Fish Reproductive Health Assessment in PCB Contaminated Regions of the Housatonic River, Massachusetts, USA: Investigations of Causal Linkages Between PCBs and Fish Health

Final Report of Phase I Studies
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1.0 EXECUTIVE SUMMARY

The Housatonic River is an important natural resource in western Massachusetts and western Connecticut. There is concern that contamination by polychlorinated biphenyls (PCBs) in the Housatonic River has resulted in adverse health effects on the fish and wildlife. We report here the first portion (Phase I) of a set of studies designed to: 1) evaluate the survival, growth and development of offspring of fish collected in the Housatonic River; and 2) quantify the amount of PCBs in the fish. Largemouth bass and bluegills were collected from three locations along the Housatonic River (Deep Reach, GE River Mile 126-127; Woods Pond, GE River Mile 124-125; and Rising Pond, GE River Mile 105-106) and a reference site (Three Mile Pond, east of the Housatonic River at GE River Mile 94). The adult fish were transported to the Columbia Environmental Research Center, Columbia, MO for spawning and rearing of the offspring. Spawning of the bluegill was not successful. The largemouth bass were spawned in outdoor ponds and the eggs and fry were incubated in the laboratory under controlled conditions. The health of the adults and offspring were evaluated through a suite of endpoints designed to measure symptoms associated with PCB-related toxicity.

Adult largemouth bass from the Housatonic River contained elevated concentrations of PCBs in carcass and ovary samples. The mean concentrations of total PCBs were 43-149 μg/g (wet wt.) in carcass homogenate samples and 160-448 μg/g in ovary samples from the same largemouth bass. The mean concentrations of total PCBs in whole fish homogenates and ovaries from the reference site were 0.1 μg/g and 0.6 μg/g, respectively. Polychlorinated dibenzofurans (PCDFs), contaminants of commercial PCB mixtures, were also elevated (approximately 90-fold in the tissues and 150-fold in the ovaries based on dioxin-like toxic potency, TEQs) relative to the reference fish. Polychlorinated dibenzo-p-dioxins (PCDDs) were elevated (approximately 5 to 10 fold in the tissues and 15 to 20 fold in the ovaries based on TEQs) relative to the concentrations in fish from the reference site. The mean total dioxin-like potency in largemouth bass from the Housatonic River was 37-65 pg TEQs/g in the tissues and 109-135 pg TEQs/g in

ovaries, while the fish from the reference site contained 1.0 pg TEQs/g in either whole carcass or ovary samples.

The adult largemouth bass collected from the Housatonic River had several symptoms that were consistent with PCB-related toxicosis. The adult largemouth bass collected from the Housatonic River had elevated liver enzyme (ethoxyresorufin O-deethylase, EROD) activities, abnormal gonadal histology, and elevated occurrences and rates of macrophage aggregates. In general, organ weights and steroid hormone concentrations were not different in adult largemouth bass from the Housatonic River as compared with fish from the reference site, Three-Mile Pond.

The offspring of largemouth bass collected from the Housatonic River expressed a suite of symptoms that were consistent with PCB-related toxicity. The suite of symptoms observed in the offspring of largemouth bass from the Housatonic River included delayed development, reduced survival at swim-up, cytochrome P450 induction, developmental deformities, and wasting syndrome (reduced weight gain). The deformities, such as the lack of inflation of the swim bladder, which were observed exclusively in the fry from the Housatonic River, suggest an Ah-receptor agonist etiology for the adverse effects observed in largemouth bass populations that inhabit the Housatonic River. These same symptoms were not observed in the offspring of largemouth bass from the reference location, Three-Mile Pond. This suite of indicators, the specific patterns of their occurrence, and the magnitudes of their responses at this critical life-stage in fishes were indicative of an adverse effect related to PCBs or other dioxin-like compounds.

Exposure indicators and adverse effects observed in largemouth bass and their offspring from all study locations on the Housatonic River are consistent with PCB-related toxicity in these populations. Additionally, the data from these experiments indicate that all of the study sites on the Housatonic River (Deep Reach, Woods Pond, and Rising Pond) were above threshold concentrations for adverse effects in largemouth bass.

The second phase of these studies (Phase II) are designed to provide a more complete test of the hypothesis that PCBs are causally linked to the adverse effects observed in the largemouth bass from the Housatonic River. We will extract the chemicals present in the largemouth bass and introduce them into clean embryos of largemouth bass (as well as surrogate species). Threshold concentrations for the adverse effects will be established based on chemicals present in the mixture.

2.0 INTRODUCTION

The Housatonic River is a valuable aquatic resource, both aesthetically and economically (Orciari and Leonard 1990). Draining over 2000 square miles, the Housatonic flows south through a series of impoundments in western Massachusetts and western Connecticut, terminating in Long Island Sound. During the past two decades there has been increasing concern regarding the threat posed by the presence of highly toxic environmental contaminants to the fish and wildlife inhabiting the river. The principal cause of this contamination is a polychlorinated biphenyl (PCB) point source located on the East Branch of the Housatonic River at Pittsfield, Massachusetts. Total PCB concentrations in fish downstream of this source have been reported at levels as high as 418 mg/Kg (Rick Beach, personal communication). Although PCBs are considered to be the major toxic input, polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) also contribute to contamination of the river (Eitzer 1993).

PCBs, PCDDs, and PCDFs are collectively referred to as planar halogenated hydrocarbons (PHHs). The toxic effects of PHHs and structurally similar compounds are thought to be mediated through contaminant binding to a cytosolic aryl hydrocarbon receptor (Ah-R). This ligand-activated transcription factor binds with selected sites on DNA called dioxin responsive elements (DRE) which control the expression of genes that encode both Phase I and Phase II enzymes. The induction of these proteins is part of a response to dioxin-like chemicals which leads to alterations in cellular homeostasis (DeVito and Birnbaum 1995). Binding of PHHs to the Ah-R has been linked to several molecular events including the production of electrophilic metabolites and oxygen radicals, reduced capacity for xenobiotic metabolism, and alteration in the rates of endogenous substrate metabolism (Stegeman and Hahn 1994). In fish, early life stages appear to be particularly sensitive to the effects of Ah-R ligands (Mehrle et al. 1988; Walker and Peterson 1991) and recent evidence indicates the specific involvement of cytochrome P450 enzymes in this embryo-toxic response (Cantrell et al. 1996; 1998).

A detailed assessment of the toxicological impact of PHHs on fish from the Housatonic River has not previously been conducted. Using a combination of validated field and laboratory based tools, the current project evaluates the potential for contaminants in the Housatonic River to elicit embryo-toxic effects in fish that could ultimately result in altered population size and structure. The project will demonstrate the associations between PCB exposure and changes in early fish development and will establish a foundation for the determination of causality, if such a linkage exists. The studies will provide dose-response information for fish embryo toxicity caused by the actual mixtures of chemicals found in fish from the Housatonic River. The multiple levels of biological organization investigated (biochemical, histological, organismal) will provide additional lines of evidence in support of the conclusions obtained from the studies.

The project is being conducted in two Phases to address separate, albeit related, hypotheses. The focus of this interim report is on progress made in Phase I of the project. A subsequent report of progress on Phase II will be submitted separately.

3.0 OBJECTIVES AND EXPERIMENTAL DESIGN

The studies conducted within this project were designed to test two fundamental hypotheses. The first set of studies (Phase I) addresses the sensitivity of endemic fish species to Housatonic River contaminants. The second set of studies (Phase II) is directed toward determination of the mechanism of toxicity of Housatonic River contaminants. Specifically, the hypotheses to be tested in the two Phases are as follows: I) Early life stages of fish species endemic to the Housatonic River are sensitive to the amount and composition of the PHHs present, and II) PHHs present in fish from the Housatonic River elicit detrimental effects through an Ah-R mediated mechanism of toxicity.

3.1 Study Objectives

To test the first hypothesis, studies in Phase I are designed to evaluate the survival and development of offspring of fish collected from three PCB-contaminated locations in the Housatonic River and from an off-river reference site in the basin. Phase I studies have the following primary objectives:

1) Determine appropriate rearing conditions for embryos of representative species from the Housatonic River.
2) Determine the dioxin-like effects present in embryos and early life stages of offspring from fish collected from four areas of interest in the Housatonic River Basin.
3) Determine the concentration of PCBs and other organic contaminants present in the carcass and ovaries of fish collected from the four areas of interest.

To test the second hypothesis, studies in Phase II are designed to determine the mechanisms of embryo-toxic effects of contaminants found in fish from the Housatonic River Basin sites. Phase II studies have the following primary objectives:

1) Develop extracts of organic contaminants from largemouth bass collected from each of the four areas of interest for use in egg injection studies, and characterize the PCBs and other hydrophobic organic chemicals present in those extracts.
2) Determine the embryo-toxic effects of the extracts in egg injection studies with largemouth bass, rainbow trout, and medaka.
3) Determine the extent to which an additive model of dioxin-like toxicity explains the effects observed in embryos and fry in the Phase I rearing studies and in the Phase II egg injection studies.

3.2 Experimental Design

Phase I of the project involved the collection of brood fish from four study sites in the Housatonic River Basin, spawning of the fish in experimental ponds, and subsequent rearing of

offspring in the laboratory. Stage-specific mortality determinations, gross pathology assessments, histological examinations, and biochemical measurements were made on the developing embryos and resultant fry. Information on survival, development, and growth was augmented with exposure assessment. The carcasses of brood fish and portions of ovaries collected during this phase of the project were analyzed for organochlorine chemicals, including pesticides, PCBs, dioxins, and furans. Additionally, samples were obtained from adult fish for assessment of biological indicators of contaminant exposure. Biochemical and physiological measurements in the adult largemouth bass included ethoxyresorufin-*O*-deethlyase induction (EROD, a measure of cytochrome P450 induction); gross histology of liver and gonads; measurement of plasma concentrations of estrogen and testosterone and their ratios (E/T ratios); and measurement of plasma concentrations of vitellogenin. This exposure and effects information will be used in Phase II to determine the ability of laboratory models to predict dose-response relationships for Housatonic River contaminants. Thus, the information obtained with field-collected fish in Phase I studies will be used to validate dose-response curves generated in the laboratory during Phase II.

During Phase II studies, chemical mixtures extracted from Housatonic River fish will be used to develop dose-response relationships for embryo toxicity in the laboratory. This will aid in revealing toxicological mechanisms and allow for quantitative dose-response relationships to be developed, exclusive of other stressors. The studies are designed to allow controlled laboratory exposures of fish eggs and developing embryos to extracts obtained from fish from the four locations of interest in the Housatonic River Basin. Egg injection techniques and subsequent monitoring of the developing embryos until the time of exogenous feeding will be used to assess toxic effects. The egg injection procedures effectively mimic the maternal transfer of hydrophobic contaminants, such as PCBs, to developing oocytes. Moreover, the toxic effects observed in previous egg injection studies have been shown to be similar to those observed in studies where eggs obtained contaminants through maternal deposition (Walker et al. 1994; 1996). The results of the field-laboratory studies of Phase I and laboratory studies of Phase II will elucidate the extent to which PCBs are adversely affecting early life stages of fish in the

Housatonic River. Phase II studies are designed to develop predictive dose-response models between the hydrophobic chemicals present in Housatonic River largemouth bass and early life-stage toxicity. The results of the Phase I field-laboratory studies will be compared with the predictive models to determine their accuracy. The extent to which the early life-stage toxicity observed in Housatonic River fish may be attributed to PCBs will also be determined by these comparisons.

4.0 METHODS (Phase I)

4.1 Field Collection of Brood Fish

Largemouth bass (*Micropterus salmoides*) and bluegills (*Lepomis macrochirus*) were collected from three sites on the Housatonic River, and from one off-river reference site in the basin, during the first week of May, 1999. The timing of sampling was intended to correspond with the onset of spawning condition. The fish were collected by electro-shocking by U.S. Fish and Wildlife Service personnel, using their collection protocols. The three Housatonic River sampling sites included Rising Pond (GE River Mile 105-106), Woods Pond (GE River Mile 124-125), and Deep Reach (GE River Mile 126-127). The off-river reference site was Three-Mile Pond, which is located east of the Housatonic River near GE River Mile 94. More specific locations of these sites are shown in Figure 1. The fish were held in cages at the collection sites until May 12, 1999, when they were transported to CERC in Columbia, MO. The fish from the four collection sites were transported by truck in separate aerated compartments, each containing approximately 1135 L of water. The fish were treated with 3-5 parts per thousand salt to reduce handling stress during the 20-h trip to CERC (Piper et al. 1982). Upon arrival at CERC on May 13, 1999, the largemouth bass were immediately stocked into experimental ponds. The bluegills were held in 1600-L fiberglass tanks under flow-through conditions until initiation of reproductive studies at a later point in time.

