.07	0.55	0.06	0.08	1.47	0.10
Cl6(163)	17.99	55.71	55.86	8.68	3.52	0.85	0.06	0.08	1.82	9.87
Cl6(164)	6.46	21.93	27.36	4.32	1.32	0.35	0.05	0.06	0.06	2.74
Cl6(166)	0.12	0.22	2.34	0.36	0.11	0.11	0.08	0.09	0.10	0.12
Cl6(167)	5.16	11.79	16.43	6.58	0.86	0.07	0.05	0.06	0.06	0.07
Cl6(169)	0.16	0.38	1.07	0.10	0.08	0.15	0.10	0.12	0.13	0.16
Cl7(170)	13.87	44.24	45.53	8.28	3.17	1.84	0.05	0.06	0.07	4.39
Cl7(171)	5.01	15.72	12.75	2.66	0.97	0.35	0.04	0.05	0.05	1.16
Cl7(172)	5.85	14.29	11.22	2.57	0.81	0.41	0.05	0.06	0.07	2.21
Cl7(174)	21.29	62.98	46.54	6.92	3.52	2.07	0.03	0.03	0.86	5.78
Cl7(176)	3.90	10.87	6.81	1.13	0.57	0.42	0.05	0.06	0.96	1.92
Cl7(177)	13.44	44.32	30.39	5.45	2.78	1.32	0.05	0.06	0.86	4.84
Cl7(178)	6.64	17.50	10.11	2.03	1.26	0.42	0.04	0.05	0.43	3.85
Cl7(179)	12.63	35.12	21.57	3.43	1.78	1.00	0.08	0.09	1.08	4.44
Cl7(180)	44.81	174.99	114.76	17.70	8.11	4.93	0.17	0.06	2.48	10.84
Cl7(183)	14.74	38.13	27.28	5.97	2.21	1.25	0.05	0.06	1.16	5.28
Cl7(184)	0.51	0.56	0.88	0.33	0.05	0.05	0.04	0.04	0.18	0.85
Cl7(185)	3.11	7.34	5.69	0.78	0.46	0.32	0.05	0.06	0.07	0.71
Cl7(187)	32.04	89.49	52.55	9.15	5.05	2.48	0.17	0.06	1.91	11.73
Cl7(189)	0.12	2.75	3.42	2.63	0.11	0.11	0.08	0.09	0.10	0.12
Cl7(190)	4.39	10.56	11.11	2.44	0.91	0.46	0.06	0.07	0.08	1.10
Cl7(193)	3.20	8.39	4.73	1.17	0.53	0.24	0.03	0.03	0.04	1.20
Cl8(194)	20.22	48.80	33.81	5.83	3.13	1.47	0.04	0.05	0.05	6.68
Cl8(195)	7.13	17.11	11.56	2.08	1.14	1.01	0.04	0.05	0.05	1.78
Cl8(199)	32.53	59.55	40.47	6.02	3.07	1.23	0.08	0.09	3.54	22.16
Cl8(200)	2.12	5.65	4.23	0.65	0.37	0.13	0.09	0.10	0.11	0.84
Cl8(201)	3.23	7.43	6.02	0.97	0.39	0.33	0.09	0.10	0.11	1.26
Cl8(202)	4.64	9.59	6.78	0.99	0.47	0.09	0.06	0.07	0.71	3.31
Cl8(196)/(203)	8.98	43.89	31.67	5.89	2.82	1.12	0.02	0.03	1.32	3.34
Cl8(205)	1.50	3.16	2.71	0.77	0.31	0.03	0.02	0.02	0.02	0.03
Cl9(206)	53.18	61.68	51.80	7.43	3.21	0.61	0.08	0.33	10.51	48.51
Cl9(207)	3.50	7.95	10.18	1.33	0.32	0.21	0.07	0.08	0.38	1.92
Cl9(208)	14.53	18.36	17.64	2.00	0.74	0.20	0.06	0.08	2.74	16.11
Cl10(209)	280.56	786.23	759.57	92.13	14.52	1.43	0.63	0.50	39.69	292.53
Sum 117 congeners	19,614	76,711	86,972	19,544	3,755	541	54	9	887	6,932

STATION_ID	T180D	T180D	T180D	T180D	T180D	T180D	T180D	T181A	T181A	T181A
FIELD SAMPLE_ID	T180D 4-5FT	T180-D-UTS	T180-D-RQP	T180-D-ONM	T180-D-LKJ	T180-D-IHG	30D 20.3-21.3	T181A 0.5-1F	T181A 1-2FT	181A 2-3.2F
SAMPLE DEPTH (from bottom)	4-5	5-8	8-11	11-14	14-17	17-20.3	20.3-21.3	0.5-1	1-2	2-3.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	90.23	122.56	127.87	56.99	58.59	39.04	14.26	7.37	9.75	13.26
Cl1(1)	0.08	0.08	25.26	32.15	18.06	5.48	0.07	0.06	0.06	0.06
Cl1(3)	0.04	0.04	15.07	17.63	8.63	2.42	0.04	0.03	0.03	0.03
Cl2(4)/(10)	0.13	0.13	88.26	106.09	112.70	16.92	1.89	0.10	0.11	0.11
Cl2(5)	0.12	0.12	4.63	9.93	10.47	0.79	0.12	0.10	0.10	0.10
Cl2(6)	16.08	128.97	418.31	331.84	194.92	25.73	2.98	0.07	0.08	0.08
Cl2(7)	0.07	0.07	10.79	17.82	19.11	1.62	0.07	0.05	0.05	0.05
Cl2(8)	20.90	83.92	293.43	440.93	270.30	46.25	4.67	0.09	0.09	0.52
Cl2(9)	0.08	0.08	19.99	29.27	33.35	2.47	0.08	0.07	0.07	0.07
Cl2(13)	0.08	62.88	142.94	89.66	63.51	8.50	1.45	0.07	0.07	0.07
Cl2(15)	0.15	26.24	111.25	199.79	127.32	15.58	2.81	0.12	0.12	0.13
Cl3(16)	60.99	305.14	952.88	982.86	346.11	72.93	23.03	0.09	0.09	1.41
Cl3(17)	82.04	345.29	1206.22	1102.44	396.21	79.40	22.26	0.05	0.05	2.07
Cl3(18)	218.43	1131.51	5402.12	3778.24	1268.66	242.31	99.07	0.07	0.08	4.89
Cl3(19)	13.46	48.58	165.87	212.39	62.77	10.28	3.25	0.08	0.08	0.09
Cl3(22)	69.64	372.68	1351.09	1222.72	399.06	93.21	33.22	0.07	0.07	2.96
Cl3(24)	0.07	0.07	12.22	10.94	11.34	1.03	0.07	0.05	0.05	0.05
Cl3(25)	46.42	557.93	1778.79	1329.34	604.23	97.91	16.14	0.05	0.05	2.81
Cl3(26)	50.32	544.47	2028.61	1498.41	730.28	134.22	23.42	0.07	0.08	3.05
Cl3(27)	7.61	31.26	96.84	70.54	52.63	7.12	2.45	0.04	0.05	0.05
Cl3(28)	275.03	1224.87	6386.14	3867.74	1383.76	283.84	125.61	0.09	0.09	7.52
Cl3(31)	299.43	1536.78	8007.25	5095.89	1713.47	345.54	177.62	0.04	0.05	8.32
Cl3(32)	42.33	208.59	732.63	667.11	237.71	51.16	17.69	0.04	0.04	1.28
Cl3(33)/(20)	108.98	520.15	2138.99	1845.68	616.63	139.58	47.29	0.09	0.09	4.31
Cl3(37)	42.36	116.94	674.37	578.25	198.92	37.93	18.55	0.08	0.08	1.23
Cl4(40)	51.54	280.17	1142.22	1009.01	263.05	56.96	35.96	0.10	0.10	0.10
Cl4(41)	10.35	95.13	451.25	464.38	83.47	22.48	20.11	0.05	0.05	0.05
Cl4(42)/(59)	123.68	662.23	2631.20	2380.35	635.01	131.40	20.24	0.07	0.07	4.11
Cl4(43)	21.88	92.34	286.57	277.70	79.64	15.24	0.07	0.06	0.06	0.06
Cl4(44)	357.67	1755.76	9078.42	6285.20	1740.45	333.58	270.20	0.07	0.08	10.66
Cl4(45)	51.17	301.50	1051.33	1052.80	277.77	51.81	32.00	0.05	0.05	2.07
Cl4(46)	34.71	136.18	457.43	464.22	119.17	25.61	14.08	0.09	0.09	0.09
Cl4(47)	104.52	400.99	1575.00	1412.22	409.91	88.32	43.02	0.07	0.07	3.19
Cl4(48)	51.52	296.76	1092.85	1091.59	203.53	47.87	39.95	0.07	0.07	0.07
Cl4(49)	327.48	1357.09	7029.66	4868.38	1503.20	286.65	197.47	0.06	0.06	8.74
Cl4(51)	22.60	94.64	277.58	299.88	80.40	15.47	8.45	0.08	0.08	0.58
Cl4(52)	426.69	2119.30	10100.39	6964.98	1921.58	366.37	284.66	0.04	0.05	13.48
Cl4(53)	53.20	290.77	1085.26	994.38	250.57	49.70	29.12	0.04	0.05	1.45
Cl4(54)	0.07	4.46	22.87	14.79	6.11	3.04	0.53	0.05	0.05	0.05
Cl4(56)	143.52	574.76	2644.56	2021.26	533.35	107.88	114.26	0.09	0.09	4.48
Cl4(60)	11.87	119.69	783.55	711.11	125.48	40.35	34.84	0.08	0.08	1.45
Cl4(64)	166.13	802.73	4131.67	2924.44	739.35	154.13	122.28	0.03	0.03	5.53
Cl4(66)	337.54	1025.70	5633.95	3997.26	884.16	228.81	220.75	0.07	0.07	9.29
Cl4(70)	407.52	1544.69	7812.03	5704.43	1288.37	288.20	286.65	0.07	0.08	11.97
Cl4(71)	102.40	472.92	1875.17	1531.00	420.87	92.52	50.39	0.07	0.07	2.71
Cl4(74)	122.03	556.67	2631.83	2048.14	473.15	99.33	102.32	0.04	0.05	4.04
Cl4(77)	29.12	73.92	468.14	228.02	88.62	16.90	11.03	0.16	0.16	1.10
Cl4(81)	0.07	1.00	7.75	7.03	1.40	0.33	0.07	0.05	0.05	0.05
Cl5(82)	26.86	121.24	654.97	408.12	106.37	22.24	16.05	0.06	0.06	0.06
Cl5(83)/(119)	32.11	89.14	406.22	320.18	95.77	20.89	8.54	0.08	0.08	0.09
Cl5(84)	96.19	303.77	1284.64	1111.31	284.00	63.66	32.54	0.11	0.12	2.16
Cl5(85)	29.82	117.48	841.34	569.78	151.76	29.94	19.35	0.05	0.05	0.05
Cl5(87)	44.92	239.23	1211.55	933.65	186.66	41.44	30.57	0.11	0.12	1.78
Cl5(91)	40.23	152.54	599.88	585.44	134.08	30.45	16.39	0.04	0.05	1.03
Cl5(92)	34.71	112.58	422.44	362.26	104.53	23.68	3.84	0.07	0.07	1.01
Cl5(95)	105.20	509.05	2242.13	2008.70	481.73	98.30	52.51	0.06	0.06	3.48
Cl5(97)	50.33	208.49	1066.99	804.61	195.32	40.35	26.12	0.04	0.04	1.59
Cl5(99)	58.81	205.46	1138.23	862.77	192.29	43.98	31.23	0.06	0.06	1.89
Cl5(100)	0.07	4.55	21.18	15.44	5.26	0.95	0.07	0.05	0.05	0.05