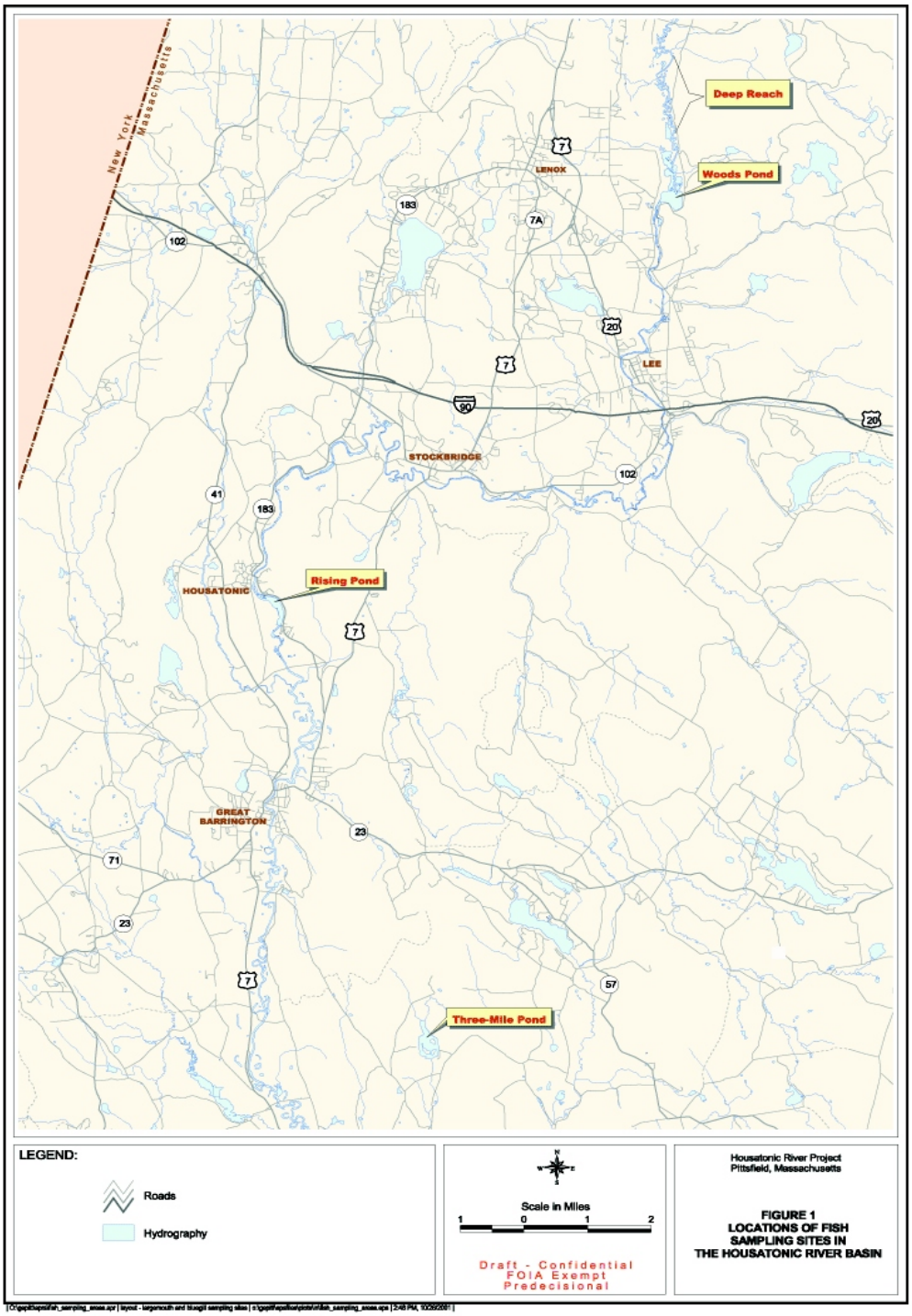


Figure 1. Locations of fish sampling sites in the Housatonic River Basin

4.2 Spawning of Largemouth Bass and Rearing of Embryos

The intent of this portion of the study was to evaluate the ability of largemouth bass collected from the Housatonic River Basin sites to spawn and to determine the occurrence of potential adverse effects during the development of resultant offspring. The bass were stocked on May 13, 1999 into eight 0.1-hectare ponds for spawning (two ponds were randomly assigned to each Housatonic River Basin collection site). The fish were weighed and efforts were made to distribute biomass approximately evenly across ponds. Also, to ensure that fish of both sexes were added to each pond, efforts were made to distinguish males from females through observation of coloration, general external morphological differences, appearance of the urogenital opening, and by penetration of the gonadal duct with a blunt probe. Determination of the sex of an individual was based upon agreement among several of these parameters (Snow 1963). A target distribution of six males and six females per pond was established. However, since sex determination of the fish was inexact, an additional fish was stocked in cases where the distribution was particularly uncertain. Excess fish from each study site (fish not used for the reproduction studies) were weighed and measured for length. Additionally, measurements were made on gonads and livers for subsequent calculation of gonadal (GSI) and liver (LSI) somatic indices (Dethloff and Schmitt 2000). Blood samples were also collected from these excess fish for evaluation of reproductive hormones and vitellogenin. All samples were processed in general accordance with the procedures described for the Biomonitoring of Environmental Status and Trends (BEST) Program of the USGS (Schmitt et al. 1999; Schmitt and Dethloff 2000).

Each experimental pond was initially provided with 6 spawning substrates (0.5 x 0.6 m mats constructed from latex-coated coconut fiber, similar to those used by Chastain and Snow 1965) placed at depths from 0.3 to 1.0 m (Figure 2). Additional mats were added in areas where territoriality of male fish was noted. Each nest site was marked with a float and spawning behavior was monitored twice daily. Once spawns were confirmed on the mats, they were retrieved and brought into the laboratory. Each group of eggs collected from the spawning mats was treated as a separate spawning event. In the laboratory, mats were placed in a 1.5% sodium

sulfite solution for 5-7 min to minimize adhesiveness, allowing for egg removal and separation. Spawns were initially transferred to 500 mL plastic vessels with in-flowing well water designed to afford a gentle rolling action to the eggs to minimize clumping. The spawns were held in this manner to provide initial acclimation of the eggs to laboratory water quality and temperature conditions. After initial acclimation, the spawns were subdivided and placed into the hatching and rearing chambers. Well water at CERC typically has a pH of about 8 and alkalinity and hardness of 250-300 mg/L $CaCO_3$, which is similar to the Housatonic River for pH, but has a higher buffering capacity. Temperature, flow, and aeration were monitored throughout the experiment.

Figure 2. Spawning mats used in experimental ponds during Housatonic River Basin largemouth bass reproduction studies.

Subsequently, samples of eggs from each spawning event were distributed into six replicates of 100 eggs each for growth, survival, and developmental determinations. Two additional samples of eggs from each spawn were sampled temporally for histological examination and immuno-histochemical analysis. The developing embryos were incubated generally as described by (Piper et al. 1982), in flowing well water. The hatching and fry rearing system consisted of rearing baskets suspended in a constant-temperature, aerated, flow-through water bath. The eggs were hatched and the fry were raised in the rearing baskets through the duration of the studies. The rearing baskets were constructed from 100 mL polyethylene specimen cups with three 2 x 3 cm openings symmetrically cut around the sidewalls of the container. The openings were covered with stainless steel screen (30 X 30 mesh, 0.010" diameter wire) to retain embryos, yet allow flow of water into and out of the containers. Air stones were placed in the surrounding water bath to enhance the movement of water through the rearing baskets. Baskets were placed in the water column to attain an approximate volume of 60 mL for the 100 eggs contained in each basket. Eggs and hatched embryos were maintained in the rearing baskets until the fry reached the swim-up life stage. The rearing baskets were cleaned daily and dead eggs were removed with a pipette. Deformities in the developing embryos and fry were monitored throughout development. Standard symptoms of an Ah-R mediated mode of action (Peterson et al. 1993) including mortality and measures of gross physical abnormalities and pathology (e.g. edema, hemorrhage, and craniofacial anomalies) were noted and recorded. Embryos and fry were observed under a dissecting microscope and photographs were taken to document examples of the deformities observed. Eggs and fry from the additional replicates were periodically sampled for subsequent histological analysis. The samples were preserved in 10% formalin until further processing.

After swim up, the surviving fry from all replicates within a spawn were pooled. Weight and length determinations were made and 25 of the surviving fry were placed back in each of the six replicate rearing vessels used for each spawning group. Feeding commenced at this point of the study. Fish were fed 24-hr-old *Artemia salinas* by hand pipetting a known concentration of nauplii to each chamber. The culture of the artemia followed standard practices (CERC SOP

P.525). The nauplii were fed to the largemouth bass fry at 3-hour intervals from 6:00 am to 9:00 pm. Photoperiod was 16 hours light: 8 dark and lighting intensity was approximately 100-200 lux. Dead fry, feces, and excess food were removed by pipette prior to each feeding. At the termination of the study, 15 days post swim up, the fry were examined for gross pathologies, weighed, and lengths were taken to assess growth rates. Growth rates were assessed by comparison with the initial swim-up fry weights and lengths for fry from each of the Housatonic River Basin sites. Samples of fry were also taken upon termination of the study for biochemical and histological evaluation.

Upon completion of the reproductive portion of the study, adult fish were sacrificed for measurement of biochemical and physiological indicators of contaminant exposure and for preparation of organic contaminant extracts for use in the egg injection studies in Phase II. The samples were necropsied in accordance with the procedures described for the Biomonitoring of Environmental Status and Trends (BEST) Program of the USGS (Schmitt et al. 1999; Schmitt and Dethloff 2000). Ovary samples were also taken for the chemical exposure assessment portion of the Phase I studies. These samples were stored at -20°C until being processed for chemical analysis (see Section 4.6 for details). Carcasses of the adult largemouth bass from the Phase I studies were used for chemical analysis and preparation of the organic extracts for the Phase II studies. They were logged into a centralized sample tracking system and stored at -20°C until extracted and analyzed.

4.3 Biochemical and Histological Evaluations of Adult Largemouth Bass

In addition to assessing the nature and extent of contaminant exposure through analytical measurements of OCs, PCBs, PCDDs, and PCDFs, a suite of biological indicator evaluation procedures was applied to the adult largemouth bass upon completion of spawning. The bioindicators employed included ethoxyresorufin-O-deethlyase (EROD) induction, Western Blot and immunohistochemical analysis of Cytochrome P450 1A.

7-Ethoxyresorufin-O-deethylase induction - Induction of cytochrome P450 1A in adult hepatic tissue was assessed by measuring the catalytic activity of 7-ethoxyresorufin-O-deethylase (EROD). This assay is based on the work of Pohl and Fouts (1980). Preparation of hepatic microsomes and EROD analysis was performed in basic accordance with CERC SOPs P.123 and P.124. Microsomal preparation involved homogenization of liver tissue in cold phosphate buffer (pH 7.4) with two passes of a hand-held Tissuemizer® (Omni International, Warrenton, VA). After centrifugation for 25 min at 9000 g and 4˚ C, the supernatant fraction was centrifuged at 105,000 g for 50 min at 4˚ C. Microsomal pellets were re-suspended in phosphate buffer and then centrifuged again at 105,000 g for 50 min. The resulting pellet was again re-suspended in phosphate buffer and the EROD assay was performed on the same day as the microsomal preparation. Enzymatic activity of cytochrome P450 1A, measured as the conversion of 7-ethoxyresorufin to resorufin, was assessed in triplicate samples per fish (Pohl and Fouts 1980). Microsomal samples (5 nL) were added to 96-well microtitre plates and mixed with 50 nL of 10 µM ethoxyresorufin, 50 nL of 4.3 mM NADPH, and 50 nL of phosphate buffer (all reagents at 25˚ C). Plates were incubated for 10 min at 25˚ C and then scanned on a Cytofluor 2300 plate reading fluorometer (Perseptive Biosystems, Framingham, MA) with the following settings: emission filter (590 nm), excitation filter (530 nm), sensitivity 3, and 10 scans at a scan cycle of 60. All resorufin concentrations were calculated based on a resorufin standard curve. Immediately following the EROD scan, protein content of the mixture was determined fluorometrically using the method of Kennedy and Jones (1994).

Western Blot and immunohistochemical analysis of Cytochrome P450 1A - The presence of Cytochrome P450 1A (CYP 1A) is widely used as a biomarker for assessing exposure to environmental contaminants. Western Blot analysis allows both qualitative and quantitative identification of CYP 1A protein. This procedure was used to assay CYP 1A in liver samples of adult largemouth bass in accordance with CERC SOPs P.552, P.553, and P.554. Liver microsomes were prepared, and protein concentrations determined, as described above for EROD (CERC SOPs P.123 and P.124). Microsomes were then diluted with sufficient PBS buffer to attain a total protein concentration of 1µg/µL. After additional dilution with PBS, incubation at

92˚ C in a water bath for 2 min, and centrifugation at 10,000 rpm for 1 min, 15-25 µL of the supernatant (containing 12-20 µg of total protein) was added to each lane on polyacrylamide gels. Following separation by electrophoresis, the proteins were transferred to nitrocellulose paper and assayed with mAb 1-12-3 antibody (Park et al. 1986) and goat anti-rabbit IgG. Following color development of the samples, the Western Blots were scanned into a computer image. Digital analysis of density was used as a determinant of CYP 1A concentration. Immunohistochemical techniques were also employed for determination of Cytochrome P450 1A in livers of adult largemouth bass. The methods used were essentially as described below for largemouth bass offspring.

Steroid hormone analysis - Planar halogenated hydrocarbons can affect natural steroid hormone levels, potentially affecting reproduction in fish (Munkittrick et al. 1992). To determine if PCBs in the Housatonic are interfering with steroid hormone regulation, levels of 17ß-estradiol and testosterone were measured in plasma from fish collected at the four study sites. The radio-immunoassay (RIA) technique described in van der Kraak et al. (1984) was employed. Briefly, plasma samples (50 nL) were combined with 1-3 mL of phosphate buffer (0.05 M, pH 7.6, containing 0.1% gelatin) and heated at 70˚ C for one hour. Testosterone and 17ß-estradiol were measured using rabbit anti-testosterone and anti-17ß-estradiol serum. Diluted, heated plasma or appropriate standards (200 nL each) were combined with 200 nL of tritiated estradiol or testosterone and 200 nL of diluted antiserum. Samples were then incubated for 16-20 h at room temperature, after which they were cooled on ice for 15 min prior to the addition of 200 nL of phosphate buffer containing 0.5% Norit A charcoal and 0.05% Dextran T-70. Samples were then incubated for 10 min on ice, followed by a 10 min centrifugation at 4000 rpm and 4˚ C. The resulting supernatant was poured directly into scintillation vials and combined with 6 mL of scintillation fluid for counting. The antibody concentrations in the RIA procedure were adjusted so that 45-55% of the radio-labeled steroids were bound in the absence of competitor. All plasma samples were analyzed in duplicate.

Vitellogenin determination - Vitellogenin concentrations in plasma samples from the adult largemouth bass were quantified in general accordance with the ELISA (Enzyme-Linked Immunosorbent Assay) technique described by Folmar et al. (1996), using the monoclonal antibody (Mab HL 1147 2D3-3A9) produced and characterized by Dr. N.S. Denslow at the University of Florida. Purified antibody was diluted to 10 µg/mL in phosphate-buffer saline, coated onto 96-well microtiter plates (50 µg/well), and stored overnight at 4˚ C. Plates were then washed with tris-buffered saline Tween (TBST), blocked with 0.1 percent bovine serum albumin in TBST at 360 µL per well for two hours at room temperature, and then washed three more times with TBST. Plasma samples were then diluted in 0.1 percent bovine serum albumin in TBST, added to the microtiter plates, and incubated overnight. Standard curves were prepared by adding serial dilutions of purified carp vitellogenin to control plasma made from male carp known to contain no vitellogenin. Samples and controls were then washed with TBST, incubated with 50 µL of rabbit anti-vitellogenin ploYclonal antibody (OF114, produced and characterized by Dr. NS. Denslow, Univeristy of Florida) per well, and incubated for 2 hours at room temperature. Subsequently goat anti-rabbit IgG linked to alkaline phosphatase was added and incubated at room temperature for 2 hours. After a final washing with TBST, 100 µL of *p*-nitro phenyl phosphate in carbonate buffer (pH 9.6) was added to each well and incubated for 30 min. The intensity of the resulting yellow color was quantified at 405 nm and compared to values obtained with the standards to determine vitellogenin concentrations.

Histological evaluation - Liver and gonad tissue was collected from adults for histopathological examination. Preparation of these tissues for histological analysis was performed in general accordance with procedures outlined in CERC SOP P.542. One-millimeter sections of liver and gonad tissues obtained from a sub-sample of individuals from each site were preserved in 10% formalin, washed in 10 mM HEPES (pH 7.4) and dehydrated by immersion in graded aqueous solutions of ethanol ranging from 50% to 100% ethanol. This was followed by immersion in xylene and subsequent infiltration with paraffin. The paraffin-embedded samples were sectioned at 7 µm (CERC SOP P.550), placed onto silanized slides (CERC SOP P.548), and stored at room temperature until staining. In preparation for histochemical staining, tissue sections were

dewaxed with xylene and then rehydrated to water by immersion in graded solutions containing decreasing concentrations of ethanol ranging from 100% to 0% (CERC SOP P.540). Liver sections were then stained with hematoxylin and eosin following procedures outlined in CERC SOP P.539 for evaluation of presence or absence of macrophage aggregates and general histopathological condition. Other liver sections were stained with Prussian Blue (CERC SOP P.541) for evaluation of pigments in macrophages. Liver sections were also stained using the Periodic Acid Schiff procedure (CERC SOP P.538) for evaluation of glycogen. Gonad sections were prepared in a manner similar to that described above for liver and stained following the general nuclear stain procedure for hematoxylin and eosin (CERC SOP P.539). Stained gonad sections were subsequently evaluated for pathologies and stage of maturation.

4.4 Biochemical and Histological Evaluations of Largemouth Bass Offspring

Apoptotic cell death - Previous work in our lab has demonstrated DNA degradation and morphological changes that are characteristic of apoptosis in cells of the embryonic vasculature of Japanese medaka exposed to 2,3,7,8-TCDD (Cantrell et al. 1996, 1998). To determine if contaminants in Housatonic fish exert toxic effects through a similar mechanism, apoptosis was examined in the paraffin-embedded tissue sections prepared above in general accordance with CERC SOPs P.556 and P.547. Rehydrated tissue sections were analyzed for the presence of apoptotic cells by using a terminal transferase-based assay which tags 3´OH DNA strand breaks with a peroxidase-conjugated antibody. The presence of numerous 3´OH DNA strand breaks is a hallmark of apoptosis (Compton 1992). Apoptosis detection was accomplished using a commercial apoptosis detection kit (Oncor, Gaithersburg, MD). The rehydrated tissue sections were washed in phosphate-buffered saline (PBS) and digested with 20 µg/mL solution of Proteinase K. Slides were then washed in PBS and incubated with a digoxigenin-conjugated nucleotide in the presence of terminal deoxynucleotidyl transferase (TdT), followed by incubation with a peroxidase conjugated anti-digoxigenin antibody (Compton 1992; Cantrell et al. 1998). Image analysis was performed using a Nikon inverted Diaphot-TMD microscope.

Immunohistochemical analysis of Cytochrome P450 1A - The level of Cytochrome P450 1A induction observed following contaminant exposure is often used to infer the presence of compounds such as PCBs that can exert effects through the aryl hydrocarbon receptor (Ah-R). Immuno-detection of Cytochrome P450 1A in paraffin-embedded tissue sections was accomplished using an indirect peroxidase-labeling method (CERC SOPs P.551 and P.547). The tissue sections were dewaxed and rehydrated in a PBS solution containing 1% bovine serum albumin. The rehydrated slides were incubated in 0.5% H_2O_2 in methanol for 5 min to block endogenous peroxidase activity. The tissue sections were then immunochemically stained using monoclonal antibody (mAb) 1-12-3 made against scup P450E as the primary antibody (Park et al. 1986), and observed for peroxidase staining (red-brown deposit) using light microscopy. Companion sections were incubated with a non-specific monoclonal immunoglobulin G2 (Smolowitz et al. 1991) to confirm the specificity of the observed responses. Selected sections were counter stained with Mayer's hematoxylin to enable differentiation of cellular structures. Qualitative assessments were then made as to the occurrence of the responses in various tissue types.

Histological evaluation - Preparation of largemouth bass fry for histological analysis was performed in general accordance with CERC SOP P.549. Samples of fry were preserved in 10% formalin, washed in 10 mM HEPES (pH 7.4) and dehydrated by immersion in graded aqueous solutions of ethanol ranging from 50% to 100% ethanol. This was followed by immersion in xylene and subsequent infiltration with paraffin. The paraffin-embedded samples were sectioned at 7 μm and placed onto silanized slides (CERC SOPs P.548 and P.550), then stored at room temperature until staining. In preparation for histochemical staining, tissue sections were dewaxed with xylene and then rehydrated to water by immersion in graded solutions containing decreasing concentrations of ethanol ranging from 100% to 0% (CERC SOP P.540). Tissue samples were then stained following the general nuclear stain procedure for hematoxylin and eosin (CERC SOP P.539) and Periodic Acid Schiff (CERC SOP P.538), and subsequently evaluated for lesions.

4.5 Spawning of Bluegills

The field-collected bluegills were held in circular tanks until the largemouth bass were removed from the experimental ponds. During this period of time, the bluegills were first fed fathead minnows and then transitioned to a Purina Trout Chow® diet. On July 15, 1999, the bluegills were sedated with CO_2 gas, sexed, and transferred to enclosures in four of the 0.1-hectare experimental ponds. Ten enclosures (1.5 m diameter circular cages constructed from PVC-coated 1" x 1" (2.54 x 2.54 cm) wire mesh) were placed in each of the four ponds (Figure 3). The four Housatonic River Basin collection sites were then randomly assigned to the forty enclosures and the bluegills were distributed (two males and two females from a site per enclosure) in a randomized block design (Figure 4). Two spawning mats (0.1 x 0.15 m) were placed in each enclosure, and an Aquamat™ screen was placed between the mats as a visual barrier. At the time of stocking, the temperatures of the four ponds were all within 1° C of each other (average 18.6° C), compared to 17.6° C for the holding tanks. Dissolved oxygen levels averaged 8.25 mg/L. Subsequently, dissolved oxygen and temperature measurements were made twice daily in the ponds. Fish were fed one time per day in the morning, and spawning behavior in the enclosures was monitored two times daily.

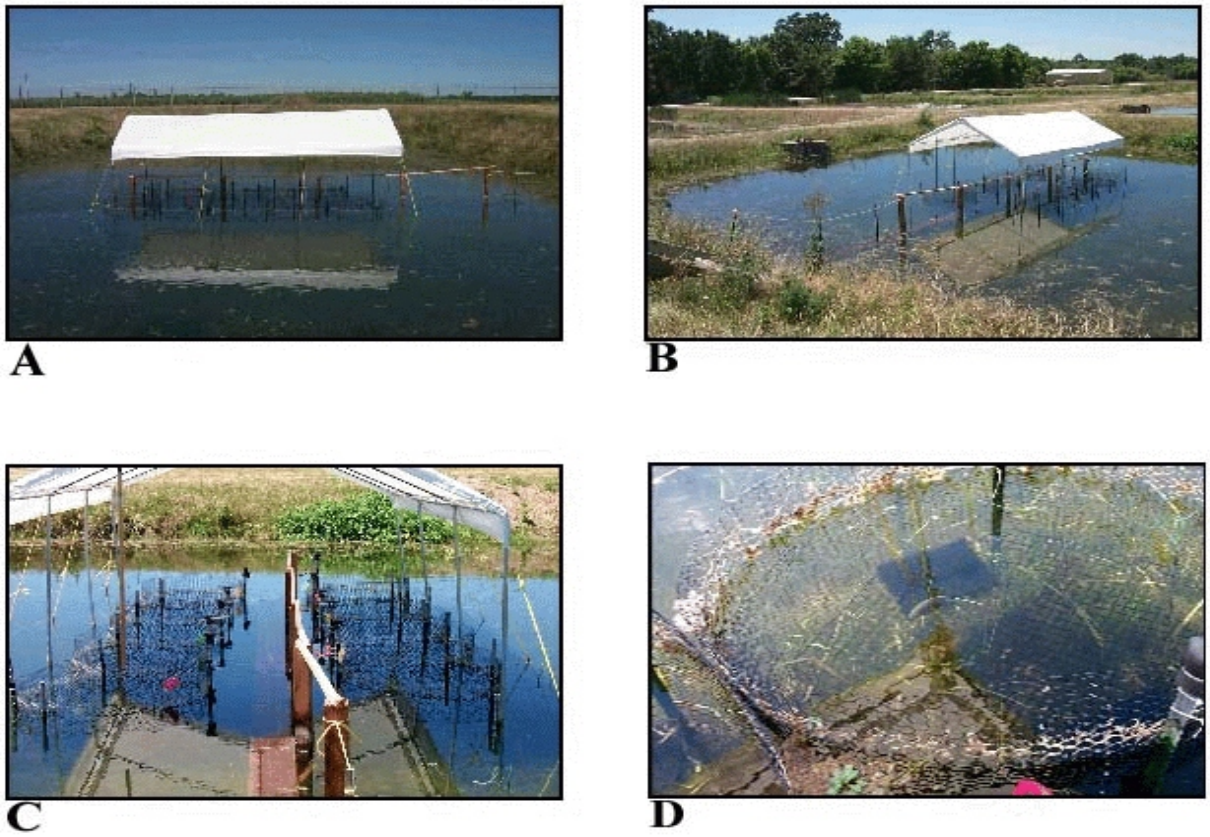
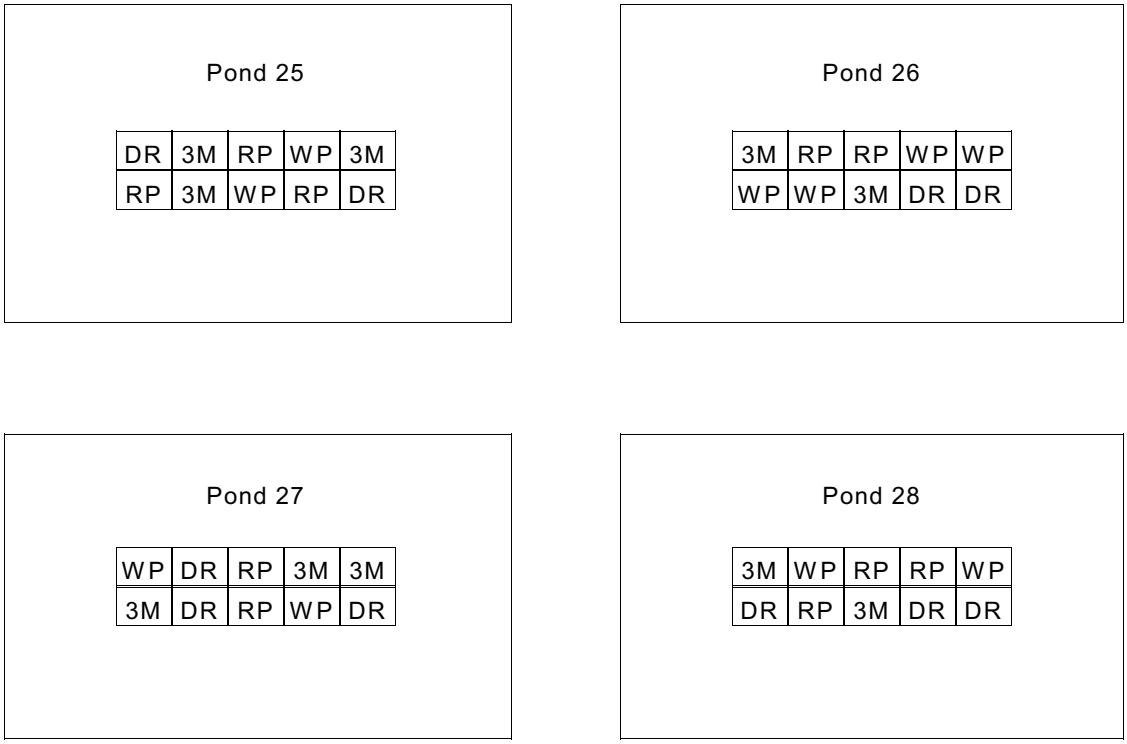


Figure 3. Enclosures used for Housatonic River Basin bluegill reproduction studies.



3M = Three-Mile Pond, RP = Rising Pond, WP = Woods Pond, DR = Deep Reach

Figure 4. Distribution of sampling sites within experimental ponds during Housatonic River Basin bluegill reproduction studies.

4.6 Chemical Characterization of Fish Tissue Extracts

Chemical characterization of fish tissued (whole carcasses and ovaries) for the Phase I portion of these studies included congener-specific PCB analysis and quantification of planar PCBs, chlorinated dioxins and furans, and organochlorine pesticides. Characterization of the organic extracts used in the Phase II egg injection studies included measurement of organochlorine pesticides, PCBs, PCDFs, and PCDDs found in the extracts. The determination of the amounts of dioxin-like chemicals in the fish tissue composites and dosing solutions generally followed the methods of Feltz et al. 1995, Peterman et al. 1996, and Echols et al. 1997, as follows. The raw fish composites were homogenized, dried with sodium sulfate, spiked with the appropriate standards and column-extraction with methylene chloride. All the concentrated extracts were then treated by a two-stage reactive cleanup; first employing a sulfuric acid silica gel/potassium silicate column followed by a column of sulfuric acid silica gel/potassium silicate/silica gel. High pressure gel permeation chromatography (HP-GPC) cleanup then was used to remove residual lipids (Feltz et al. 1995).

The fish tissue extracts and aliquants of the final dosing solution extracts were fractionated according to the procedures in Echols et al. (1997) using high performance porous graphitic carbon chromatography (HP-PGC). The three fractions obtained were: 1) bulk PCBs through mono-*ortho* chlorine substituted PCB congeners, 2) non-*ortho* chlorine substituted congeners, and 3) 2,3,7,8-PCDDs and PCDFs. The chromatographic separation conditions and detection methods for each of these three fractions collected from the carbon separation are described below.

The instrumental analysis for the determination of the congener-specific PCBs (Fraction 1) was by GC/ECD. Congener-specific PCB analysis for determination of PCB profiles of fish generally followed the methods described by Schwartz and Stalling (1991). PCB congeners were analyzed with a Hewlett-Packard 5890A Series II gas chromatograph (Hewlett-Packard, Palo Alto, CA, USA) equipped with a ^{63}Ni electron capture detector (ECD) and a Hewlett-Packard 7673

autosampler. The detector temperature was 330° C and the injector was set to follow the oven temperature. Injections were 1 nL cool on-column onto a 30 m x 0.25 mm x 0.25 µm DB-5 capillary column (J & W, Folsom, CA, USA) with a 1 m x 0.53 mm deactivated retention gap connected to the column, with H_2 carrier gas maintained at 12 psig, linear velocity 60 cm/s. The oven temperature program was as follows: 60° C, 10° C/min to 120° C, 2° C/min to 240° C, and then 10° C/min to 320° C with a 5-minute hold. Data was collected with PC-based PE Nelson chromatography software (Perkin Elmer, Norwalk, CT, USA). Quantification of approximately one hundred PCB congeners were based upon an internal standard calibration.