STATION_ID	T180D	T180D	T180D	T180D	T180D	T180D	T180D	T181A	T181A	T181A
FIELD SAMPLE_ID	T180D 4-5FT	T180-D-UTS	T180-D-RQP	T180-D-ONM	T180-D-LKJ	T180-D-IHG	30D 20.3-21.3	181A 0.5-1F	T181A 1-2FT	181A 2-3.2F
SAMPLE DEPTH (from bottom)	4-5	5-8	8-11	11-14	14-17	17-20.3	20.3-21.3	0.5-1	1-2	2-3.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	127.31	377.81	1668.40	1329.43	275.79	60.58	46.65	0.12	0.12	3.13
Cl5(105)	23.95	141.61	1031.06	711.79	159.81	35.65	27.27	0.08	0.08	1.42
Cl5(110)	179.67	659.38	3457.15	2371.32	685.71	133.23	117.08	0.09	0.09	5.82
Cl5(114)	0.15	3.79	33.41	38.08	7.68	2.10	1.57	0.12	0.12	0.13
Cl5(115)	0.13	10.27	46.17	45.24	9.73	2.03	0.13	0.10	0.11	0.11
Cl5(118)	99.16	284.68	1642.78	1092.50	252.00	53.40	40.83	0.07	0.07	2.93
Cl5(107)/(123)	16.24	69.03	265.56	209.64	53.11	11.29	5.80	0.11	0.12	0.44
Cl5(124)	0.08	9.21	55.71	48.15	8.86	1.75	0.08	0.07	0.07	0.07
Cl5(126)	0.12	2.27	7.33	5.53	1.43	1.56	0.12	0.10	0.10	0.10
Cl6(128)	8.40	19.97	155.90	70.03	18.58	4.67	2.44	0.09	0.09	0.09
Cl6(130)	5.68	12.76	71.57	37.63	10.92	2.59	0.91	0.09	0.09	0.09
Cl6(134)	2.92	8.34	49.24	27.58	8.79	1.78	1.20	0.07	0.08	0.08
Cl6(135)	6.58	19.02	131.57	49.91	17.71	4.45	1.95	0.08	0.08	0.25
Cl6(136)	7.15	18.30	101.27	51.37	16.37	3.49	2.07	0.02	0.02	0.23
Cl6(137)	0.15	4.66	29.21	22.65	4.72	1.32	0.78	0.12	0.12	0.13
Cl6(138)	23.81	51.50	482.37	179.15	46.77	12.56	8.44	0.10	0.10	0.82
Cl6(141)	0.07	11.68	77.07	42.73	8.16	2.40	1.86	0.05	0.05	0.05
Cl6(144)	0.13	5.09	32.15	14.96	3.24	0.83	0.38	0.10	0.11	0.11
Cl6(146)	12.57	24.40	165.63	52.34	18.49	4.36	1.52	0.02	0.02	0.02
Cl6(149)	30.96	82.01	540.55	238.12	66.99	18.08	9.88	0.08	0.08	0.92
Cl6(151)	8.50	26.31	154.58	58.52	19.34	4.83	2.12	0.09	0.09	0.33
Cl6(132)/(153)/(168)	40.75	99.24	623.02	291.32	65.92	19.52	13.23	0.07	0.08	1.21
Cl6(156)	0.03	5.05	39.97	30.55	6.27	2.82	1.49	0.02	0.02	0.02
Cl6(157)	0.11	2.26	12.64	9.30	2.02	1.24	0.11	0.09	0.09	0.09
Cl6(129)/(158)	2.61	9.65	55.99	33.88	7.88	3.22	1.30	0.08	0.08	0.09
Cl6(163)	8.41	19.79	151.26	51.06	16.45	4.10	2.28	0.08	0.08	0.30
Cl6(164)	1.77	7.20	43.42	21.47	6.16	1.58	0.79	0.06	0.06	0.06
Cl6(166)	0.12	0.12	2.54	1.85	0.12	0.12	0.12	0.10	0.10	0.10
Cl6(167)	0.08	3.88	21.53	12.48	3.19	1.44	0.07	0.06	0.06	0.06
Cl6(169)	0.16	0.10	2.14	0.03	0.15	0.06	0.16	0.13	0.13	0.13
Cl7(170)	5.85	14.82	183.06	36.05	8.51	3.02	2.23	0.07	0.07	0.07
Cl7(171)	1.91	4.98	35.97	10.93	2.98	0.97	0.51	0.05	0.05	0.05
Cl7(172)	2.86	4.92	27.75	9.01	2.51	1.04	0.08	0.07	0.07	0.07
Cl7(174)	6.36	21.25	196.79	34.27	9.29	3.00	2.53	0.04	0.04	0.23
Cl7(176)	1.37	3.70	25.50	5.32	1.73	0.62	0.42	0.06	0.06	0.06
Cl7(177)	4.61	14.51	117.30	26.52	8.30	2.78	1.48	0.07	0.07	0.07
Cl7(178)	3.05	6.52	40.69	9.18	3.74	1.19	0.55	0.05	0.05	0.05
Cl7(179)	3.94	12.28	83.90	15.64	5.60	1.76	1.09	0.10	0.10	0.19
Cl7(180)	11.79	38.74	320.80	72.32	18.09	7.20	5.44	0.07	0.07	0.40
Cl7(183)	4.26	13.54	83.58	20.43	5.56	2.30	1.42	0.07	0.07	0.14
Cl7(184)	0.28	0.43	0.88	0.46	0.20	0.12	0.06	0.04	0.05	0.05
Cl7(185)	0.08	2.68	16.77	3.99	0.90	0.44	0.30	0.07	0.07	0.07
Cl7(187)	10.45	30.44	211.85	42.44	14.70	4.90	2.69	0.06	0.06	0.32
Cl7(189)	0.12	0.88	4.89	2.69	0.64	1.00	0.12	0.10	0.10	0.10
Cl7(190)	2.01	3.59	23.11	9.23	2.18	0.94	0.37	0.07	0.08	0.08
Cl7(193)	1.04	2.66	17.45	4.83	1.33	0.52	0.05	0.04	0.04	0.04
Cl8(194)	8.85	19.58	80.17	26.33	6.60	2.69	1.53	0.05	0.05	0.05
Cl8(195)	2.42	6.02	31.01	9.43	2.38	0.93	0.07	0.05	0.05	0.05
Cl8(199)	26.38	26.33	183.45	28.66	9.31	2.97	1.57	0.10	0.10	0.10
Cl8(200)	0.99	2.16	12.32	2.84	1.07	0.37	0.14	0.11	0.12	0.12
Cl8(201)	1.45	2.99	14.54	3.95	1.58	0.56	0.14	0.11	0.12	0.12
Cl8(202)	2.69	4.30	18.60	4.92	2.03	0.61	0.09	0.07	0.08	0.08
Cl8(196)/(203)	5.03	17.14	77.52	24.02	7.20	2.50	0.67	0.03	0.03	0.03
Cl8(205)	0.03	1.22	5.23	2.32	0.68	0.52	0.03	0.02	0.02	0.02
Cl9(206)	71.54	37.04	73.11	27.34	9.98	3.29	0.91	0.10	0.10	0.28
Cl9(207)	1.72	2.59	11.04	5.24	1.92	0.55	0.11	0.09	0.09	0.09
Cl9(208)	16.09	10.65	22.93	9.44	4.46	1.03	0.11	0.08	0.08	0.09
Cl10(209)	234.11	276.49	734.87	363.35	156.48	20.90	3.92	0.05	0.05	1.19
Sum 117 congeners	5,870	24,942	118,030	86,232	25,039	5,127	3,121	8	9	163

STATION_ID	T181A	T181B	T181B	T181B	T181B	T181B	T181B	T181B	T181C	T181C
FIELD SAMPLE_ID	181A 3.2-4.2F	T181B 0-1FT	T181B 1-2FT	T181B 2-3FT	T181B 3-4FT	181B 4-5.2F	181B 5.2-6.4F	181B 6.4-7.4F	181C 0.4-1F	T181C 1-2FT
SAMPLE DEPTH (from bottom)	3.2-4.2	0-1	1-2	2-3	3-4	4-5.2	5.2-6.4	6.4-7.4	0.4-1	1-2
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	7.85	18.57	68.44	177.02	188.25	124.60	27.98	15.69	123.17	258.91
Cl1(1)	0.07	0.06	0.07	0.08	0.08	26.21	0.09	0.07	0.06	0.08
Cl1(3)	0.04	0.03	0.04	0.04	0.04	14.85	0.04	0.04	0.03	0.04
Cl2(4)/(10)	0.49	1.98	6.11	0.14	0.15	82.40	34.35	10.33	0.11	0.14
Cl2(5)	0.12	0.10	0.11	0.13	0.14	0.31	0.14	0.12	0.10	0.13
Cl2(6)	1.22	0.07	0.09	6.80	45.93	501.24	169.51	28.33	26.56	35.07
Cl2(7)	0.06	0.05	0.06	0.07	0.07	0.17	2.30	0.06	0.06	0.07
Cl2(8)	1.85	0.09	5.31	9.66	31.35	252.83	79.72	33.28	15.26	39.46
Cl2(9)	0.08	0.07	0.08	0.09	0.09	14.67	6.55	0.08	0.07	0.09
Cl2(13)	0.08	0.07	0.08	0.09	16.84	143.18	53.66	17.61	8.18	18.34
Cl2(15)	1.30	0.12	0.14	0.16	0.17	84.49	55.86	19.23	0.13	8.81
Cl3(16)	3.89	0.09	19.99	39.34	97.55	627.37	155.69	29.20	39.25	105.59
Cl3(17)	5.02	1.14	28.73	46.28	154.20	909.54	207.91	43.74	41.59	131.32
Cl3(18)	13.30	4.43	49.11	112.30	418.37	2608.33	665.15	111.82	128.29	391.58
Cl3(19)	0.44	0.08	3.43	5.56	22.67	102.64	34.11	6.53	7.77	20.77
Cl3(22)	6.75	1.58	24.75	48.40	145.91	1027.99	223.42	40.96	40.14	135.57
Cl3(24)	0.06	0.05	0.06	0.07	0.07	0.17	0.08	0.06	0.06	0.07
Cl3(25)	6.73	1.22	8.02	31.95	164.28	1722.38	486.14	86.62	65.39	166.29
Cl3(26)	7.85	1.37	11.91	32.03	188.05	1827.79	632.95	121.67	60.06	147.43
Cl3(27)	0.05	0.04	0.05	0.06	13.67	68.06	26.46	4.88	4.40	15.82
Cl3(28)	22.29	4.38	73.68	150.08	541.21	3184.19	758.38	154.27	164.89	505.29
Cl3(31)	23.31	5.42	84.02	167.03	611.45	3733.03	963.38	191.56	185.63	563.17
Cl3(32)	3.33	0.04	14.31	27.32	76.66	517.20	116.91	33.62	38.77	78.34
Cl3(33)/(20)	8.07	0.09	40.12	66.31	214.73	1424.36	297.64	51.06	58.62	213.21
Cl3(37)	5.02	0.08	13.52	25.70	62.23	387.79	77.96	30.57	27.23	63.14
Cl4(40)	5.10	0.10	22.24	48.30	107.15	755.39	177.95	0.12	42.06	104.34
Cl4(41)	0.06	0.05	0.06	0.07	23.58	180.73	51.86	8.47	0.06	26.10
Cl4(42)/(59)	9.42	0.07	41.98	63.49	289.47	1312.39	437.06	82.05	69.58	269.04
Cl4(43)	0.07	0.06	0.07	0.08	37.48	191.56	49.28	5.90	13.05	39.78
Cl4(44)	32.24	6.99	89.03	214.38	704.11	3836.10	984.50	200.11	204.27	658.77
Cl4(45)	4.54	1.42	22.23	41.07	117.56	782.48	171.17	34.00	38.15	108.54
Cl4(46)	1.89	0.09	9.54	19.55	39.74	331.38	74.83	18.33	23.92	22.04
Cl4(47)	9.51	2.52	36.29	67.38	184.72	1117.76	285.82	51.93	55.95	185.72
Cl4(48)	4.19	0.07	0.08	0.09	92.30	525.25	65.29	20.24	35.42	98.07
Cl4(49)	27.17	5.98	86.07	204.47	583.36	3540.36	935.29	200.88	183.52	553.73
Cl4(51)	0.65	0.08	5.75	11.82	39.91	181.41	42.38	11.25	13.73	44.41
Cl4(52)	35.37	7.77	107.87	243.53	792.32	4868.90	1168.24	234.65	276.06	694.19
Cl4(53)	4.26	0.04	19.72	37.90	110.95	701.48	160.79	42.09	34.95	106.86
Cl4(54)	0.06	0.05	0.06	0.07	0.07	12.62	3.33	0.06	0.06	0.07
Cl4(56)	14.49	2.79	44.74	95.31	289.46	1740.77	264.44	62.92	74.65	295.31
Cl4(60)	4.98	0.08	2.40	0.11	28.38	330.28	64.23	16.84	8.49	35.01
Cl4(64)	15.79	3.08	45.06	92.15	330.61	2143.75	506.77	86.57	93.93	311.91
Cl4(66)	28.75	6.21	95.49	208.54	588.50	2288.49	401.64	105.82	158.52	489.76
Cl4(70)	33.88	7.68	118.17	249.75	721.01	3540.51	639.73	143.43	227.99	705.23
Cl4(71)	9.12	2.08	34.42	53.45	213.37	1285.43	295.00	53.65	57.20	187.99
Cl4(74)	12.31	2.55	40.15	79.61	257.25	1334.44	247.47	45.52	62.88	258.39
Cl4(77)	2.78	0.15	8.46	17.94	47.19	270.46	54.73	14.87	15.42	47.33
Cl4(81)	0.06	0.05	0.06	0.07	0.07	0.17	0.08	0.06	0.06	0.07
Cl5(82)	2.92	0.06	7.01	0.08	39.18	388.89	72.11	14.64	19.02	46.51
Cl5(83)/(119)	0.86	0.08	9.95	15.83	48.32	263.09	65.85	17.26	21.74	50.32
Cl5(84)	8.10	1.29	27.02	46.00	149.81	1063.64	225.30	42.84	58.10	135.43
Cl5(85)	3.91	0.05	8.00	13.50	61.36	545.51	0.08	0.06	0.06	0.07
Cl5(87)	4.58	0.11	13.85	19.90	83.70	646.03	102.20	23.49	36.46	76.44
Cl5(91)	2.78	0.42	11.31	22.55	57.85	407.12	104.64	26.76	27.25	64.08
Cl5(92)	2.03	0.45	8.81	19.04	56.86	312.84	73.96	21.69	26.23	45.87
Cl5(95)	13.52	2.56	41.54	73.92	221.86	1566.36	368.86	60.63	73.48	217.12
Cl5(97)	4.88	0.04	17.06	30.40	97.46	634.42	115.64	29.10	39.18	104.38
Cl5(99)	6.63	1.55	23.51	41.33	113.46	674.73	142.35	34.46	41.65	121.22
Cl5(100)	0.06	0.05	0.06	0.07	0.07	11.35	4.14	0.06	0.06	0.07

STATION_ID	T181A	T181B	T181B	T181B	T181B	T181B	T181B	T181B	T181C	T181C
FIELD SAMPLE_ID	181A 3.2-4.2F	T181B 0-1FT	T181B 1-2FT	T181B 2-3FT	T181B 3-4FT	181B 4-5.2F	181B 5.2-6.4F	181B 6.4-7.4F	181C 0.4-1F	T181C 1-2FT
SAMPLE DEPTH (from bottom)	3.2-4.2	0-1	1-2	2-3	3-4	4-5.2	5.2-6.4	6.4-7.4	0.4-1	1-2
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	12.85	2.52	39.93	73.83	219.41	1172.14	235.78	37.58	76.57	200.12
Cl5(105)	5.98	0.08	8.65	13.22	63.01	524.03	95.30	19.85	21.71	58.52
Cl5(110)	19.03	4.07	62.19	117.51	364.25	2000.96	479.14	100.85	121.26	334.86
Cl5(114)	0.14	0.12	0.14	0.16	0.17	12.91	0.18	0.15	0.13	0.16
Cl5(115)	0.13	0.10	1.00	0.14	0.15	0.33	0.16	16.36	13.80	44.54
Cl5(118)	10.21	2.25	34.63	66.22	175.46	1056.71	200.85	42.03	59.50	168.70
Cl5(107)/(123)	1.55	0.11	4.93	11.30	25.19	133.58	29.38	6.06	6.76	20.66
Cl5(124)	0.08	0.07	0.08	0.09	0.09	26.27	4.69	0.08	0.07	0.09
Cl5(126)	0.12	0.10	0.11	0.13	0.14	0.31	0.14	0.12	0.10	0.13
Cl6(128)	1.27	0.09	2.59	4.66	12.25	87.89	16.21	5.90	6.98	12.77
Cl6(130)	0.11	0.09	2.13	4.44	8.67	48.71	6.79	2.92	3.86	8.51
Cl6(134)	0.09	0.07	1.39	2.53	4.06	27.04	0.11	1.58	2.22	4.21
Cl6(135)	1.50	0.08	2.22	5.50	10.33	66.55	13.59	3.98	5.36	9.40
Cl6(136)	1.81	0.39	3.05	6.12	10.47	68.32	12.63	3.29	6.54	8.73
Cl6(137)	0.14	0.12	0.14	0.16	0.17	18.67	4.91	0.15	0.13	0.16
Cl6(138)	9.09	0.10	9.20	16.28	39.44	279.53	46.37	11.98	23.51	35.90
Cl6(141)	3.55	0.05	0.06	0.07	4.49	39.02	8.18	0.06	0.06	0.07
Cl6(144)	0.77	0.10	0.12	0.14	0.15	14.11	1.44	0.13	0.11	0.14
Cl6(146)	1.88	0.02	4.27	9.85	16.66	89.28	15.15	4.61	6.89	15.92
Cl6(149)	11.70	0.83	10.69	21.55	44.82	265.08	48.94	16.74	23.90	41.62
Cl6(151)	3.95	0.09	2.81	5.48	13.61	90.55	15.74	4.52	6.59	13.15
Cl6(132)/(153)/(168)	16.77	1.05	15.48	29.62	52.16	381.32	59.43	19.62	33.39	51.98
Cl6(156)	0.97	0.02	0.03	0.03	4.79	27.96	6.86	0.03	0.02	0.03
Cl6(157)	0.11	0.09	0.11	0.12	0.13	12.04	0.13	0.11	0.10	0.12
Cl6(129)/(158)	1.28	0.08	1.30	2.07	5.67	30.91	6.24	2.06	2.77	0.11
Cl6(163)	2.73	0.08	3.16	8.38	12.09	84.73	13.58	5.16	5.77	10.84
Cl6(164)	0.82	0.06	1.33	0.08	4.49	28.74	4.17	1.45	0.06	3.63
Cl6(166)	0.12	0.10	0.11	0.13	0.14	0.31	0.14	0.12	0.10	0.13
Cl6(167)	0.07	0.06	0.07	0.08	0.08	16.76	0.09	0.07	0.06	0.08
Cl6(169)	0.15	0.12	0.15	0.17	0.18	25.73	0.19	0.16	0.14	0.17
Cl7(170)	4.89	0.07	1.76	3.93	9.21	55.11	6.35	3.10	3.05	6.64
Cl7(171)	1.47	0.05	0.06	1.36	2.94	18.13	2.41	0.71	0.06	2.37
Cl7(172)	0.75	0.07	0.08	1.91	4.06	12.95	2.25	0.08	0.87	3.20
Cl7(174)	6.13	0.04	1.94	3.73	10.19	62.33	7.71	3.16	4.70	7.80
Cl7(176)	0.66	0.18	0.86	1.63	2.05	11.15	1.69	0.93	1.75	1.95
Cl7(177)	3.06	0.07	1.77	3.76	7.17	44.34	6.34	2.72	2.80	6.59
Cl7(178)	1.00	0.05	1.48	4.34	4.49	18.04	2.48	1.07	1.53	3.71
Cl7(179)	2.39	0.22	1.83	3.18	6.31	36.44	4.59	2.05	2.99	6.69
Cl7(180)	12.95	0.46	4.10	8.54	20.86	143.53	19.37	7.09	8.79	18.32
Cl7(183)	2.93	0.07	1.61	3.89	7.45	38.24	5.92	1.85	4.01	7.12
Cl7(184)	0.05	0.04	0.39	0.89	0.73	1.04	0.07	0.06	0.05	0.67
Cl7(185)	0.98	0.07	0.08	0.09	0.83	7.12	1.34	0.08	0.07	0.09
Cl7(187)	6.23	0.06	3.56	8.79	15.86	92.87	12.99	4.84	7.09	14.79
Cl7(189)	0.12	0.10	0.11	0.13	0.14	0.31	0.14	0.12	0.10	0.13
Cl7(190)	0.93	0.07	0.09	0.75	2.20	13.92	2.15	0.09	0.08	0.95
Cl7(193)	0.48	0.04	0.42	0.05	1.85	7.36	1.50	0.05	0.04	1.13
Cl8(194)	2.93	0.05	3.62	7.41	13.95	46.90	6.12	2.30	3.80	8.03
Cl8(195)	1.32	0.05	0.73	1.24	3.71	16.27	3.25	0.06	0.06	2.53
Cl8(199)	3.30	1.04	13.86	38.68	40.09	57.87	7.40	3.25	10.79	25.84
Cl8(200)	0.55	0.11	0.35	0.62	1.51	5.21	0.17	0.14	0.12	1.40
Cl8(201)	0.51	0.11	0.66	0.63	1.75	6.02	1.51	0.14	1.01	1.31
Cl8(202)	0.40	0.07	1.73	4.42	3.98	10.70	1.45	0.70	1.74	3.49
Cl8(196)/(203)	1.72	0.03	1.56	3.56	6.70	24.97	2.49	2.51	1.95	4.94
Cl8(205)	0.03	0.02	0.03	0.03	1.11	0.07	0.03	0.03	0.02	0.03
Cl9(206)	1.14	2.36	42.67	98.21	127.20	73.78	11.84	3.95	27.22	110.88
Cl9(207)	0.11	0.09	1.33	2.71	2.75	10.08	2.15	0.67	1.01	2.04
Cl9(208)	0.22	0.60	10.76	25.87	24.14	20.69	3.61	1.30	7.97	16.08
Cl10(209)	3.08	13.88	231.94	440.15	466.70	743.13	118.50	57.35	198.81	372.30
Sum 117 congeners	588	112	1,923	3,872	11,217	65,256	14,968	3,135	3,667	10,420