Non-ortho PCBs (Fraction 2) were analyzed by gas chromatography/high resolution mass spectrometry (GC/HRMS) as described by Peterman et al. 1996, using an HP 5890A capillary gas chromatograph interfaced to a VG 70-250S high resolution mass spectrometer. An HP 7673 autosampler was used to introduce 2 nL of the enriched extract from a conical vial onto a 2.5 m x 530 µm deactivated fused silica retention gap via a cool on-column injection technique. A 50 m x 200 µm x 0.11 µm Ultra-1 capillary column (Hewlett-Packard's equivalent to DB-1) was used to resolve most non-*ortho*-PCBs from interferences. The GC oven was held at 120˚C for 1 min, programmed to 240˚C at 2.2˚C/min, then ramped to 310˚C at 5˚C/min, and a final hold of 5 min. Helium carrier gas was maintained at 48 psig with an initial linear velocity of 25 cm/s. The analytical column was put into the MS interface, heated at 310˚C. All column-to-column connections were made using fused silica press-tight connectors. The VG GC/HRMS system was tuned to 10,000 resolution and calibrated using perfluorodecalin, and mass windows were established for two groups of non-*ortho*-PCBs. Group 1 from 23-48:00 min included ions for Cl_4-biphenyls 77 and 81 and Cl_5-biphenyl 126; Group 2 from 48:05-65 min included ions for Cl_6-biphenyl 169. Within each mass window, the two most abundant ions were measured for positive identification and quantification of each analyte. The ion responses were quantified and averaged, unless interferences occurred. Within each mass window, additional ions monitored the responses of higher-chlorinated, potential interfering PCB congeners, Cl_{4-8} naphthalenes (PCNs), Cl_{3-5} terphenyls (PCTs), Br_5- and Cl_6-diphenyl ethers, and Cl_4-PCDF (to ensure no breakthrough of PCDFs). The amount of each analyte detected was inherently self-corrected for

losses through the whole analysis (extraction, isolation of analytes, and instrumental analysis). A calibration curve describing the response of each native congener to that of an isotope-labeled congener was used directly in the calculations and its range of values was determined in the calibration procedure. Concentrations of the native PCB congeners in standards ranged from 0.25 to 2,500 pg/nL. Each calibration curve was specifically matched to the range of analyte responses in the sample set.

Finally, PCDD/PCDFs (Fraction 3) were eluted through basic alumina (according to CERC SOP C5.152) for removal of potential co-contaminants such as polychlorinated diphenyl ethers (PCDEs), residual polychlorinated naphthalenes (PCNs), and PCBs. The instrumental internal standard, ^{13}C-labeled 1,2,3,4-PCDD, was added to each semi-conical autosampler vial prior to transferring the PCDDs/PCDFs. Determination of PCDFs and PCDDs was accomplished using GC/HRMS by monitoring five sequential mass windows of selected ions during the chromatographic separation (according to CERC SOP C5.183 and Peterman et al. 1996). Analysis by GC/HRMS was performed using an HP 5890A capillary gas chromatograph interfaced to a VG 70-250S high resolution mass spectrometer. An HP 7673 autosampler was used to introduce 2 nL of the enriched extract from a conical vial through a spiral uniliner onto a 5 m x 320 µm deactivated fused silica retention gap via a heated (285° C) direct inlet. The analytes of interest were separated on a 50 m x 200 µm x 0.11 µm Ultra-2 (Hewlett Packard) capillary column with an initial hold of 1 min at 120° C followed by a ramp to 200° C at 20° C/min, a second ramp to 300° C at 2.3° C/min, and a final hold of 5 min. The He carrier gas was maintained at 44 psig with an initial linear velocity of 25 cm/s. All column-to-column connections were made using fused silica press-tight connectors. The VG GC/HRMS system was tuned to 10,000 resolution and calibrated using perfluoro-tetradecahydro-phenanthrene, and mass windows were established for five ion groups to measure Cl_{4-8} PCDFs and PCDDs. These windows were monitored sequentially during the temperature program. Within each mass window, the two most abundant ions were measured for positive identification and quantification of each analyte. The ion responses were quantified and averaged, unless interferences occurred.

Within each mass window, additional ions monitored any responses from Cl_{5-9}-PCDEs, Cl_{5-7}-terphenyls, Cl_{6-7}-PCNs, Cl_{3-8} dibenzothiophenes, and Cl_{3-8} phenanthrene/anthracenes.

Organochlorine pesticide concentrations were determined in 1) the ovaries of largemouth bass used in Phase I studies; and 2) the ground fish samples and resulting dosing solutions used for the Phase II egg injection studies. A portion of fish tissue (5 g) was extracted and processed separate from the analysis of dioxin-like chemicals described above. The extraction, clean-up, chromatography, and detection of organochlorine pesticides generally followed the methods of Ribick et al. (1981). Briefly, the ground fish tissue or dosing solution (in triolein) was dried with sodium sulfate (4-5 times by weight), column extracted with methylene chloride, and fractionated on silica gel. Organochlorine pesticides were analyzed in accordance with CERC SOP P.460. The procedures included organic solvent extraction and a non-destructive fractionation scheme that utilizes size exclusion chromatography followed by absorbent chromatography to purify sample extracts and separate contaminant residues into two fractions: 1) PCBs and non-polar pesticides, and 2) slightly polar pesticides. Briefly, aliquants (5 g) of the samples were ground and dried with 4 times (by weight) sodium sulfate. The resulting homogenates were loaded in an extraction column, spiked with procedural internal standards (PCB 029, 155, 204, dibutyl chlorendate, and 2,4,5,6-tetrachloro-m-xylene), and extracted with methylene chloride. A portion of the sample was used for gravimetric lipid determination. Another portion (2 g-equivalent) was used for the rest of the determination of organochlorine pesticides through the clean-up procedures. The 2 g-equivalent portions of the extracts were first processed for lipid removal by open-column gel permeation chromatography (GPC) in accordance with CERC SOP C5.155), followed by high-performance gel permeation chromatography (HP-GPC) in accordance with CERC SOP C5.200). Following HP-GPC, the extracts were fractionated on silica gel into two fractions. The elution solvents used in this fractionation were 100% hexanes for Fraction 1 and 60/40 hexanes/methy t-butyl ether for Fraction 2. The collected fractions were evaporated to volume to achieve a concentration of 1 gEq/mL and were ready for instrumental analysis. Organochlorine pesticide fractions (SODS-1 and SODS-2) were adjusted to a final volume of 4 mL and the instrumental internal standards were added (PCB congeners 030 and

207). Individual organochlorine pesticides were measured in both fractions by GC/ECD. Analyses were performed using Hewlett-Packard 5890 Series II GCs with cool on-column capillary injection systems and Hewlett-Packard model 7673 autosamplers. For all analyses, a 3-m section of 0.53 mm i.d. uncoated and deactivated (Restek Corp., Inc.) capillary retention gap was attached to the front of the analytical column by a "Press-Tight" (Restek Corp., Inc.) union. The analytical column for the SODS-2 fraction was a 30-m x 0.25-mm DB-35ms (J&W Scientific). The H_2-carrier gas was pressure regulated at 11 psi. The temperature program for the analysis was as follows: initial temperature 90° C, immediately ramped to 165° C at 15 C/min, held 3 minutes, then ramped to 260° C at 2.5° C/min with a 5 minute hold, and finally ramped to 320° C at 10° C/min, and held for 1 min. The ECD temperature was 330° C. Capillary GC/ECD data were collected, archived in digital form, and processed using a PE-Nelson chromatography data system that included the Model 970 interface and Version 6.1 of Turbochrom Workstation™ chromatography software on a Pentium III microcomputer. Six levels of organochlorine pesticide standards were used for calibration, with each pesticide at concentrations ranging from 1 to 80 ng/mL. Organochlorine pesticide results for the samples were given as concentrations expressed as nanograms of analyte per gram of sample (wet weight).

4.7 Data Analysis

Gross pathologies observed during the egg and sac-fry stages of development were recorded and evaluated for contaminant-related increases by chi-square analysis (Snedecor and Cochran 1980). Survival and growth data were analyzed using ANOVA (SAS 1988). Confidence levels were set to 95% (Type I error set at 5% or $p \leq 0.05$). ANOVA and a multiple post-hoc comparison, the least-significant difference (LSD) test, was used to ascertain differences among sites for EROD induction, vitellogenin synthesis and steroid hormone levels in adult fish from the Housatonic River. Significance levels were set at $p \leq 0.05$. The statistical analysis of the analytical chemistry data consisted of mean concentration comparisons among sites. Concentrations of total PCBs

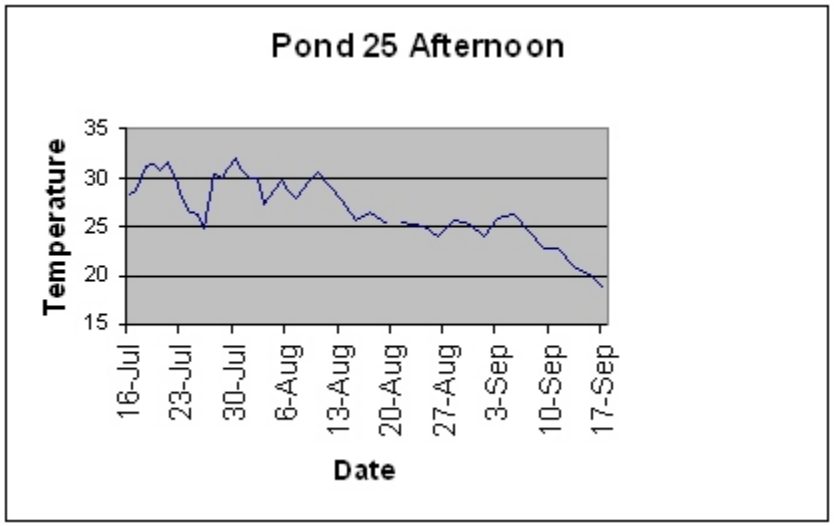
and TEQs generated from the analytical chemistry and an additive model of toxicity were compared among sites by ANOVA (SAS 1988) if assumptions of normality and homogeneity of variance were met, or by Kruskul-Wallace one-way analysis of variance (Snedecor and Cochran 1980) if assumptions were not met.

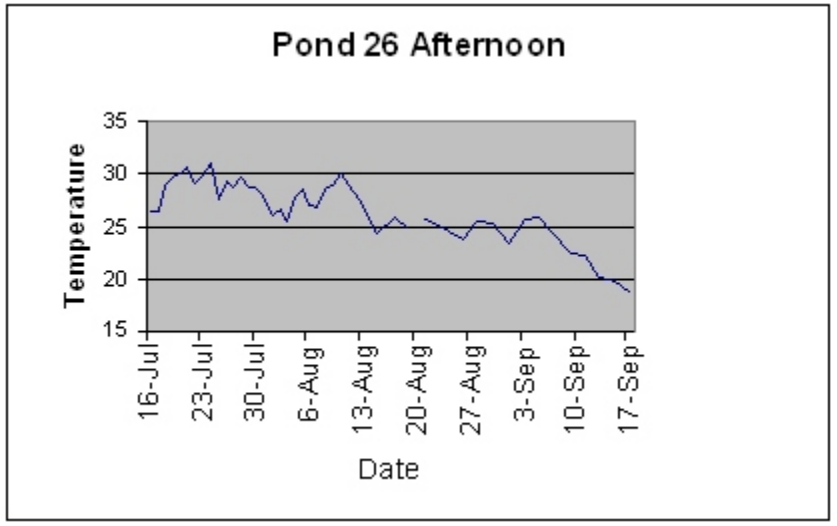
5.0 RESULTS AND DISCUSSION (Phase I)

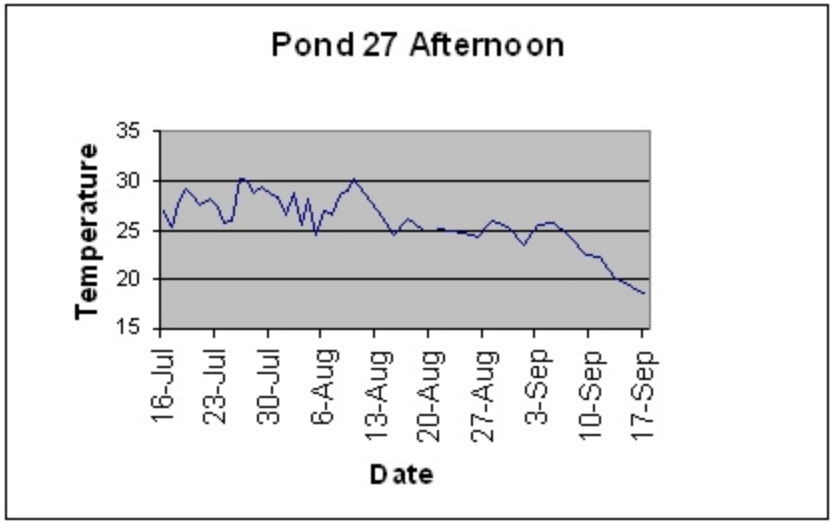
5.1 Spawning of Bluegills

Unlike the study with largemouth bass, detection and collection of bluegill eggs was largely unsuccessful. During the holding period, prior to transfer to the ponds, fish from Three-Mile Pond, Woods Pond, and Deep Reach incurred 5% mortality or less. However, 57% of the fish from Rising Pond died during the holding period, apparently infected with *Ichthyopthirius*. This may have been a secondary infection, since subsequent examination of fish from all sites showed significant infestation with the metacercaria of a parasitic trematode. Within a few days of placement into the enclosures in the ponds, bluegills were observed to be taking on spawning coloration and exhibiting breeding behavior. Afternoon temperature profiles (Figure 5) were similar across ponds, with minimum and maximum measured temperatures of 18.3° and 32.1° C, respectively. Afternoon dissolved oxygen concentrations remained within acceptable levels in all ponds with mean values ranging from 8.4 to 8.9 mg/L and minimum and maximum measured values of 4.7 and 12.9 mg/L, respectively (Table 1). Evaluation of weight, length, gonadal somatic index (GSI), and liver somatic index (LSI) of the extra fish suggested no obvious problems (Table 2). However, no eggs were obtained on the spawning mats, making it impossible to conduct the remainder of the study. On September 20-21, 1999 the study was terminated and all remaining fish were euthanized. Fish that had been held in the circular tanks (extras) and the relatively small number of fish that had died in the experimental cages (10% or less) were heavily infested with the metacercaria of an unidentified digenic parasitic trematode in kidney, liver, and heart tissue (Figure 6). However, it is unlikely that this was the only reason that we failed to obtain spawns. Upon draining the ponds, a few fry were observed, indicating

that a sparse amount of reproduction had occurred. The most probable reason for the failure to obtain spawns may be related to the long holding period before stocking. The bluegills had been held in circular tanks for two months, awaiting completion of spawning activity by the largemouth bass, prior to stocking in the ponds. This holding period may have disturbed the process of normal gonad maturation.