STATION_ID	T181C	T181C	T181C	T181C	T181C	T181C	T181C	T181D	T181D	T181D
FIELD SAMPLE_ID	T181C 2-3FT	T181C 3-4FT	T181C 4-5FT	T181C 5-6FT	T181-C-TS	T181-C-RQP	31C 10.8-11.8	T181D 0-1FT	T181D 1-2FT	T181D 2-3FT
SAMPLE DEPTH (from bottom)	2-3	3-4	4-5	5-6	6-8	8-10.8	10.8-11.8	0-1	1-2	2-3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	658.83	135.60	246.84	202.10	67.81	45.82	157.22	604.97	314.35	417.23
Cl1(1)	36.17	0.11	56.50	19.01	13.79	2.13	0.05	0.07	0.08	0.08
Cl1(3)	19.26	0.06	22.36	10.87	8.21	1.63	0.02	0.04	0.04	0.04
Cl2(4)/(10)	34.11	71.55	156.88	109.41	69.81	7.89	2.45	13.40	10.23	12.68
Cl2(5)	0.18	0.18	0.31	3.56	4.74	0.11	0.08	0.12	0.13	0.12
Cl2(6)	231.25	137.90	696.55	224.95	55.50	17.12	3.50	0.09	7.59	12.26
Cl2(7)	0.10	0.10	13.45	9.52	8.69	0.73	0.04	0.06	0.07	0.07
Cl2(8)	121.07	150.19	522.13	405.11	140.35	20.36	5.91	8.86	12.17	22.02
Cl2(9)	0.13	0.13	28.62	14.85	13.21	1.00	0.06	0.08	0.09	0.09
Cl2(13)	78.94	44.10	201.59	79.41	22.35	7.38	1.14	0.08	0.09	3.99
Cl2(15)	59.00	50.05	148.94	145.36	73.13	12.18	2.79	0.15	0.17	5.81
Cl3(16)	514.74	649.36	1620.27	1090.30	332.17	203.89	13.89	31.82	45.09	82.58
Cl3(17)	470.31	714.82	1979.60	0.17	296.29	50.39	14.52	38.56	74.72	121.10
Cl3(18)	1796.15	2590.93	5777.55	3601.32	1109.31	681.02	40.45	107.97	165.21	313.69
Cl3(19)	69.87	84.20	237.72	165.92	63.88	5.68	1.85	4.68	6.96	11.37
Cl3(22)	676.93	862.25	2202.45	1211.28	389.15	303.72	16.97	38.16	58.81	99.21
Cl3(24)	0.10	0.10	13.32	12.98	5.54	0.06	0.04	0.06	0.07	0.07
Cl3(25)	779.48	580.86	2201.26	646.56	113.38	404.07	10.03	7.36	33.64	52.75
Cl3(26)	742.61	709.60	2598.53	849.01	200.04	516.35	14.88	13.74	36.39	59.46
Cl3(27)	70.73	58.58	150.08	97.68	42.25	4.61	1.33	3.52	4.58	7.64
Cl3(28)	2122.77	2684.27	6638.12	3956.94	1139.27	944.62	40.52	121.40	212.83	361.18
Cl3(31)	2609.00	3415.74	8097.34	4564.17	1393.77	1261.95	47.69	135.42	225.21	394.42
Cl3(32)	400.19	493.92	1213.78	708.86	227.71	31.70	10.27	22.81	34.06	58.52
Cl3(33)/(20)	992.12	1438.87	2602.42	2035.10	628.13	408.77	22.78	67.22	89.18	166.93
Cl3(37)	344.92	439.88	1020.76	664.82	211.18	144.70	7.03	20.15	30.43	45.43
Cl4(40)	607.79	742.82	1860.57	921.20	331.37	206.86	10.50	32.91	49.78	82.19
Cl4(41)	274.81	395.08	729.64	533.09	194.49	13.68	5.30	13.67	5.44	11.66
Cl4(42)/(59)	1145.14	1330.49	3259.65	2080.40	736.83	570.34	22.99	74.77	123.61	206.11
Cl4(43)	144.11	144.67	335.77	247.36	77.69	13.37	2.36	8.61	12.55	20.92
Cl4(44)	2984.72	3884.45	8954.32	5550.16	1909.30	1495.59	56.24	192.45	294.14	496.13
Cl4(45)	601.09	684.78	1773.51	1003.93	322.93	215.46	11.66	35.08	49.34	95.93
Cl4(46)	258.16	272.93	815.29	489.72	161.73	19.46	5.33	14.67	23.21	38.45
Cl4(47)	726.14	972.59	2547.58	1285.09	430.73	371.84	13.98	54.42	93.70	152.36
Cl4(48)	581.35	856.73	1761.97	1196.57	511.51	35.75	11.42	45.98	45.90	80.88
Cl4(49)	2548.69	3279.12	7719.69	4196.34	1423.20	1178.90	42.10	147.04	242.66	434.24
Cl4(51)	154.45	178.70	455.06	306.19	96.71	12.56	2.26	8.54	12.47	21.80
Cl4(52)	3581.32	4681.20	10063.57	6327.30	2289.46	1562.78	67.30	217.40	336.95	552.84
Cl4(53)	564.91	653.96	1634.25	866.20	303.91	193.52	11.02	30.39	46.69	81.41
Cl4(54)	9.80	12.61	27.84	0.17	7.05	0.86	0.04	0.06	0.07	0.07
Cl4(56)	1370.49	1622.03	3362.21	2470.07	713.44	470.37	19.28	85.93	130.47	220.46
Cl4(60)	487.49	802.72	1182.23	791.97	288.03	25.60	7.80	26.58	8.88	14.83
Cl4(64)	1507.10	1825.50	4406.98	2630.94	881.15	634.98	26.71	91.85	134.24	245.37
Cl4(66)	2294.28	2976.55	6734.07	4587.97	1510.62	946.40	35.74	181.07	272.49	452.04
Cl4(70)	3302.31	4144.69	9436.00	6133.71	1954.56	1251.56	47.82	221.88	330.09	556.28
Cl4(71)	800.45	1150.66	2540.89	1492.64	502.66	357.14	16.03	54.61	80.66	136.88
Cl4(74)	1202.48	1695.03	3573.19	2535.97	814.28	3.37	18.92	96.08	111.52	187.93
Cl4(77)	253.17	297.38	644.51	372.23	99.06	17.57	2.63	12.75	20.18	31.10
Cl4(81)	0.10	10.85	12.95	8.18	3.31	0.06	0.04	0.06	0.07	0.07
Cl5(82)	361.00	414.14	868.38	400.03	181.36	18.92	3.21	13.16	17.22	26.53
Cl5(83)/(119)	197.62	212.64	541.70	269.16	122.26	18.73	1.79	11.05	19.34	28.67
Cl5(84)	602.62	855.97	2241.29	1270.93	348.56	248.28	8.44	39.40	64.08	113.51
Cl5(85)	0.10	0.10	0.17	645.28	220.26	23.11	4.47	18.15	16.53	30.66
Cl5(87)	503.48	730.66	1733.37	958.36	349.42	34.26	5.88	29.16	31.66	45.68
Cl5(91)	325.04	344.28	891.80	450.62	195.15	28.69	3.52	15.68	25.30	38.27
Cl5(92)	212.72	250.00	651.58	263.12	121.24	26.78	3.14	12.93	24.43	32.01
Cl5(95)	975.54	1230.29	2817.24	1649.08	584.03	428.92	15.32	64.65	105.06	153.31
Cl5(97)	589.30	691.15	1650.31	866.83	298.28	37.39	6.21	31.58	42.24	60.81
Cl5(99)	551.18	771.43	1885.73	963.07	329.07	167.41	6.66	41.64	55.49	81.55
Cl5(100)	1.97	4.30	25.80	9.37	5.35	0.97	0.04	0.82	0.80	1.34