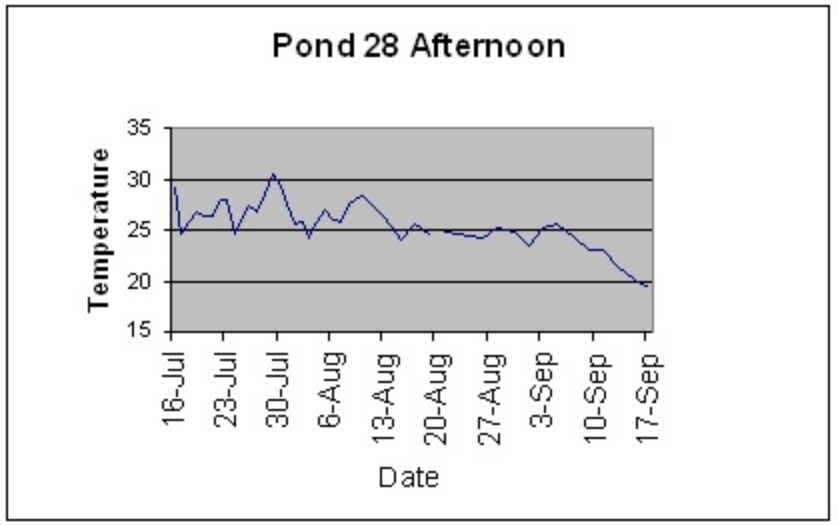


Figure 5. Temperature profiles of experimental ponds during Housatonic River Basin bluegill reproduction studies.

Table 1. Afternoon dissolved oxygen (DO) concentrations (mg/L) in experimental ponds during Housatonic River Basin bluegill reproduction studies.

Pond #	DO (mg/L) Mean ± SD	Minimum	Maximum
25	8.4 ± 1.4	5.0	11.4
26	8.4 ± 1.5	4.7	11.0
27	8.4 ± 1.4	5.4	11.1
28	8.9 ± 1.5	6.6	12.9

Table 2. Lengths, weights, gonadal somatic index (GSI), and liver somatic index (LSI) of extra adult bluegills from Housatonic River Basin sites. Note: these fish were not used in the reproduction studies. *

Site	n	Sex	Length (mm) Mean ± SD	Weight (g) Mean ± SD	GSI Mean ± SD	LSI Mean ± SD
Three-Mile Pond	1	F	153	66	1.05	0.75
	7	M	139 ± 7	45 ± 12	**	1.36 ± 0.50
Woods Pond	11	F	165 ± 17	90 ± 33	3.32 ± 2.56	1.20 ± 0.34
	3	M	146 ± 12	63 ± 19	0.38 ± 0.09	1.06 ± 0.14
Deep Reach	4	F	179 ± 6	125 ± 11	4.61 ± 2.55	1.13 ± 0.14
	2	M	163 ± 27	91 ± 55	0.36 ± 0.24	1.14 ± 0.30

* There were no extra brood fish from the Rising Pond site.
** Testes were too small to accurately measure.

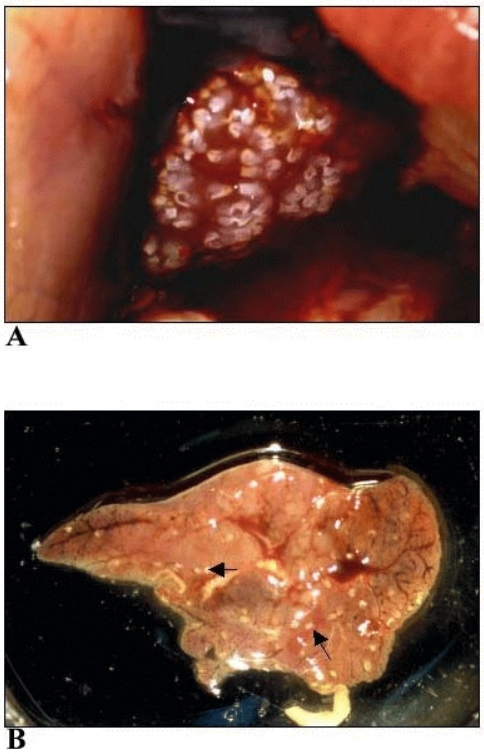


Figure 6. Metacercaria infestation in heart (A) and liver (B) of bluegills in Housatonic River Basin reproduction studies.

5.2 Spawning of Largemouth Bass

Largemouth bass from the Housatonic River were stocked into experimental ponds at CERC on May 13, 1999. The first spawn was detected on May 19 (Rising Pond) and the last spawn was detected on May 31 (Deep Reach) at pond temperatures between 21-24° C. Spawning in our ponds was consistent with the literature regarding black bass spawning temperatures (Breder 1936; Swingle 1956). A total of 27 spawn events were obtained, distributed across the Housatonic River sampling sites as follows: Three-Mile Pond (3 spawns), Rising Pond (7 spawns), Woods Pond (7 spawns), and Deep Reach (10 spawns; Table 3). Temperatures in the experimental ponds showed similar profiles (Figure 7), with minimum and maximum measured temperatures of 19.0° and 26.5° C, respectively. The maximum difference between any two ponds at any point in time was 1.5° C. Dissolved oxygen concentrations remained within acceptable levels in all ponds with mean values for ponds ranging from 9.1 to 12.4 mg/L and minimum and maximum measured values of 7.9 and 13.6 mg/L, respectively (Table 4).

Table 3. Numbers of adult largemouth bass males and females stocked and resulting numbers of spawns produced in Housatonic River Basin reproduction studies.

Site	Pond #	# Males	# Females	# Spawns
Three-Mile Pond	26	7	5	0
	28	7	6	3
Rising Pond	25	8	4	5
	30	4	7	2
Woods Pond	34	5	7	2
	35	7	4	5
Deep Reach	27	4	9	5
	31	3	9	5

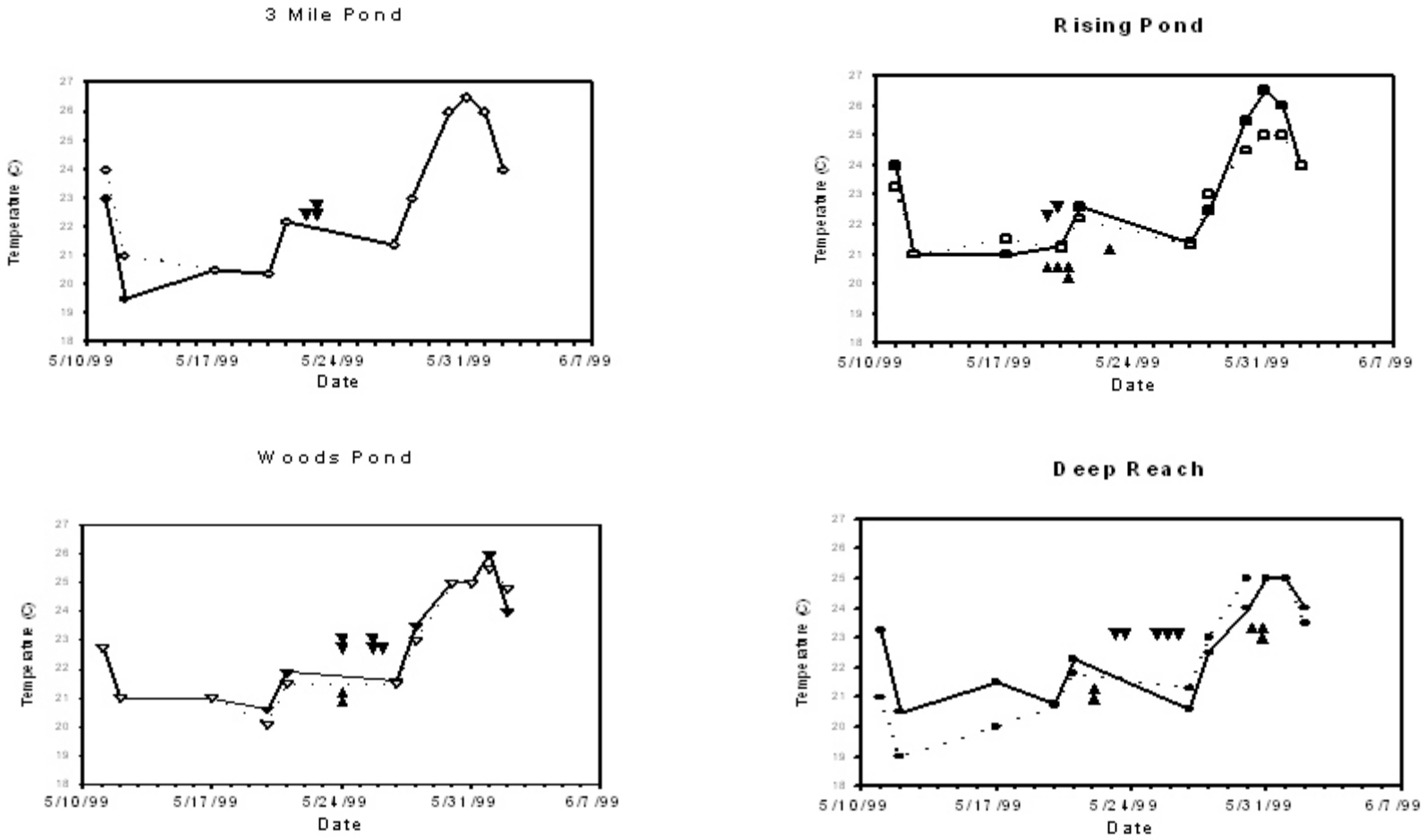


Figure 7. Temperature profiles of replicate experimental ponds and dates of spawning events during Housatonic River Basin largemouth bass reproduction studies.

Table 4. Dissolved oxygen (DO) concentrations (mg/L) in experimental ponds during Housatonic River Basin largemouth bass reproduction studies.

Site	Pond #	DO (mg/L) Mean ± SD	Minimum	Maximum
Three-Mile Pond	26	10.3 ± 0.7	9.8	11.1
	28	12.4 ± 1.2	11.2	13.6
Rising Pond	25	9.4 ± 1.1	8.2	10.3
	30	9.0 ± 1.7	7.9	11.2
Woods Pond	34	9.9 ± 1.0	8.9	10.8
	35	11.4 ± 1.4	10.5	13.0
Deep Reach	27	10.2 ± 1.3	8.8	11.4
	31	9.1 ± 0.4	8.8	9.5

5.3 Measurements in Adult Largemouth Bass

The quickness of the onset of spawning (only 9-11 days after stocking) and the short period of time until completion of spawning (2 days for Three-Mile Pond, 4 days for Woods Pond, 5 days for Rising Pond, and 10 days for Deep Reach) indicate that the fish were near physiological readiness for spawning at the time of collection from the Housatonic. Fish from all sites outwardly appeared to be in generally healthy condition, although females from the Three-Mile Pond reference site tended to be somewhat heavier than females from the other sites. Additionally, females from Three-Mile Pond tended to have a higher GSI value (Table 5). However, all GSI values fell into the same range as those reported for pre-spawning largemouth bass in an earlier study conducted in Columbia, MO (Brauhn et al. 1972). Weights, lengths, GSI, and LSI of fish not stocked into the ponds for reproduction from each of the study sites are shown in Table 5. Based on a U.S. Fish and Wildlife Service report on age determination of

largemouth bass from the Housatonic River watershed (Smithwood 1999), we estimate these fish (and those stocked into our ponds) to be in the range of 4 to more than 10 years old.

Table 5. Pre-spawn lengths, weights, gonadal somatic index (GSI), and liver somatic index (LSI) of adult largemouth bass from Housatonic River Basin sites. Note: these fish were not used in the reproduction studies. *

Site	n	Sex	Length (mm) Mean ± SD	Weight (g) Mean ± SD	GSI Mean ± SD	LSI Mean ± SD
Three-Mile Pond	2	F	336 ± 144	2142 ± 547	6.69 ± 0.07	1.61 ± 0.39
	13	M	337 ± 41	1158 ± 368	0.45 ± 0.26	1.49 ± 0.20
Rising Pond	5	F	363 ± 50	1583 ± 718	5.34 ± 2.28	1.05 ± 0.59
	2	M	340 ± 32	1325 ± 461	0.33 ± 0.11	1.07 ± 0.34
Woods Pond	4	F	327 ± 96	1650 ± 862	4.61 ± 0.61	1.86 ± 0.28
	2	M	336 ± 30	1283 ± 406	0.41 ± 010	1.72 ± 0.34
Deep Reach	13	F	357 ± 39	1608 ± 498	4.94 ± 1.56	1.86 ± 0.96
	4	M	339 ± 42	1433 ± 545	0.38 ± 0.13	1.34 ± 0.54

* There were no significant differences in mean values among sites at $p \leq 0.05$.

Statistical analysis of liver enzyme induction indicated that EROD activity of pre- and post-spawn fish did not differ. Therefore, data were pooled for subsequent analysis of site differences. In general, males tended to show a higher level of activity than females (Table 6). Mean hepatic EROD activity levels in fish from the Three-Mile Pond reference site (4.1 to 5.2 pmol/mgP/min) were consistent with basal levels reported in the literature (Adams et al. 1994; Schlenk et al. 1996ab). Mean values for Woods Pond and Deep Reach fish were 5-9 times higher than those in fish from the reference site. An even higher level of induction was observed in fish from Rising Pond (12-22 times reference site levels). However, variation among individual fish within sites resulted in some apparent differences not being significantly different (Table 6). The EROD induction observed in this study is greater than previously observed in PAH-exposed largemouth

bass (Haasch et al. 1992), and comparable or greater than that observed in largemouth bass caged over PCB-contaminated sediments in other locations (Haasch et al. 1993).

Table 6. Hepatic EROD activity in adult largemouth bass from Housatonic River Basin sites. Note: Includes pre-spawn fish and fish used in the reproduction studies.

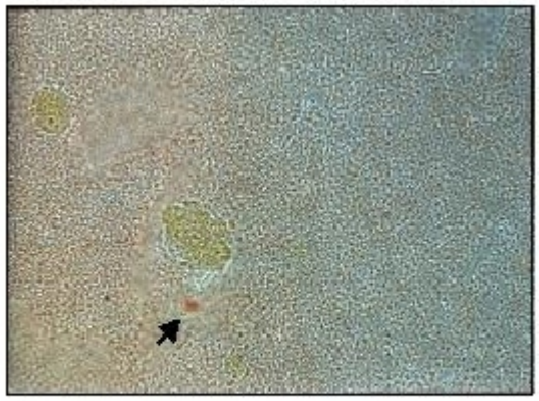
Site	n	Sex	EROD Rate (pmol/mgP/min) Mean ± SD	HousatonicRiver Site Value/Reference Site Value*
Three-Mile Pond	13	F	4.1 ± 2.4[a]	
	28	M	5.2 ± 3.4[a]	
Rising Pond	16	F	48.9 ± 62.0[b]	12
	14	M	114.7 ± 112.0[b]	22
Woods Pond	13	F	23.8 ± 20.9[c]	6
	15	M	39.1 ± 18.7[a]	7
Deep Reach	31	F	20.3 ± 21.9[c]	5
	10	M	46.1 ± 25.3[a]	9

Values, within sexes, with the same letter are not significantly different at $p \leq 0.05$.

* Less than a 10-fold increase indicates 'weak' induction
10 to100-fold increase indicates 'moderate' induction
Greater than 100-fold increase indicates 'strong' induction (Whyte et al. 2000).

In some cases, particularly when fish have been exposed to high levels of contamination for a long period of time, EROD activity may not faithfully reflect P450 protein levels. To further validate AH Receptor activity, we used Western Blot techniques to verify production of P450 protein. In general, there was a strong positive correlation between EROD activity and P450 protein levels. Fish from Deep Reach showed a positive relationship with a correlation coefficient of 0.74 (p=0.0056). Rising Pond fish showed a similar relationship with a correlation coefficient of 0.63 (p=0.0035). Protein levels and EROD activity were less strongly correlated in fish from Woods Pond, with a correlation coefficient of only 0.21 (p=0.5519). In this location,

EROD activity levels were low compared to protein levels. No detectable protein and very low EROD activity ($\leq$20 pmol/mgP/min) were found in 82% of the Three-Mile Pond samples. Immunohistochemical staining of livers of ten randomly-selected fish from each site indicated no CYP 1A protein induction in Deep Reach or Three-Mile Pond fish, while two fish from Rising Pond showed moderate to high staining and two fish from Woods Pond showed low to moderate staining (Figure 8). These values correspond well with EROD assay results for Rising Pond and Three-Mile Pond. Induction in Woods Pond fish was considered Low to Moderate. Induction was detected in some Deep Reach fish, but no CYP 1A protein was observed using the immunohistochemical method on liver tissue.



A

B

Figure 8. Immunochemical staining for CYP 1A in liver sections from adult Housatonic River Basin largemouth bass, showing positive staining in fish from Rising Pond (A) and no staining in fish from Three-Mile Pond (B). Magnification 50X.

Levels of testosterone did not differ significantly between males and females within a site, nor among sites (Table 7). Estrogen levels were similar for both sexes at each site. However, estrogen levels in fish from Three-Mile Pond and Woods Pond were higher than those in fish from Rising Pond and Deep Reach. Estrogen/testosterone ratios ranged from 0.3 to 1.3 across the various sites. Typical ratios for largemouth bass from uncontaminated sites are ≥ 1.0 for females and ≤ 1.0 for males (Schmitt and Dethloff 2000). Vitellogenin was not detected in males from Rising Pond, Woods Pond, or Deep Reach. One male from Three-Mile Pond had detectable, but very low, levels of vitellogenin. Two females from Rising Pond had very high vitellogenin levels, representing the only significant effect in this parameter across sexes and sites.

Table 7. Pre-spawn values for 17ß-estradiol, 11-ketotestosterone, their ratios, and vitellogenin in plasma of adult largemouth bass from Housatonic River Basin sites. Note: these fish were not used in the reproduction studies.

Site	n	Sex	17ß-estradiol (pg/mL) Mean ± SD	11-ketotestosterone (pg/mL) Mean ± SD	E/T Ratios	vitellogenin (µg/mL) Mean ± SD
Three-Mile Pond	2	F	341 ± 10[a]	268 ± 27[a]	1.3	0.142 ± 0.153[a]
	14	M	366 ± 96[a]	395 ± 98[a]	0.9	0.004 ± 0.016[a]
Rising Pond	4	F	278 ± 148[b]	361 ± 43[a]	0.8	4.867 ± 5.396[b]
	2	M	139 ± 90[b]	486 ± 108[a]	0.3	0.000 ± 0.000[a]
Woods Pond	4	F	493 ± 115[a]	422 ± 113[a]	1.2	0.014 ± 0.015[a]
	2	M	390 ± 22[a]	325 ± 43[a]	1.2	0.000 ± 0.0[a]
Deep Reach	10	F	175 ± 64[b]	377 ± 160[a]	0.5	0.126 ± 0.179[a]
	2	M	184 ± 68[b]	338 ± 66[a]	0.5	0.000 ± 0.000

Values within columns with the same letter are not significantly different at $p \leq 0.05$.

Weights of post-spawn adult largemouth bass showed no significant differences among sites, however lengths of female bass from Deep Reach were significantly less than those from the other sites (Table 8). Measurement of GSI showed no significant differences with values ranging from 1.95 to 3.01 for females and from 0.28 to 0.36 for males (Table 8). Post-spawning GSI values for our fish are comparable to data for largemouth bass from a Georgia impoundment collected by Timmons et al. (1980). While pre-spawn fish (extra fish not used in the reproductive studies) from the Three-Mile Pond reference site had the highest GSI, post-spawn fish from this site were among the lowest in GSI values. If a larger number of spawns had been obtained from these fish compared to the other sites, this could have been interpreted as a greater level of reproductive success. However, fish from Three-Mile Pond produced the fewest number of spawns collected (Table 3). This may indicate that spawning was occurring in the pond that was not captured on the spawning mats. This is further supported by gonad histology, which indicated that all but one female from Three-Mile Pond had neither mature nor atretic oocytes remaining in the ovary. This is in contrast with most females from the other sites which retained mature oocytes at the termination of the study. Values for LSI ranged from 1.29 to 1.78 in females and from 1.20 to 1.58 in males; the LSI values for females from Rising Pond were higher than those from the other sites (Table 8). Most of our pre- and post-spawn LSI values are slightly higher than those reported for largemouth bass collected from a reservoir on the Tennessee River (Adams and McClean 1985). Increases in liver size, relative to body size, have been associated with exposure and effects of various chemicals. However, many other factors (e.g. temperature and nutrition) may also affect liver size. Although the Tennessee fish were at the same maturational stage, they were nearly five years younger which may account for their LSI values being lower than those of our Housatonic River fish.

Table 8. Post-spawn gonadal somatic index (GSI) and liver somatic index (LSI) of adult largemouth bass used in Housatonic River Basin reproduction studies. Statistical comparisons were only made within sexes and significant differences were only observed within females for length and LSI . Other statistical comparisons are not shown.

Site	n	Sex	Length (mm) Mean ± SD	Weight (g) Mean ± SD	GSI Mean ± SD	LSI Mean ± SD
Three-Mile Pond	11	F	391 ± 32 [a]	855 ± 227	2.00 ± 0.99	1.29 ± 0.41 [a]
	14	M	349 ± 46	621 ± 245	0.29 ± 0.11	1.53 ± 0.67
Rising Pond	11	F	367 ± 51 [a]	836 ± 376	2.73 ± 1.35	1.78 ± 0.78 [b]
	12	M	336 ± 27	544 ± 166	0.31 ± 0.07	1.32 ± 0.44
Woods Pond	11	F	374 ± 48 [a]	768 ± 266	1.95 ± 1.24	1.35 ± 0.45 [a]
	12	M	341 ± 22	592 ± 124	0.28 ± 0.11	1.58 ± 0.32
Deep Reach	18	F	349 ± 31 [b]	667 ± 165	3.01 ± 1.37	1.55 ± 0.52 [a]
	7	M	336 ± 49	579 ± 277	0.36 ± 0.08	1.20 ± 0.19

[ab] Values with the same letter are not significantly different at $p \leq 0.05$

Macrophage aggregates have been suggested as possible bioindicators of environmental chemical exposure (Wolke 1992). Macrophage aggregates function in fish to protect the body by 1) recycling iron, 2) storing, destroying, or detoxifying effete material, and 3) carrying out their role in immune response (Aguis 1985). A large number of studies have noted increases in macrophage aggregates in fish from polluted waters (reviewed in Schmitt and Dethloff 2000). However, since the formation of macrophage aggregates may also be influenced by age, diet, temperature, and other factors, cause and effect relationships may be difficult to establish.

While some macrophage aggregates were found in individuals at all sites, Three-Mile Pond had the highest number of individuals with no macrophage aggregates (36%). The other sites had ≤ 8% of individuals with no macrophage aggregates. A scoring of the livers using an index of severity of the lesions (Figure 9) indicated that fish from the Deep Reach site were most heavily

affected by macrophage aggregates (Figure 10, Table 9). Hemosiderin, lipofuscin, and ceroid are yellow-brown granular pigments often found within macrophage aggregates. While the pigments themselves do not damage tissue, they may indicate the health of an organism or its exposure to toxic compounds. Hemosiderin is a by-product of hemoglobin breakdown and lipofuscin and ceroid are considered to be lipid pigments produced by the peroxidation of unsaturated fatty acids. These three pigments were found in all macrophage aggregates. Results for liver glycogen showed no significant differences among sampling sites. Other than the macrophage aggregate lesions, all livers appeared normal.

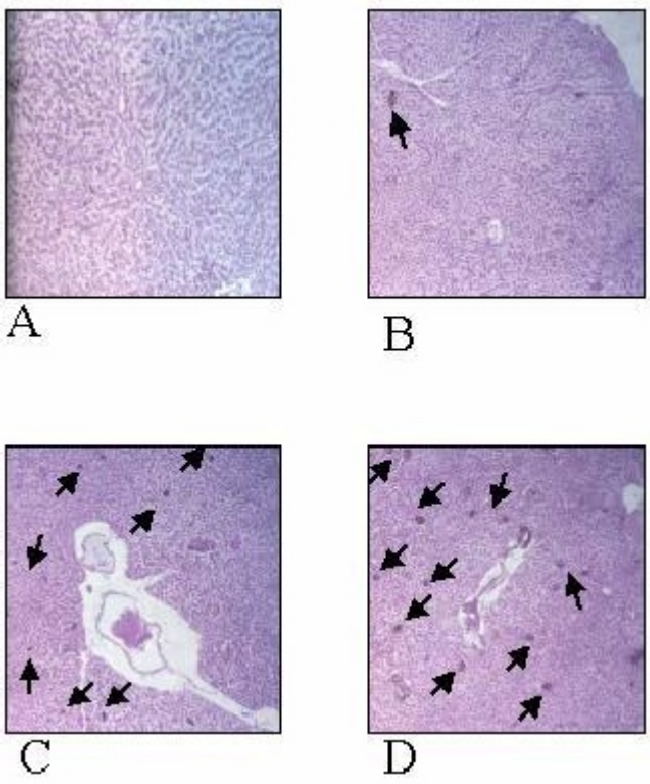


Figure 9. Index of lesion severity in livers of adult Housatonic River Basin largemouth bass. Panel A - no macrophage aggregates, Panel B - low macrophage aggregates, Panel C - moderate macrophage aggregates, Panel D - high macrophage aggregates. Magnification 10X.

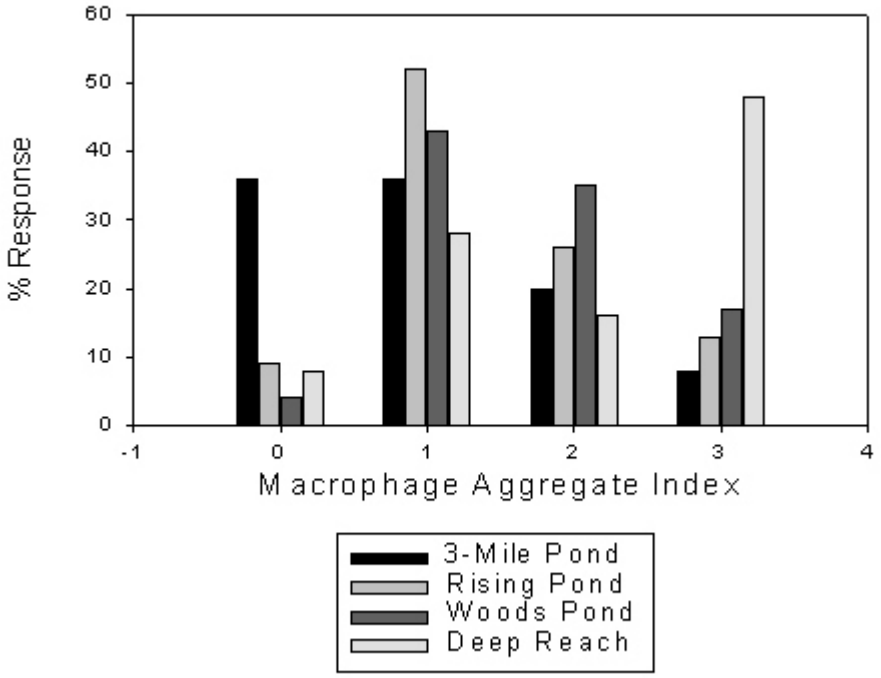


Figure 10. Occurrence of macrophage aggregates in livers of adult Housatonic River Basin largemouth bass.

Table 9. Median values* for macrophage aggregates in adult largemouth bass from Housatonic River Basin reproduction studies (n=number of individuals evaluated).

Site	n	Macrophage Aggregates
Three-Mile Pond	25	1.3
Rising Pond	23	1.7
Woods Pond	23	2.1 **
Deep Reach	25	2.8 **

*** Median values were calculated from livers that were scored using an index for macrophage aggregates in which 0=none, 2=moderate, and 3=heavy.**

**** Significantly different from Three-Mile Pond using a one-sample median test (Dowdy and Wearden 1991).**

Males from all sites were ripe with sperm present in the lumen of the testes. However, there was noticeably less sperm in males from the Deep Reach site. In addition, Deep Reach males had thickened lobular walls (Figure 11, Table 10). Thickening of lobule walls and a decrease in spermatic elements has been observed in testes of Atlantic cod (*Gadius morhua*) exposed to Aroclor 1254 (Freeman et al. 1982). No other pathologies were observed in testes from fish from any of the study sites.