STATION_ID	T181C	T181C	T181C	T181C	T181C	T181C	T181C	T181D	T181D	T181D
FIELD SAMPLE_ID	T181C 2-3FT	T181C 3-4FT	T181C 4-5FT	T181C 5-6FT	T181-C-TS	T181-C-RQP	31C 10.8-11.8	T181D 0-1FT	T181D 1-2FT	T181D 2-3FT
SAMPLE DEPTH (from bottom)	2-3	3-4	4-5	5-6	6-8	8-10.8	10.8-11.8	0-1	1-2	2-3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	991.31	1207.26	2846.72	1479.18	524.48	273.45	12.16	61.52	97.86	137.06
Cl5(105)	605.60	783.73	1550.51	707.86	281.57	28.53	4.66	25.61	19.00	27.78
Cl5(110)	1562.60	1755.01	4278.01	2444.47	728.55	609.72	17.46	93.59	167.00	228.35
Cl5(114)	10.63	16.74	47.28	44.00	21.90	1.35	0.10	0.15	0.17	0.15
Cl5(115)	310.39	340.00	0.33	46.96	21.51	1.27	0.38	2.17	0.15	0.13
Cl5(118)	851.23	1137.62	2680.74	1413.11	473.22	223.84	8.39	58.39	88.50	117.05
Cl5(107)/(123)	106.62	121.07	274.84	187.34	77.55	11.06	0.81	5.43	14.33	11.33
Cl5(124)	28.64	49.29	84.55	49.92	25.80	1.49	0.06	1.86	0.09	1.71
Cl5(126)	0.18	4.53	10.45	0.31	2.52	0.11	0.08	0.12	0.13	0.12
Cl6(128)	50.10	68.73	161.53	100.06	30.05	4.36	1.08	4.31	7.93	7.76
Cl6(130)	24.70	31.66	76.48	42.17	13.75	2.78	0.07	1.91	5.32	4.70
Cl6(134)	16.42	21.54	53.37	27.53	11.07	1.66	0.06	1.56	2.45	2.78
Cl6(135)	37.86	50.30	115.15	53.13	19.42	4.80	0.56	3.18	4.72	6.60
Cl6(136)	40.36	54.87	133.56	60.88	20.33	3.42	0.42	4.90	5.32	6.64
Cl6(137)	11.31	19.25	40.79	27.16	10.81	1.31	0.10	2.15	1.71	0.15
Cl6(138)	213.56	215.99	645.81	322.91	93.52	11.45	1.98	13.79	21.11	21.06
Cl6(141)	35.27	55.94	102.37	61.67	22.18	2.21	0.71	0.06	2.51	0.07
Cl6(144)	11.36	17.08	42.74	19.89	0.17	0.66	0.09	0.13	1.44	1.69
Cl6(146)	42.91	49.59	123.92	66.14	20.40	5.39	0.43	3.54	8.52	10.27
Cl6(149)	201.88	181.16	540.26	276.16	81.04	20.12	2.11	13.53	24.28	28.35
Cl6(151)	58.96	69.39	174.19	76.10	25.55	5.10	0.61	4.12	6.46	8.00
Cl6(132)/(153)/(168)	284.78	275.12	813.01	425.14	115.75	18.98	2.74	18.95	35.28	37.27
Cl6(156)	15.75	31.52	60.84	48.22	14.78	1.99	0.02	2.92	2.96	0.03
Cl6(157)	7.85	8.27	22.83	13.89	4.14	0.89	0.07	0.11	0.12	0.11
Cl6(129)/(158)	30.67	38.64	79.49	44.85	16.32	2.06	0.07	1.42	2.69	2.94
Cl6(163)	43.80	52.15	526.65	71.63	20.76	4.67	0.69	3.01	6.98	8.04
Cl6(164)	18.58	20.98	58.27	27.28	9.64	1.51	0.05	0.07	2.52	2.99
Cl6(166)	0.18	0.18	0.31	0.31	0.16	0.11	0.08	0.12	0.13	0.12
Cl6(167)	9.80	12.18	32.19	20.43	6.53	0.85	0.05	2.43	0.08	0.08
Cl6(169)	0.24	22.25	44.21	1.27	0.31	0.14	0.11	0.16	0.18	0.16
Cl7(170)	36.43	53.40	155.32	60.64	16.52	3.08	0.40	3.50	3.02	3.36
Cl7(171)	12.40	16.53	37.48	16.25	4.73	1.03	0.04	0.87	1.59	1.74
Cl7(172)	11.59	11.83	26.94	14.13	4.54	1.08	0.06	5.69	2.00	2.07
Cl7(174)	53.05	63.58	144.66	63.96	17.05	3.53	0.53	3.44	3.79	5.30
Cl7(176)	8.91	9.38	21.30	9.91	2.61	0.75	0.13	2.80	0.99	1.60
Cl7(177)	31.33	37.35	92.21	37.37	11.15	3.62	0.26	2.56	2.93	3.91
Cl7(178)	13.11	14.52	32.25	15.14	4.12	1.76	0.04	1.31	1.88	2.80
Cl7(179)	29.19	33.01	72.93	36.33	8.38	2.15	0.38	3.24	2.22	3.72
Cl7(180)	151.53	147.45	334.85	139.80	36.22	7.64	1.40	7.49	8.25	9.57
Cl7(183)	31.86	35.04	81.47	40.30	10.63	2.32	0.38	5.25	3.67	4.10
Cl7(184)	0.44	0.08	0.14	0.14	0.52	0.10	0.04	0.41	0.41	0.39
Cl7(185)	7.72	7.99	16.44	8.02	2.29	0.44	0.18	0.08	0.47	0.09
Cl7(187)	71.93	68.07	177.28	78.46	20.83	6.30	0.58	5.10	7.16	9.15
Cl7(189)	4.11	3.67	6.16	5.15	1.60	0.11	0.08	0.12	0.13	0.12
Cl7(190)	10.40	14.16	27.81	12.64	4.22	0.68	0.06	0.09	0.95	1.20
Cl7(193)	5.84	8.35	18.23	7.19	2.24	0.53	0.03	0.87	0.97	1.07
Cl8(194)	40.68	48.41	81.03	45.88	10.96	2.95	0.38	3.20	3.12	4.88
Cl8(195)	13.13	17.75	33.53	18.34	5.10	1.16	0.04	1.16	1.27	1.58
Cl8(199)	58.14	52.52	104.56	62.39	15.72	3.80	0.44	8.88	10.26	17.61
Cl8(200)	6.07	5.09	10.18	5.10	1.70	0.48	0.09	0.14	0.60	0.93
Cl8(201)	5.91	5.55	11.83	8.12	2.92	0.48	0.09	1.45	1.25	1.04
Cl8(202)	8.50	6.99	15.66	9.73	2.94	0.76	0.06	1.62	1.64	2.67
Cl8(196)/(203)	24.89	21.76	42.76	44.80	13.18	2.96	0.47	3.36	3.44	5.51
Cl8(205)	1.81	2.60	5.22	3.58	0.04	0.03	0.02	0.59	0.03	0.03
Cl9(206)	160.72	42.98	83.34	108.76	22.64	3.74	0.51	24.97	24.20	38.84
Cl9(207)	6.69	5.30	16.42	11.85	5.93	0.63	0.24	1.24	1.16	1.41
Cl9(208)	21.96	11.08	28.08	30.52	8.24	1.33	0.38	7.13	7.99	12.49
Cl10(209)	584.46	456.64	1141.16	1133.10	398.93	65.67	3.68	352.88	180.11	276.41
Sum 117 congeners	48,927	61,211	143,780	84,588	28,211	17,028	822	3,341	4,681	7,651

STATION_ID	T181D	T181D	T181D	T181D	T181D	T181D	T181D	T181D	9	24
FIELD SAMPLE_ID	T181D 3-4FT	T181D 4-5FT	T181D 5-6FT	T181-D-TSR	T181-D-QPO	T181-D-NML	T181-D-KJIH	31D 18.5-19.5	FAD-001	FAD-003
SAMPLE DEPTH (from bottom)	3-4	4-5	5-6	6-9	9-12	12-15	15-18.5	18.5-19.5	0-0.3	0-0.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	114.28	639.94	702.21	175.27	67.23	90.67	24.34	3.63	6.66	6.92
Cl1(1)	0.08	18.24	0.10	29.61	33.35	11.40	2.07	0.07	0.05	0.04
Cl1(3)	0.04	8.29	0.05	19.34	19.44	4.63	1.45	0.03	0.02	0.02
Cl2(4)/(10)	6.64	25.01	41.86	109.77	187.40	48.77	5.91	0.92	0.09	0.56
Cl2(5)	0.13	0.15	0.17	4.99	14.92	3.47	0.11	0.11	0.08	0.06
Cl2(6)	20.83	258.83	603.41	378.53	252.95	54.38	15.07	1.66	0.06	0.66
Cl2(7)	0.07	0.08	0.09	12.11	26.91	6.12	0.56	0.06	0.04	0.03
Cl2(8)	20.33	102.39	171.60	368.17	507.73	110.92	13.60	1.95	0.16	0.85
Cl2(9)	0.09	0.10	5.16	18.64	44.45	10.05	0.81	0.07	0.06	0.04
Cl2(13)	8.80	96.33	184.93	125.50	53.01	18.33	5.77	0.70	0.06	0.33
Cl2(15)	6.04	36.85	43.71	129.15	269.34	65.59	8.44	1.25	0.10	0.78
Cl3(16)	100.62	492.65	705.31	1436.48	1152.91	225.25	32.32	6.59	0.07	1.92
Cl3(17)	129.40	641.74	1085.17	1249.90	891.15	173.32	50.65	6.75	0.34	2.43
Cl3(18)	365.22	2052.67	3478.87	5084.56	3927.51	737.63	143.90	23.33	0.64	5.99
Cl3(19)	11.92	63.09	118.14	272.02	216.82	45.19	4.76	1.03	0.07	0.31
Cl3(22)	111.50	629.90	946.39	1829.84	1403.28	254.58	55.74	9.42	0.60	3.71
Cl3(24)	0.07	0.08	4.16	12.22	15.56	3.80	0.06	0.06	0.04	0.03
Cl3(25)	97.87	1088.90	2615.63	1347.64	520.46	150.13	87.44	8.44	0.04	3.58
Cl3(26)	111.57	1206.73	2725.66	1559.69	839.19	240.24	113.22	10.91	0.29	4.88
Cl3(27)	8.14	44.88	73.45	111.56	94.27	23.47	3.54	0.81	0.04	0.25
Cl3(28)	413.63	2246.31	3612.03	5919.82	4028.88	766.67	178.99	28.59	1.03	9.38
Cl3(31)	448.67	2832.00	4657.10	6865.54	5132.20	932.17	223.41	41.45	1.21	11.92
Cl3(32)	66.93	373.18	516.25	1011.71	798.80	160.04	24.79	5.05	0.22	1.56
Cl3(33)/(20)	169.97	913.80	1352.55	2946.62	2266.17	413.20	78.19	13.52	0.76	4.22
Cl3(37)	48.04	202.53	273.18	864.14	726.55	124.92	25.78	5.06	0.39	2.82
Cl4(40)	97.75	573.50	762.61	1473.74	1216.79	211.06	42.52	8.20	0.08	3.82
Cl4(41)	23.48	191.13	126.21	717.96	690.55	100.37	12.29	4.06	0.04	1.32
Cl4(42)/(59)	217.03	1213.80	1580.50	3186.65	2314.48	455.06	104.74	18.54	0.47	8.83
Cl4(43)	22.47	148.65	197.87	396.64	248.88	58.71	10.74	1.50	0.05	0.76
Cl4(44)	541.28	3314.74	4740.10	8499.39	6621.40	1081.50	264.29	60.62	1.60	19.66
Cl4(45)	105.93	577.62	826.27	1371.73	1180.33	200.64	41.65	7.34	0.28	2.80
Cl4(46)	40.38	278.74	365.44	591.20	514.38	99.74	16.46	3.07	0.07	1.24
Cl4(47)	154.68	803.91	1295.21	1891.60	1415.97	242.75	65.37	11.52	0.37	5.38
Cl4(48)	105.74	439.99	386.86	1731.75	1583.54	249.04	28.29	7.70	0.27	2.82
Cl4(49)	448.64	2669.49	4270.03	6393.23	5002.22	858.01	234.44	45.51	0.87	15.28
Cl4(51)	23.19	161.48	209.45	419.37	368.73	52.97	9.50	1.84	0.07	0.72
Cl4(52)	659.15	3828.56	5847.75	9224.10	6885.52	1192.90	303.31	65.43	1.38	19.82
Cl4(53)	101.43	551.65	812.48	1458.30	1030.08	181.60	33.27	7.13	0.22	2.41
Cl4(54)	0.07	0.08	8.43	21.71	14.68	4.74	0.82	0.06	0.04	0.08
Cl4(56)	232.49	1255.09	1323.49	3037.31	2276.78	394.42	79.46	19.97	0.54	7.92
Cl4(60)	25.11	386.23	168.54	925.10	1094.78	159.15	21.43	7.78	0.34	2.44
Cl4(64)	268.98	1563.65	2215.13	4014.32	3046.98	524.18	127.12	23.21	0.69	10.67
Cl4(66)	432.60	2021.88	1646.81	6752.63	5110.12	818.91	164.89	39.23	1.28	15.97
Cl4(70)	592.61	3010.03	3266.97	9123.83	6547.83	1108.12	223.76	56.79	1.64	18.99
Cl4(71)	162.13	928.85	1173.18	2444.92	1753.81	294.67	73.96	12.84	0.40	6.04
Cl4(74)	207.50	1012.46	675.18	3638.66	2887.64	419.94	67.21	18.78	0.74	9.51
Cl4(77)	29.81	144.95	115.44	495.10	398.79	63.64	12.68	3.13	0.13	1.78
Cl4(81)	0.07	2.10	0.09	9.90	10.00	1.63	0.06	0.06	0.04	0.03
Cl5(82)	42.16	237.13	302.55	663.37	554.23	86.89	16.36	3.99	0.05	2.32
Cl5(83)/(119)	28.95	190.41	206.30	442.83	288.64	51.04	15.08	2.20	0.07	1.35
Cl5(84)	124.90	736.66	941.91	1554.67	1311.40	229.95	51.22	8.53	0.27	4.84
Cl5(85)	50.22	339.27	329.31	857.07	631.22	109.48	20.44	5.81	0.23	2.59
Cl5(87)	74.36	421.87	379.18	1435.52	1161.38	195.42	29.54	7.29	0.68	5.22
Cl5(91)	44.85	252.85	286.36	859.87	603.10	105.19	23.00	4.22	0.22	2.63
Cl5(92)	26.21	160.50	194.08	550.97	434.82	49.89	19.40	3.85	0.06	2.19
Cl5(95)	172.35	944.07	1220.39	2771.61	2040.26	370.16	86.74	15.23	1.11	10.69
Cl5(97)	80.62	377.23	377.56	1282.38	966.41	147.52	29.07	6.71	0.42	4.63
Cl5(99)	88.12	454.65	375.45	1335.05	1016.66	166.57	29.97	8.14	0.44	4.39
Cl5(100)	1.16	4.97	8.13	18.07	13.13	2.71	0.72	0.06	0.04	0.03

STATION_ID	T181D	T181D	T181D	T181D	T181D	T181D	T181D	T181D	9	24
FIELD SAMPLE_ID	T181D 3-4FT	T181D 4-5FT	T181D 5-6FT	T181-D-TSR	T181-D-QPO	T181-D-NML	T181-D-KJIH	31D 18.5-19.5	FAD-001	FAD-003
SAMPLE DEPTH (from bottom)	3-4	4-5	5-6	6-9	9-12	12-15	15-18.5	18.5-19.5	0-0.3	0-0.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	144.45	688.06	545.91	2234.29	1640.17	264.43	47.97	13.53	1.20	8.92
Cl5(105)	51.27	372.43	202.16	1010.33	913.76	156.47	23.25	7.34	0.69	4.24
Cl5(110)	257.78	1332.18	1579.74	3391.40	2530.67	423.29	112.02	21.95	1.54	14.49
Cl5(114)	0.16	6.18	0.21	44.07	478.42	11.32	1.20	0.37	0.49	0.64
Cl5(115)	2.01	19.08	0.18	56.99	43.12	9.16	1.25	0.39	0.09	0.36
Cl5(118)	120.76	582.42	390.27	1989.44	1463.91	234.62	39.39	12.15	1.11	7.93
Cl5(107)/(123)	13.85	58.69	91.86	359.13	247.73	43.93	8.42	1.20	0.09	1.26
Cl5(124)	2.56	16.82	7.77	71.39	79.10	10.37	1.30	0.49	0.06	0.33
Cl5(126)	0.13	3.83	2.69	10.48	9.47	2.13	0.92	0.11	0.08	0.06
Cl6(128)	7.80	34.83	41.99	153.72	93.52	16.12	3.00	0.62	0.45	1.22
Cl6(130)	4.17	19.76	28.84	58.88	32.18	6.76	1.86	0.10	0.07	0.56
Cl6(134)	2.26	11.85	15.93	41.66	26.81	5.56	1.32	0.08	0.06	0.59
Cl6(135)	5.57	29.70	47.44	87.79	42.52	9.98	3.16	0.48	0.33	1.50
Cl6(136)	6.16	28.31	38.10	90.25	48.70	10.49	2.52	0.74	0.31	1.68
Cl6(137)	1.34	7.24	6.00	35.07	30.63	5.14	0.89	0.13	0.10	0.24
Cl6(138)	23.57	111.92	139.95	351.77	233.41	53.40	8.63	2.83	1.27	6.60
Cl6(141)	3.51	20.87	12.11	82.31	68.94	11.07	1.97	0.76	0.62	3.16
Cl6(144)	1.24	7.29	7.39	29.79	16.94	3.07	0.59	0.27	0.18	0.76
Cl6(146)	8.74	35.45	55.84	103.96	44.87	10.65	3.05	0.62	0.32	1.50
Cl6(149)	28.76	157.30	223.85	492.57	249.46	46.16	14.15	2.93	2.04	10.55
Cl6(151)	8.71	38.67	52.28	148.82	49.11	12.92	3.69	0.87	0.71	3.73
Cl6(132)/(153)/(168)	37.38	175.86	178.79	576.34	309.09	58.69	13.47	4.20	2.38	12.59
Cl6(156)	2.54	10.15	8.28	49.18	42.40	7.80	1.40	0.35	0.02	1.04
Cl6(157)	1.03	4.63	3.63	14.44	11.35	2.06	0.49	0.10	0.07	0.06
Cl6(129)/(158)	3.28	21.33	14.82	55.37	39.29	7.57	1.59	0.42	0.28	1.08
Cl6(163)	6.04	29.15	42.40	89.86	42.40	10.51	2.85	0.84	0.43	1.84
Cl6(164)	2.50	10.33	11.80	37.72	22.88	4.67	1.08	0.07	0.05	0.85
Cl6(166)	0.13	0.15	1.51	0.22	3.46	0.10	0.11	0.11	0.08	0.06
Cl6(167)	1.50	6.21	5.61	25.38	16.43	3.48	0.66	0.24	0.05	0.39
Cl6(169)	3.01	0.20	0.22	0.48	1.26	0.16	0.14	0.14	0.10	0.08
Cl7(170)	5.60	26.71	29.82	86.84	46.24	8.31	2.14	0.73	0.86	5.06
Cl7(171)	1.23	8.13	10.94	26.17	10.98	2.02	0.66	0.20	0.26	1.19
Cl7(172)	1.88	8.42	10.83	21.71	9.88	1.89	0.66	0.07	0.18	0.90
Cl7(174)	6.83	32.40	34.72	126.70	38.42	7.59	2.30	0.74	1.03	5.60
Cl7(176)	1.48	5.72	7.12	16.92	5.09	1.29	0.42	0.11	0.13	0.63
Cl7(177)	4.27	23.28	32.55	68.87	25.32	6.25	2.45	0.54	0.59	3.28
Cl7(178)	2.10	10.65	15.31	23.57	7.21	2.31	1.05	0.11	0.19	0.86
Cl7(179)	3.79	20.18	23.57	57.31	14.79	3.63	1.49	0.53	0.44	2.11
Cl7(180)	15.72	97.11	71.85	316.84	121.63	17.66	4.97	1.91	2.40	12.93
Cl7(183)	4.72	23.04	24.13	65.40	22.15	4.87	1.52	0.54	0.60	3.22
Cl7(184)	0.33	0.88	0.38	0.85	0.57	0.19	0.05	0.05	0.04	0.03
Cl7(185)	0.74	4.49	4.06	12.82	4.67	0.93	0.35	0.09	0.13	0.71
Cl7(187)	9.92	52.39	72.69	130.02	40.25	9.61	4.42	1.14	1.14	6.16
Cl7(189)	0.13	2.36	0.17	4.83	3.90	0.64	0.11	0.11	0.08	0.23
Cl7(190)	1.28	7.21	7.82	21.83	10.77	1.88	0.50	0.30	0.15	1.07
Cl7(193)	1.29	3.90	5.75	10.17	4.50	0.96	0.32	0.18	0.12	0.51
Cl8(194)	7.89	30.24	38.59	80.55	33.52	5.75	1.89	0.51	0.61	3.11
Cl8(195)	2.62	11.98	14.29	25.28	10.37	1.91	0.83	0.26	0.04	0.91
Cl8(199)	16.76	43.91	50.20	90.61	34.09	6.83	2.23	0.51	0.63	2.98
Cl8(200)	0.73	3.41	3.71	8.73	3.22	0.56	0.23	0.12	0.09	0.37
Cl8(201)	1.26	4.77	5.16	9.81	4.66	0.76	0.45	0.12	0.09	0.33
Cl8(202)	2.16	6.80	6.68	13.02	4.85	1.11	0.43	0.20	0.15	0.45
Cl8(196)/(203)	6.55	29.30	32.82	68.44	27.97	5.01	1.93	0.50	0.64	3.01
Cl8(205)	0.03	2.00	2.58	4.81	2.79	0.72	0.02	0.02	0.02	0.01
Cl9(206)	41.67	60.94	55.40	87.03	47.81	7.86	2.27	0.53	0.25	0.86
Cl9(207)	1.00	6.07	4.41	11.55	9.71	0.94	0.27	0.10	0.03	0.12
Cl9(208)	10.33	16.16	12.55	25.62	15.82	2.41	0.72	0.10	0.08	0.17
Cl10(209)	195.29	367.74	318.35	1185.26	661.24	68.84	15.87	1.69	0.39	1.15
Sum 117 congeners	8,473	47,284	64,504	125,593	94,713	16,488	3,689	745	48	402