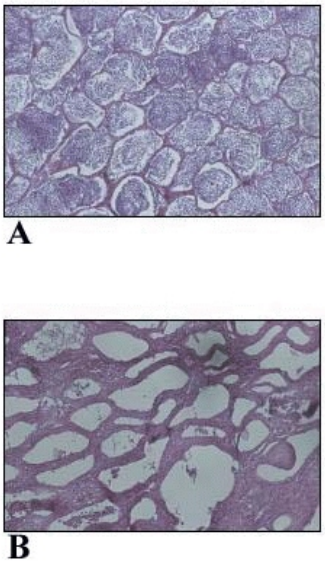


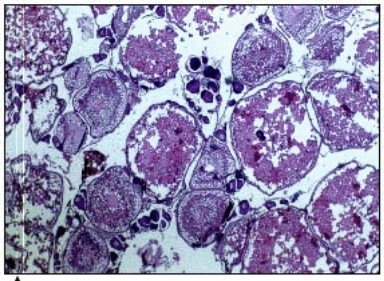
Figure 11. Condition of testes of adult Housatonic River Basin largemouth bass. Panel A - Three-Mile Pond, Panel B - Deep Reach. Magnification 50X.

Table 10. Lobule wall thickness in testes of adult male largemouth bass from Housatonic River Basin reproduction studies (n=7 individuals).

Site	Lobule Wall Thickness (µm) Mean ± SD	Range
Three-Mile Pond	0.36 ± 0.06[a]	0.34 - 0.51
Rising Pond	0.39 ± 0.08[a]	0.34 - 0.51
Woods Pond	0.46 ± 0.08[a]	0.34 - 0.51
Deep Reach	1.02 ± 0.47[b]	0.68 - 1.87

[ab] Values with the same letter are not significantly different at $p \leq 0.05$

A distinctive difference between the ovaries of fish from the Three-Mile Pond reference site and those from the Housatonic River sites was observed. All but one female from Three-Mile Pond had clearly completed spawning, as indicated by a predominance of early-stage ova, a paucity of mature ova, and large numbers of empty follicles (Figure 12). At the other extreme, only one female from the Deep Reach and Rising Pond sites appeared to have completed spawning. Only about 1/3 of the Woods Pond females had completed spawning, whereas the remainder of the females from this site still retained numerous mature ova. Females from the Housatonic sites obviously did spawn, (23 spawns were obtained from a total of 40 females), but it appears that they did not release all of the eggs in their ovaries even though environmental conditions were optimal for them to do so. The fact that egg reabsorption was observed in the Housatonic River fish is further evidence that they had completed their spawning activity. Reproductive effects associated with PCB exposure in the field and the laboratory were reviewed by Monosson (1999). The review identifies several authors that report an association between PCB exposure in fish and delayed spawning, incomplete or inconsistent oocyte development, decreases in ovarian growth, and reductions in levels of many of the steroids that are important in signaling along the brain-pituitary gonadal axis.



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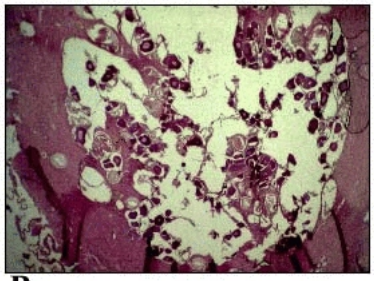

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Figure 12. Condition of ovaries of adult Housatonic River Basin largemouth bass. Panel A - Deep Reach, Panel B - Three-Mile Pond. Magnification 10X.

5.4 Survival, Growth, and Development of Largemouth Bass Offspring

Hatch to swim up - Survival to the swim-up life stage was measured as an indicator of hatching and early developmental success. Values ranged from a high of 68% for the Three-Mile reference site to a low of 28% for Deep Reach (Table 11).

Table 11. Survival of largemouth bass fry to swim up in Housatonic River Basin reproduction studies (n= number of spawns evaluated).

Site	n	Survival (%) Mean ± SE
Three-Mile Pond	3	68 ± 26 [a]
Rising Pond	5	45 ± 27 [a]
Woods Pond	6	57 ± 16 [a]
Deep Reach	10	28 ± 27 [b]

[ab] Values with the same letter are not significantly different at $p \leq 0.05$

Values in the range of those for Three-Mile Pond for survival to swim up are reasonable for largemouth bass. Timmons et al. (1980) reported egg-stage mortality of 8-26% for a variety of studies. Furthermore, when we estimated mortality for our data based on the models used by Jaworska et al. (1997) and Trebitz (1991) which use a value of 25% mortality during the egg stage and a subsequent 1.4% mortality per day through swim up, we obtain a predicted survival rate to the swim-up life-stage of 70%. The time required for development from hatch to swim-up life-stage varied from 5 days for Three-Mile Pond and Rising Pond to 6 and 7 days for the Deep Reach and Woods Pond sites, respectively, possibly indicating a slight delay in the developmental process (Table 12).

Table 12. Days required for development from hatch to swim-up life-stage in largemouth bass fry from Housatonic River Basin sites (n = number of spawns evaluated).

Site	n	Days Mean ± SD
Three-Mile Pond	3	7 ± 1[a]
Rising Pond	6	8 ± 1[a]
Woods Pond	6	9 ± 0[b]
Deep Reach	8	8 ±1[a]

[ab] Values with the same letter are not significantly different at $p \leq 0.05$

There were no significant differences among sites in length or weight of largemouth bass fry at swim up (Table 13). Largemouth bass fry were uniformly 6.0 mm in length. Mean weights ranged from 2.4 to 3.2 mg, but differences across sites were not statistically significant.

Table 13. Length (mm) and weight (mg) of largemouth bass fry at swim up in Housatonic River Basin reproduction studies (n = number of spawns evaluated).

Site	n	Length (mm) Mean ± SD	Weight (mg) Mean ± SD
Three-Mile Pond	3	6.0 ± 0.0	2.7 ± 0.6
Rising Pond	5	6.0 ± 0.0	2.4 ± 1.4
Woods Pond	6	6.0 ± 0.0	3.2 ± 0.7
Deep Reach	8	6.0 ± 0.0	2.8 ± 1.0

Weekly observations of physical abnormalities were made on largemouth bass offspring, coupled with more detailed evaluations at swim up and at the end of the 15-day post swim-up growth period. A variety of physical anomalies were observed in fish from each of the Housatonic River sampling locations and from the reference site (Table 14). The most frequent anomalies observed in fish prior to swim up were vertebral/spinal defects and pericardial edema (Figure

13). These abnormalities were observed in fry from all sites, although less frequently in Woods Pond fish. Additionally, most spawns from each site had some incidence of each of these anomalies. The other observed pathologies occurred less frequently, but more selectively among sampling sites. Craniofacial and eye deformities were most prominent in fry from the Deep Reach site. Estimated occurrences for Deep Reach were 3 per thousand and 27 per thousand for craniofacial and eye deformities, respectively. This compares to 1 to 2 (combined) occurrences per thousand for these deformities in fry from Rising Pond and Woods Pond and no occurrences in the Three-Mile Pond reference site. Other abnormalities observed at low incidences included yolk sac edema, tubular heart, and fin deformity (Table 14).

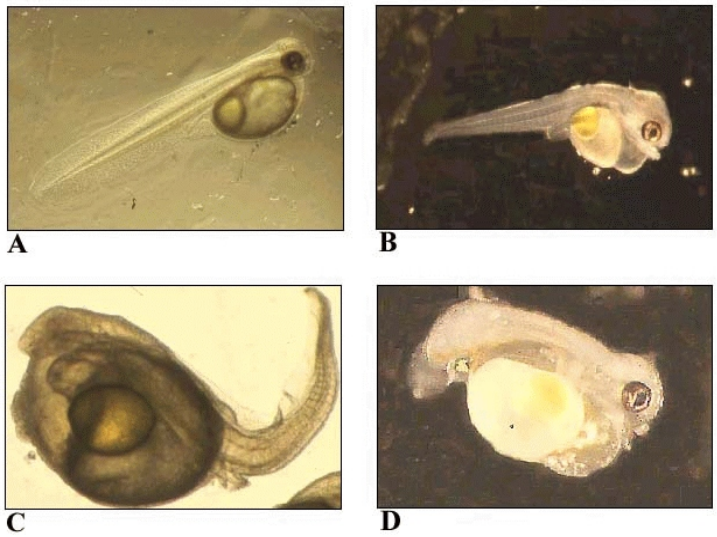

Figure 13. Abnormalities observed in largemouth bass fry prior to swim up in Housatonic River Basin reproduction studies. Panel A - normal, Panel B - craniofacial abnormality, Panel C - pericardial edema, Panel D - vertebral anomaly.

Table 14. Estimated occurrence of gross pathologies (per 1000 individuals) in largemouth bass at swim up in Housatonic River Basin reproduction studies. Number of spawns with affected individuals in parentheses.

Observation	Three-Mile Pond	Rising Pond	Woods Pond	Deep Reach
Pericardial Edema	36 (3 of 3)	33 (5 of 5)	7 [a] (5 of 6)	40 (6 of 8)
Peritoneal Edema	0 (0 of 3)	1 (1 of 5)	0 (0 of 6)	0 (0 of 8)
Yolk Sac Edema	2 (2 of 3)	1 (2 of 5)	1 (2 of 6)	0 (0 of 8)
Tubular Heart	2 (1 of 3)	0 (0 of 5)	0 (0 of 6)	0 (0 of 8)
Craniofacial Deformity	0 (0 of 3)	1 (1 of 5)	1 (3 of 6)	3 (3 of 8)
Eye Deformity	0 (0 of 3)	0 (0 of 5)	1 (1 of 6)	27 [a] (1 of 8)
Fin Deformity	0 (0 of 3)	1 (1 of 5)	0 (0 of 6)	0 (0 of 8)
Vertebral/Spinal Deformity	46 (3 of 3)	42 (4 of 5)	17 [a] (6 of 6)	54 (6 of 8)

[a] Significantly different from the Three-Mile Pond reference site at $p \leq 0.05$

Routine histological examination did not reveal any differences between the Housatonic River sites and the Three-Mile Pond reference site. However, immunohistochemical analysis using an antibody to CYP 1A protein indicated exposure to P450-inducing chemicals. CYP 1A was detected in heart, liver, kidney, brain, yolk sac, fins, and in cells surrounding the notochord in Housatonic River fish (Figures 14 and 15). Our observations are consistent with results of laboratory studies reporting tissue-specific P450 staining (Whyte et al. 2000). Staining was typically associated with epithelial cells of vasculature. Woods Pond fish had the strongest staining and Deep Reach fish stained the lightest. Only one fish from Three-Mile Pond showed any detectable staining (slight staining in the kidney tubules).

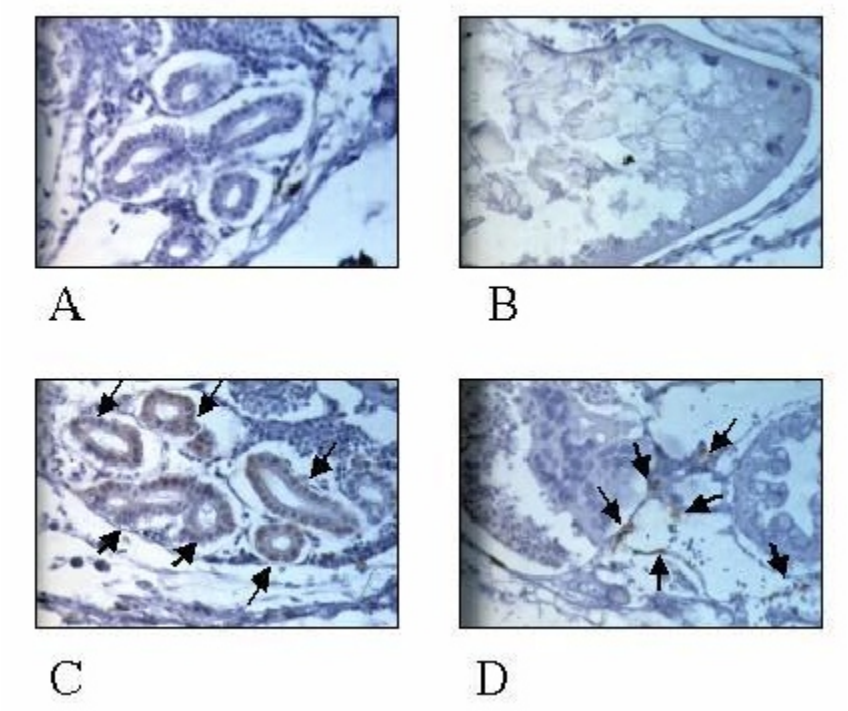

Figure 14. CYP 1A staining (arrows) in kidney and yolk sac of swim-up larvae. Panel A - Three-Mile Pond (kidney), Panel B - Three-Mile Pond (yolk sac), Panel C - Rising Pond (kidney), Panel D - Rising Pond (yolk sac). Magnification 150X.

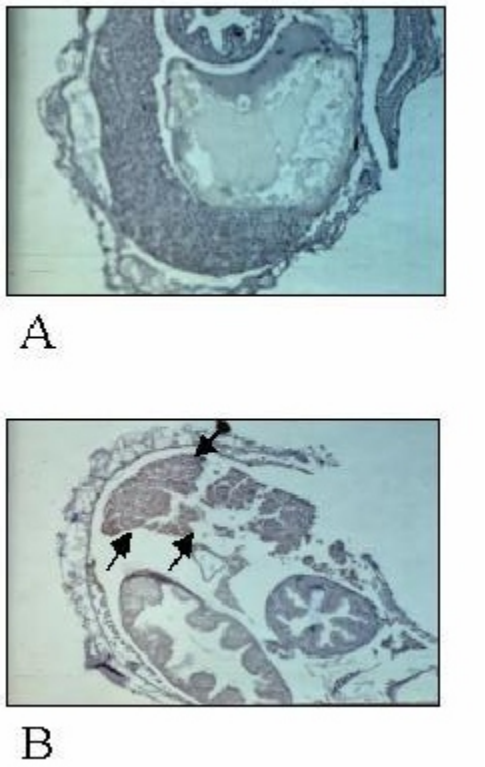

Figure 15. CYP 1A staining (arrows) in liver of swim-up larvae. Panel A - Three-Mile Pond, Panel B - Rising Pond. Magnification 50X.

Staining for apoptosis in swim-up larvae yielded similar results for fish from the Housatonic River sites and the Three-Mile Pond reference site. The observed light staining seemed to be artifact, in that the nuclei did not have apoptotic characteristics. Furthermore, staining occurred primarily in epithelial tissues, which may be dividing very quickly in fish at this early life stage (Figures 16, 17, and 18).