STATION_ID	21	2	26	12	7	22	3	25	5	27
FIELD SAMPLE_ID	FAD-005	FAD-008	FAD-012	FAD-015	FAD-021	FAD-022	FAD-023	FAD-024	FAD-025	FAD-026
SAMPLE DEPTH (from bottom)	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Biphenyl	10.12	8.34	7.21	7.29	9.83	3.63	8.93	6.42	4.70	3.78
Cl1(1)	0.05	0.04	0.04	0.04	0.06	0.03	0.03	0.05	0.04	0.04
Cl1(3)	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
Cl2(4)/(10)	1.03	0.97	0.70	0.76	0.71	0.83	1.42	0.33	0.46	0.37
Cl2(5)	0.08	0.07	0.07	0.06	0.10	0.05	0.05	0.07	0.07	0.06
Cl2(6)	1.29	1.39	0.91	0.70	1.14	0.86	1.62	0.26	0.45	0.35
Cl2(7)	0.04	0.04	0.04	0.05	0.05	0.03	0.12	0.04	0.04	0.03
Cl2(8)	1.52	1.69	1.25	1.22	1.54	1.06	3.39	0.39	0.60	0.50
Cl2(9)	0.05	0.05	0.05	0.09	0.07	0.04	0.20	0.05	0.05	0.04
Cl2(13)	0.55	0.74	0.45	0.34	0.54	0.35	0.70	0.05	0.23	0.20
Cl2(15)	1.40	1.50	1.25	1.08	1.50	0.92	2.14	0.42	0.59	0.52
Cl3(16)	3.02	3.49	2.70	2.75	3.75	2.21	7.83	0.87	1.09	1.31
Cl3(17)	3.65	4.58	3.22	3.00	3.90	2.55	7.31	0.99	1.39	1.54
Cl3(18)	9.11	11.49	7.65	7.21	10.16	6.66	21.03	1.85	3.10	3.92
Cl3(19)	0.57	0.54	0.50	0.42	0.59	0.39	1.24	0.17	0.22	0.17
Cl3(22)	5.51	6.96	5.26	4.44	8.21	4.22	12.00	1.68	2.36	2.72
Cl3(24)	0.04	0.04	0.04	0.03	0.05	0.03	0.03	0.04	0.04	0.03
Cl3(25)	4.70	6.90	4.08	3.40	4.75	3.10	5.82	0.91	1.80	1.72
Cl3(26)	6.21	8.40	5.21	4.34	6.61	4.09	9.01	1.25	2.44	2.41
Cl3(27)	0.41	0.50	0.42	0.37	0.53	0.29	0.93	0.14	0.15	0.19
Cl3(28)	14.53	19.63	14.44	12.46	21.40	11.13	29.20	3.80	5.97	7.34
Cl3(31)	16.12	22.30	15.31	13.30	22.30	12.04	34.15	3.82	6.22	8.18
Cl3(32)	2.48	3.00	2.43	2.15	3.29	2.01	5.80	0.77	0.89	1.13
Cl3(33)/(20)	6.20	8.30	5.86	5.35	8.66	5.04	14.12	1.92	2.70	3.13
Cl3(37)	3.35	3.97	3.26	2.67	4.73	2.45	6.73	0.85	1.53	1.42
Cl4(40)	4.49	5.48	4.47	3.88	6.55	3.46	9.90	1.12	1.92	2.31
Cl4(41)	2.06	2.06	2.17	1.70	3.47	1.82	5.55	0.71	0.87	1.23
Cl4(42)/(59)	8.71	11.60	10.78	7.72	12.22	6.86	18.10	2.41	3.64	4.19
Cl4(43)	0.90	1.15	0.97	0.70	1.27	0.66	1.91	0.05	0.32	0.43
Cl4(44)	23.83	30.40	24.24	20.00	35.36	18.43	47.90	6.42	10.03	12.10
Cl4(45)	3.69	4.45	3.76	2.99	5.45	2.97	9.01	0.95	1.41	1.75
Cl4(46)	1.59	1.95	1.49	1.36	2.44	1.24	3.82	0.40	0.61	0.73
Cl4(47)	6.10	7.94	6.22	5.10	9.11	4.61	12.22	1.59	2.43	3.03
Cl4(48)	3.63	4.16	3.94	3.30	6.25	3.22	10.41	1.10	1.53	2.04
Cl4(49)	17.62	22.73	17.26	14.68	25.26	13.12	32.74	4.51	7.16	8.78
Cl4(51)	0.93	1.14	0.92	0.75	1.38	0.71	2.11	0.25	0.32	0.39
Cl4(52)	23.50	29.70	23.19	19.97	34.95	18.00	45.03	6.40	9.99	11.93
Cl4(53)	3.01	3.94	3.13	2.64	4.64	2.53	7.49	0.87	1.18	1.48
Cl4(54)	0.04	0.17	0.13	0.03	0.19	0.09	0.03	0.04	0.08	0.03
Cl4(56)	9.53	11.99	9.83	8.45	15.63	7.33	19.92	2.65	4.03	5.22
Cl4(60)	3.17	3.34	3.71	2.98	6.30	2.73	8.96	1.16	1.50	1.80
Cl4(64)	12.39	15.75	12.78	10.60	19.47	9.59	26.24	3.15	5.06	6.23
Cl4(66)	18.92	22.61	19.90	16.92	31.19	14.55	36.17	5.71	8.59	10.89
Cl4(70)	22.61	28.21	22.30	19.64	34.50	16.79	43.39	6.31	9.74	13.18
Cl4(71)	6.88	9.03	7.27	5.84	10.71	5.48	15.31	1.76	2.77	3.48
Cl4(74)	10.37	12.02	10.82	9.27	17.69	8.35	22.63	3.06	4.56	5.73
Cl4(77)	1.36	1.72	1.62	1.27	2.65	0.77	3.38	0.02	0.40	0.65
Cl4(81)	0.04	0.04	0.04	0.03	0.05	0.03	0.07	0.04	0.04	0.03
Cl5(82)	2.46	2.78	2.61	2.12	3.86	1.77	4.91	0.72	1.17	1.41
Cl5(83)/(119)	1.69	2.17	1.49	1.37	2.18	1.07	2.77	0.41	0.59	0.76
Cl5(84)	5.10	6.59	4.90	4.27	7.15	3.74	9.51	1.21	2.02	2.48
Cl5(85)	3.23	3.38	3.00	2.81	4.92	2.29	5.95	0.86	1.32	1.56
Cl5(87)	7.00	4.64	6.35	5.96	9.41	4.93	11.67	2.06	3.09	3.29
Cl5(91)	2.60	3.37	2.52	2.25	3.73	1.82	4.85	0.69	1.15	1.23
Cl5(92)	3.13	3.28	2.54	2.50	3.39	1.90	3.65	0.72	1.36	1.27
Cl5(95)	15.17	15.48	11.86	12.05	15.53	9.48	17.96	4.10	6.76	5.96
Cl5(97)	5.10	5.81	4.95	4.49	7.41	3.90	9.19	1.54	2.20	2.51
Cl5(99)	5.05	5.76	4.90	4.31	7.35	3.76	8.92	1.50	2.26	2.46
Cl5(100)	0.04	0.09	0.09	0.03	0.12	0.06	0.03	0.04	0.04	0.03

STATION_ID	21	2	26	12	7	22	3	25	5	27
FIELD SAMPLE_ID	FAD-005	FAD-008	FAD-012	FAD-015	FAD-021	FAD-022	FAD-023	FAD-024	FAD-025	FAD-026
SAMPLE DEPTH (from bottom)	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3
DEPTH_UNIT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
Cl5(101)	13.93	12.83	10.81	11.65	13.68	8.72	14.87	4.09	6.52	5.34
Cl5(105)	5.89	5.95	5.70	4.77	8.74	4.28	9.91	1.71	2.57	2.83
Cl5(110)	17.51	19.21	15.06	14.27	20.03	11.09	22.86	5.06	7.81	7.64
Cl5(114)	0.58	0.09	0.73	0.50	1.09	0.07	0.85	0.42	0.38	0.50
Cl5(115)	0.45	0.55	0.44	0.42	0.41	0.31	4.23	0.11	0.14	0.20
Cl5(118)	9.99	10.04	9.01	8.54	12.62	6.67	13.33	3.04	4.76	4.55
Cl5(107)/(123)	1.63	1.72	1.49	1.37	2.19	1.13	2.33	0.49	0.68	0.87
Cl5(124)	0.45	0.41	0.36	0.36	0.57	0.34	0.67	0.05	0.27	0.19
Cl5(126)	0.08	0.07	0.07	0.06	0.10	0.05	0.05	0.07	0.07	0.06
Cl6(128)	2.60	2.08	1.50	1.92	1.74	1.20	1.29	0.73	1.15	0.85
Cl6(130)	1.05	0.97	0.70	0.77	0.73	0.57	0.61	0.32	0.48	0.36
Cl6(134)	1.32	0.99	0.75	0.95	0.71	0.53	0.59	0.45	0.54	0.36
Cl6(135)	3.63	2.75	2.20	2.96	1.77	1.77	1.37	0.98	1.78	0.90
Cl6(136)	4.21	3.16	2.48	3.28	2.10	2.05	1.54	1.10	1.91	1.12
Cl6(137)	0.52	0.31	0.30	0.31	0.43	0.21	0.35	0.09	0.18	0.08
Cl6(138)	16.70	12.44	9.91	11.70	8.28	7.73	5.93	4.17	7.48	4.51
Cl6(141)	8.56	6.16	4.77	6.20	4.09	4.13	2.87	2.26	3.96	2.15
Cl6(144)	2.01	1.37	1.20	1.68	1.07	1.05	0.71	0.58	1.03	0.48
Cl6(146)	3.93	2.82	2.29	2.99	1.91	1.74	1.40	1.10	1.77	0.96
Cl6(149)	26.65	19.62	15.58	20.66	13.64	12.81	9.40	7.54	12.72	7.03
Cl6(151)	10.14	7.40	5.74	7.89	4.99	4.79	3.43	2.73	4.98	2.50
Cl6(132)/(153)/(168)	34.23	24.59	19.02	25.45	16.67	15.73	11.34	8.49	15.31	8.77
Cl6(156)	2.09	1.67	1.37	1.73	1.30	1.07	0.89	0.64	1.01	0.64
Cl6(157)	0.07	0.06	0.06	0.27	0.29	0.05	0.21	0.07	0.07	0.06
Cl6(129)/(158)	2.61	2.20	1.54	2.16	1.40	1.26	0.96	0.67	1.28	0.75
Cl6(163)	5.94	3.92	2.63	4.39	2.76	2.36	1.94	1.40	2.48	1.37
Cl6(164)	2.18	1.75	1.37	1.66	1.17	0.91	0.78	0.62	1.00	0.57
Cl6(166)	0.39	0.29	0.20	0.32	0.25	0.05	0.14	0.07	0.07	0.06
Cl6(167)	0.91	0.74	0.56	0.71	0.56	0.37	0.38	0.32	0.54	0.30
Cl6(169)	0.10	0.09	0.09	0.08	0.13	0.07	0.07	0.10	0.09	0.08
Cl7(170)	14.31	10.02	7.52	10.63	6.31	6.09	3.79	3.34	6.79	3.53
Cl7(171)	3.69	2.59	1.98	2.61	1.49	1.48	0.94	0.83	1.61	0.93
Cl7(172)	2.56	1.88	1.43	1.82	1.16	1.06	0.77	0.68	1.23	0.74
Cl7(174)	16.12	11.31	8.75	11.80	7.21	6.73	4.21	4.02	7.47	3.91
Cl7(176)	1.98	1.42	1.09	1.40	0.88	0.83	0.55	0.53	0.90	0.49
Cl7(177)	10.03	6.90	5.27	7.06	4.25	4.15	2.70	2.39	4.56	2.47
Cl7(178)	2.69	1.89	1.34	1.91	1.13	1.07	0.74	0.65	1.31	0.65
Cl7(179)	6.49	4.49	3.42	4.66	2.96	2.68	1.66	1.51	2.81	1.60
Cl7(180)	35.63	25.58	19.60	26.90	16.96	15.59	10.17	9.54	17.42	9.32
Cl7(183)	9.76	6.80	5.05	7.08	4.16	4.11	2.62	2.34	4.43	2.28
Cl7(184)	0.04	0.03	0.03	0.03	0.04	0.02	0.02	0.03	0.03	0.03
Cl7(185)	2.17	1.47	1.10	1.59	0.92	0.92	0.59	0.51	1.03	0.60
Cl7(187)	17.63	12.40	9.76	12.91	7.98	7.69	4.79	4.27	8.20	4.43
Cl7(189)	0.62	0.49	0.34	0.44	0.25	0.36	0.18	0.07	0.28	0.06
Cl7(190)	3.31	2.16	1.79	2.35	1.56	1.43	0.90	0.84	1.54	0.77
Cl7(193)	1.55	1.04	0.88	1.05	0.66	0.65	0.39	0.34	0.79	0.43
Cl8(194)	9.11	6.53	5.33	7.04	4.10	4.07	2.49	2.39	4.54	2.39
Cl8(195)	2.78	2.00	1.52	2.16	1.37	1.08	0.78	0.69	1.32	0.77
Cl8(199)	8.09	6.02	4.59	6.36	3.94	3.53	2.50	2.31	3.78	2.43
Cl8(200)	1.10	0.68	0.53	0.75	0.52	0.44	0.31	0.27	0.52	0.29
Cl8(201)	1.11	0.70	0.54	0.75	0.43	0.41	0.28	0.24	0.50	0.31
Cl8(202)	1.24	0.89	0.73	0.90	0.61	0.48	0.34	0.36	0.61	0.33
Cl8(196)/(203)	8.60	5.99	4.56	6.65	3.57	3.47	2.50	2.09	4.01	2.18
Cl8(205)	0.49	0.32	0.02	0.30	0.02	0.01	0.01	0.02	0.02	0.01
Cl9(206)	2.36	2.10	1.58	2.38	1.65	1.13	1.06	0.69	1.20	0.80
Cl9(207)	0.32	0.20	0.17	0.27	0.15	0.13	0.11	0.08	0.14	0.09
Cl9(208)	0.46	0.43	0.30	0.48	0.33	0.20	0.21	0.15	0.25	0.23
Cl10(209)	3.02	5.51	3.73	6.35	3.48	2.74	2.58	0.85	1.08	1.67
Sum 117 congeners	665	660	522	537	660	404	790	177	294	258

STATION_ID	SD-002	SD-003	SD-004	SD-005	)06 (SD-002D
FIELD SAMPLE_ID	E2LQ0	E2LQ1	E2LQ2	E2LQ3	E2LQ4
SAMPLE DEPTH (from bottom)	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3
DEPTH_UNIT	FT	FT	FT	FT	FT
Biphenyl	20.36	32.78	50.92	15.26	18.34
Cl1(1)	0.07	0.05	0.12	0.06	0.06
Cl1(3)	0.03	0.02	0.06	0.03	0.03
Cl2(4)/(10)	10.02	9.72	18.99	9.16	10.08
Cl2(5)	0.11	0.08	0.20	0.10	0.10
Cl2(6)	5.52	5.27	9.04	5.76	5.47
Cl2(7)	1.08	0.99	1.70	1.09	1.01
Cl2(8)	25.31	22.63	41.07	24.95	25.43
Cl2(9)	1.85	1.69	3.08	1.70	1.68
Cl2(13)	2.91	2.60	4.73	2.61	3.21
Cl2(15)	22.40	17.46	28.91	21.07	22.06
Cl3(16)	32.61	23.20	42.27	28.88	31.51
Cl3(17)	28.86	22.86	41.06	26.43	30.43
Cl3(18)	58.89	46.04	85.85	54.08	59.63
Cl3(19)	5.72	4.94	9.70	4.72	5.27
Cl3(22)	41.15	29.22	56.46	38.93	42.55
Cl3(24)	0.06	0.04	0.11	0.06	0.05
Cl3(25)	9.84	5.89	12.05	8.49	10.18
Cl3(26)	19.64	13.87	25.28	19.75	19.84
Cl3(27)	4.18	3.54	6.17	3.83	4.15
Cl3(28)	83.84	58.01	107.32	78.15	80.64
Cl3(31)	82.14	57.68	105.34	79.07	81.48
Cl3(32)	20.23	15.46	27.12	18.51	19.43
Cl3(33)/(20)	59.87	41.44	79.44	58.53	59.04
Cl3(37)	42.72	31.94	55.25	38.89	42.51
Cl4(40)	16.27	12.09	22.10	14.32	13.28
Cl4(41)	13.75	8.81	16.09	11.77	14.00
Cl4(42)/(59)	36.55	24.82	58.02	34.19	36.36
Cl4(43)	6.83	5.88	16.68	5.77	8.16
Cl4(44)	94.41	71.34	140.27	86.24	96.39
Cl4(45)	16.65	11.84	24.02	14.50	16.79
Cl4(46)	8.41	6.71	15.05	7.19	8.46
Cl4(47)	36.00	30.21	58.74	39.58	35.24
Cl4(48)	21.38	16.24	31.58	20.85	20.80
Cl4(49)	66.27	54.18	99.80	65.13	67.08
Cl4(51)	9.97	7.86	16.23	11.07	9.58
Cl4(52)	94.36	71.43	136.87	86.89	93.82
Cl4(53)	16.58	13.90	26.56	16.75	17.07
Cl4(54)	0.06	0.04	0.11	0.06	0.05
Cl4(56)	36.72	24.92	44.88	35.84	34.63
Cl4(60)	29.30	17.36	31.95	27.25	28.68
Cl4(64)	41.22	27.97	51.00	39.22	40.91
Cl4(66)	79.47	55.32	104.46	75.17	76.13
Cl4(70)	111.72	77.24	145.55	106.64	108.83
Cl4(71)	25.13	18.97	32.64	24.21	24.93
Cl4(74)	48.65	31.85	63.89	47.81	47.83
Cl4(77)	8.93	7.41	17.65	11.29	12.40
Cl4(81)	0.06	2.46	0.11	0.06	0.05
Cl5(82)	36.94	23.43	42.54	36.44	38.09
Cl5(83)/(119)	15.54	12.83	25.16	15.23	14.67
Cl5(84)	38.98	30.80	58.60	38.78	37.28
Cl5(85)	22.72	16.76	31.60	21.07	21.44
Cl5(87)	117.70	78.38	139.48	106.68	113.39
Cl5(91)	25.23	22.71	42.80	26.66	25.40
Cl5(92)	68.78	38.79	69.81	59.21	71.00
Cl5(95)	241.63	160.03	292.79	224.93	234.49
Cl5(97)	53.60	41.30	75.35	48.38	52.20
Cl5(99)	56.48	44.25	81.51	53.73	54.51
Cl5(100)	2.80	2.46	5.14	4.07	2.82

STATION_ID	SD-002	SD-003	SD-004	SD-005	)06 (SD-002D
FIELD SAMPLE_ID	E2LQ0	E2LQ1	E2LQ2	E2LQ3	E2LQ4
SAMPLE DEPTH (from bottom)	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3
DEPTH_UNIT	FT	FT	FT	FT	FT
Cl5(101)	205.27	133.20	249.65	196.99	195.49
Cl5(105)	69.13	45.12	77.41	69.37	68.72
Cl5(110)	234.91	164.98	301.97	221.29	226.42
Cl5(114)	0.14	0.10	0.24	0.13	0.12
Cl5(115)	1.71	2.36	2.44	1.41	0.67
Cl5(118)	119.87	79.56	146.90	115.83	111.81
Cl5(107)/(123)	14.73	10.63	19.05	14.65	15.51
Cl5(124)	7.23	4.27	7.09	6.22	6.84
Cl5(126)	0.11	0.08	0.20	0.10	0.10
Cl6(128)	71.67	43.34	71.95	70.05	66.11
Cl6(130)	33.63	20.55	30.49	35.85	33.32
Cl6(134)	43.11	25.60	40.62	42.95	41.56
Cl6(135)	120.57	68.71	111.20	119.11	115.99
Cl6(136)	131.15	76.17	130.00	127.40	126.70
Cl6(137)	11.05	7.31	14.14	11.14	9.43
Cl6(138)	275.95	168.48	291.31	277.95	254.56
Cl6(141)	221.99	127.31	209.35	223.38	208.48
Cl6(144)	68.90	37.78	60.55	69.19	65.87
Cl6(146)	109.01	61.02	104.54	110.73	102.23
Cl6(149)	597.49	354.48	625.25	590.44	564.07
Cl6(151)	372.23	203.62	316.82	373.02	362.18
Cl6(132)/(153)/(168)	621.46	368.52	633.23	624.74	582.04
Cl6(156)	69.59	36.77	60.56	73.19	65.46
Cl6(157)	6.29	3.90	6.13	6.53	4.78
Cl6(129)/(158)	81.82	46.82	73.41	82.91	74.63
Cl6(163)	144.44	91.63	132.21	164.05	155.57
Cl6(164)	70.63	39.50	62.58	72.87	68.02
Cl6(166)	10.82	5.66	12.41	10.26	9.99
Cl6(167)	28.53	15.39	23.00	29.89	25.09
Cl6(169)	0.14	0.10	0.26	0.14	0.13
Cl7(170)	0.08	0.05	458.57	0.07	0.07
Cl7(171)	102.26	56.48	87.84	109.25	95.29
Cl7(172)	73.73	39.81	62.35	77.65	66.79
Cl7(174)	345.24	195.56	323.73	360.32	320.58
Cl7(176)	72.86	37.83	55.08	77.55	70.68
Cl7(177)	252.17	139.41	218.22	265.28	234.79
Cl7(178)	78.19	43.21	64.86	82.75	73.73
Cl7(179)	216.56	117.31	173.43	224.69	208.96
Cl7(180)	533.03	304.17	543.76	563.94	487.19
Cl7(183)	307.60	163.76	244.25	331.77	292.29
Cl7(184)	0.05	0.04	0.09	0.09	0.04
Cl7(185)	70.12	37.29	55.72	74.53	66.35
Cl7(187)	379.72	214.82	352.26	397.51	354.10
Cl7(189)	14.72	8.27	9.16	17.85	14.01
Cl7(190)	81.78	43.69	70.33	91.41	74.87
Cl7(193)	40.15	24.24	32.24	42.17	36.72
Cl8(194)	0.06	0.04	0.11	0.06	0.05
Cl8(195)	72.82	36.81	53.88	85.09	66.88
Cl8(199)	193.53	103.13	158.57	214.38	174.92
Cl8(200)	31.84	16.22	24.75	35.07	29.72
Cl8(201)	32.19	16.38	23.13	35.93	30.33
Cl8(202)	36.24	19.06	27.78	40.41	34.60
Cl8(196)/(203)	172.75	94.51	150.22	192.97	158.96
Cl8(205)	8.28	4.05	6.21	10.13	7.62
Cl9(206)	33.81	16.37	24.35	42.98	30.32
Cl9(207)	5.15	2.65	3.79	6.47	4.59
Cl9(208)	6.86	3.65	5.03	8.07	6.54
Cl10(209)	0.90	0.63	1.42	1.44	0.86
Sum 117 congeners	8,964	5,468	9,826	9,073	8,536

REPORT DOCUMENTATION PAGE

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5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

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Jim Leather - US Navy, SSC Pacific
Greg Durell - Battelle
Glenn Johnson - U of Utah
Marc Mills - EPA ORD

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14. ABSTRACT
This technical document demonstrates an integrated approach to fingerprint sediment polychlorinated biphenyl (PCB) contamination that combines sediment screening technologies on a large number of field samples followed by detailed PCB congener analysis in conjunction with advanced chemical fingerprinting data interpretation on a subset of selected laboratory samples to identify PCB sources to sediments.

15. SUBJECT TERMS
PCB Forensics - Advanced Chemical Fingerprinting(ACF) - Rapid Sediment Characterization (RSC)

16. SECURITY CLASSIFICATION OF: a. REPORT	b. ABSTRACT	c. THIS PAGE	17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
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Integrated Forensics Approach to Fingerprint PCB Sources ~~in Sedime~~ ~~SEDIMENT~~

MEETING *(IF PRESENTATION)*

DATE AND PLACE OF MEETING

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