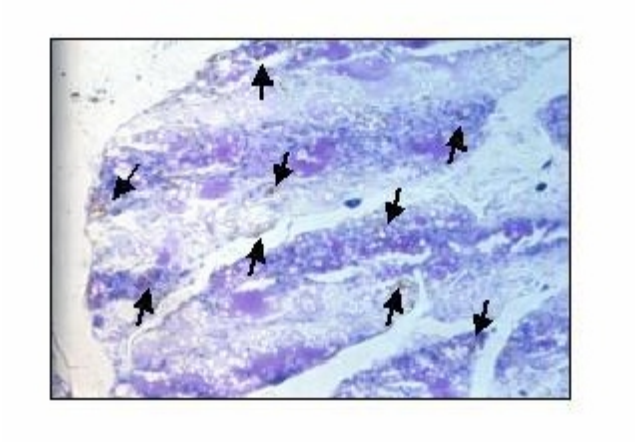

Figure 16. Positive control rodent mammary tissue (arrows point to apoptotic nuclei). Magnification 100X.

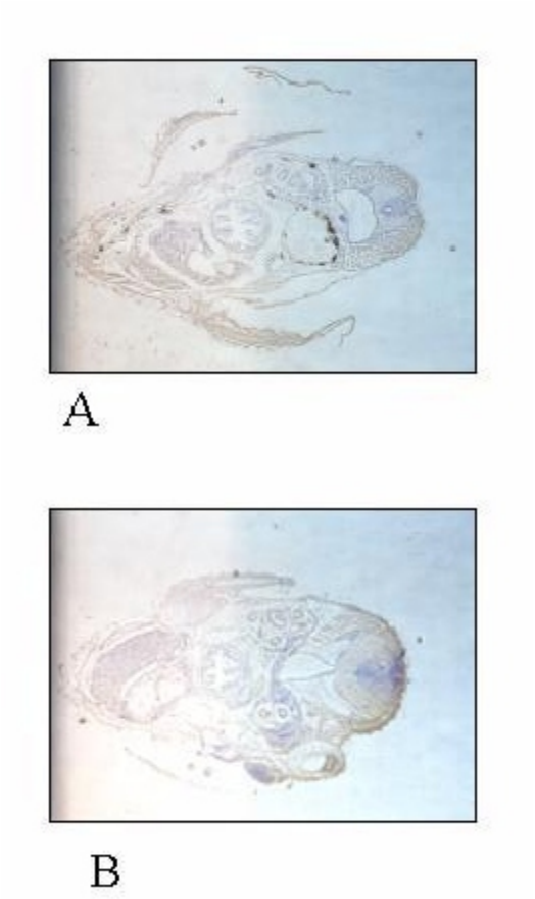

Figure 17. Apoptotic staining in liver, heart, kidney, and intestine of fish from Three-Mile Pond (Panel A) and apoptotic staining in kidney, liver, and yolk sac of fish from Rising Pond (Panel B). Magnification 25X (brown staining is apoptotic).

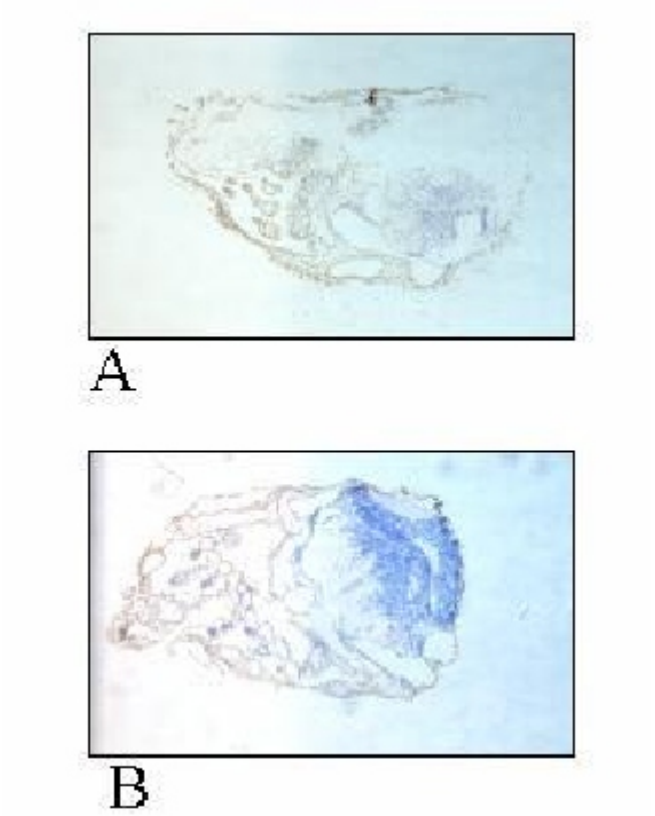

Figure 18. Apoptotic staining in brain tissue. Panel A - Three-Mile Pond, Panel B - Woods Pond. Magnification 25X (brown staining is apoptotic).

Post swim up - Survival was again assessed at 15 days post swim up. Survival during this stage of development was quite low. Mean percent survival for the Three-Mile Pond, Woods Pond, and Deep Reach sites ranged from 19-25%. Only 5% of fry from the Rising Pond site survived this critical life-stage transition, although this was not statistically significant (Table 15). Considerable variability was observed among spawns within sites as evidenced by the ranges reported in Table 15. The observed variability may have been associated with differential success in making the transition to exogenous feeding. To determine the influence of this "starvation-related" mortality on the results, temporal survival curves were constructed using only data from groups of fish that successfully made the transition (Figure 19). For this reason, median values may provide more useful estimates of survival.

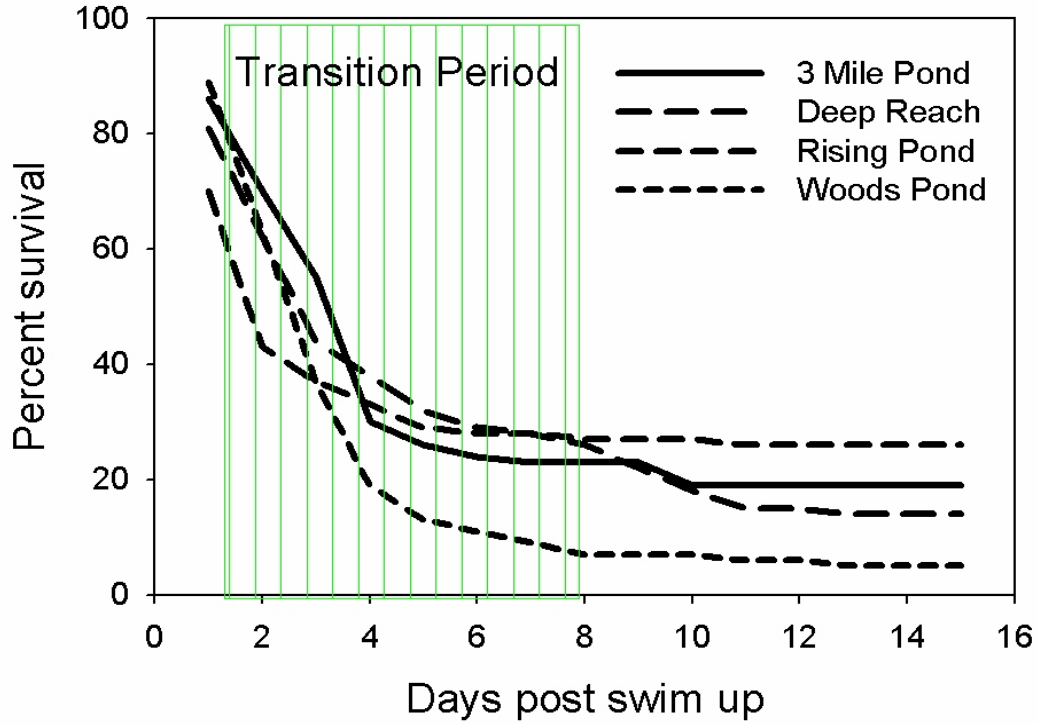

Figure 19. Temporal survival curves for largemouth bass fry from Day 8 to Day 15 post swim up.

Table 15. Survival of largemouth bass fry to 15 days post swim up in Housatonic River Basin reproduction studies.

Site	n	Survival (%) Mean ± SE	Median	Range
Three-Mile Pond	3	19 ± 9	28	1 - 29
Rising Pond	6	5 ± 2	2*	0 - 13
Woods Pond	6	25 ± 9	26	1 - 51
Deep Reach	8	20 ± 9	13	1 - 75

* **Significantly different from Three-Mile Pond using a non-parametric median test.**

Growth was evaluated at 15 days post swim up. In terms of weight, the highest growth occurred in fry for the Three-Mile Pond reference site, followed by Rising Pond and Deep Reach, with Woods Pond showing the smallest mean fry weights (Tables 16 and 17). Additionally, regression of length and weight values (as an indicator of condition) showed significant differences among sites (Table 18). The slopes of the Woods Pond and Deep Reach sites were significantly different from those of the Three-Mile Pond reference site, indicating smaller weights as a function of length.

Table 16. Length (mm) and weight (mg) of largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies.

Site	n	Length (mm) Mean ± SD	Weight (mg) Mean ± SD
Three-Mile Pond	2	14.0 ± 0.0	35.5 ± 2.8
Rising Pond	3	13.3 ± 0.6	33.3 ± 4.0
Woods Pond	5	13.2 ± 0.4	23.6 ± 0.5 [a]
Deep Reach	7	12.1 ± 2.1	22.7 ± 8.5 [a]

[a] Significantly different from the Three-Mile Pond reference site at $p \leq 0.05$

Table 17. Growth (expressed as change in length and weight) of largemouth bass fry during the first 15 days post swim up in Housatonic River Basin reproduction studies.

Site	n	△ Length (mm) Mean ± SD	△ Weight (mg) Mean ± SD
Three-Mile Pond	2	8.0 ± 0.0	32.5 ± 2.1
Rising Pond	3	7.3 ± 0.6	31.3 ± 4.0
Woods Pond	5	7.2 ± 0.4	20.6 ± 0.5 [a]
Deep Reach	7	6.1 ± 2.1	19.4 ± 8.2 [a]

[a] Significantly different from the Three-Mile Pond reference site at $p \leq 0.05$

Table 18. Length/weight regressions for largemouth bass fry from Housatonic River Basin sites at 15 days post swim up.

Site	Slope	y-intercept	r^2 (prob)
Three-Mile Pond	2.82	-1.72	0.64 (0.0001)
Rising Pond	2.86 [a]	-1.73	0.78 (0.0001)
Woods Pond	2.26 [b]	-1.18	0.67 (0.0001)
Deep Reach	1.62 [b]	-0.4	0.46 (0.0001)

[a] Variances between Three-Mile Pond and Rising Pond were not equal, so a statistical comparison could not be made.

[b] Significantly different from the Three-Mile Pond reference site at $p \leq 0.05$.

Abnormalities observed in fish during the 15-day post swim-up growth period included deformities of the tail and opercula, and swim bladder anomalies (Figures 20, 21, and 22). High incidence of uninflated and partially-inflated swim bladders occurred in all three Housatonic River sites, with no observations of the effect in fry from the Three-Mile Pond reference site

(Table 19). A very unusual effect, described here as partially-external swim bladder (Figures 23 and 24), was observed in fry during the 15-day growth period. The effect occurred in each of the three Housatonic River sites, although not in all spawns from each site. The effect was not observed in fry from any of the three spawns from the Three-Mile Pond reference site. A high incidence of opercular effects (220 per 1000) was observed in one spawn from the Deep Reach site; there was no occurrence of the effect in the other two Housatonic River sites, or the Three-Mile Pond reference site. Tail deformities were observed (18 per 1000) in fry from two of the six spawns obtained from Woods Pond spawns (Table 19).

A

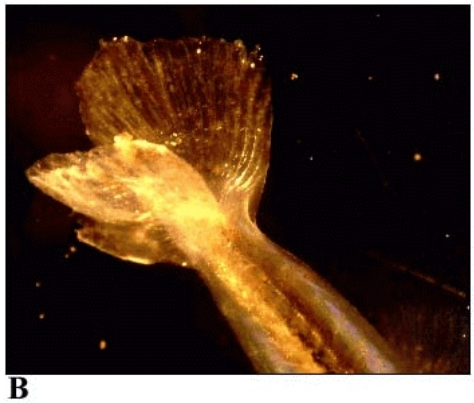

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Figure 20. Developmental abnormalities in the caudal fin observed in largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies. Panel A - normal (Three-mile Pond), Panel B - double tail (Woods Pond).

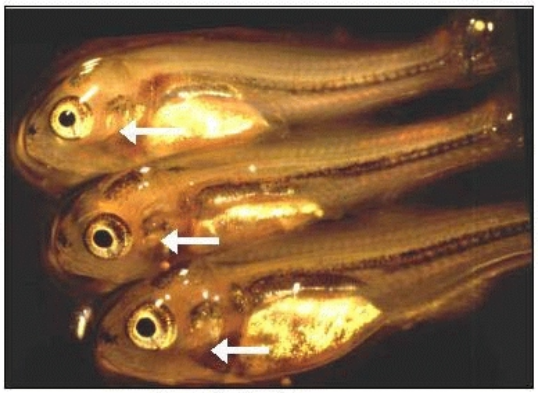


Figure 21. Opercular abnormalities observed in largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies. Arrows point to operculum (top fish normal, operculum partially missing in bottom two fish).

Figure 22. Swim bladder abnormalities observed in largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies

Table 19. Estimated occurrence of gross pathologies (per 1000 individuals) in largemouth bass at 15 days post swim up in Housatonic River Basin reproduction studies. Number of spawns with affected individuals in parentheses.

Observation	Three-Mile Pond	Rising Pond	Woods Pond	Deep Reach
Uninflated Swim Bladder	0 (0 of 3)	333 [a] (1 of 5)	9 [a] (1 of 6)	24 [a] (1 of 8)
Partially-Inflated Swim Bladder	0 (0 of 3)	120 [a] (1 of 5)	429 [a] (1 of 6)	88 [a] (2 of 8)
Partially-External Swim Bladder	0 (0 of 3)	67 [a] (1 of 5)	27 [a] (3 of 6)	24 [a] (1 of 8)
Shortened Operculum	0 (0 of 3)	0 (0 of 5)	0 (0 of 6)	220 [a] (1 of 8)
Tail Deformity	0 (0 of 3)	0 (0 of 5)	18 [a] (2 of 6)	0 (0 of 8)

[a] Significantly different from Three-Mile Pond reference site, Chi-square $p \leq 0.05$

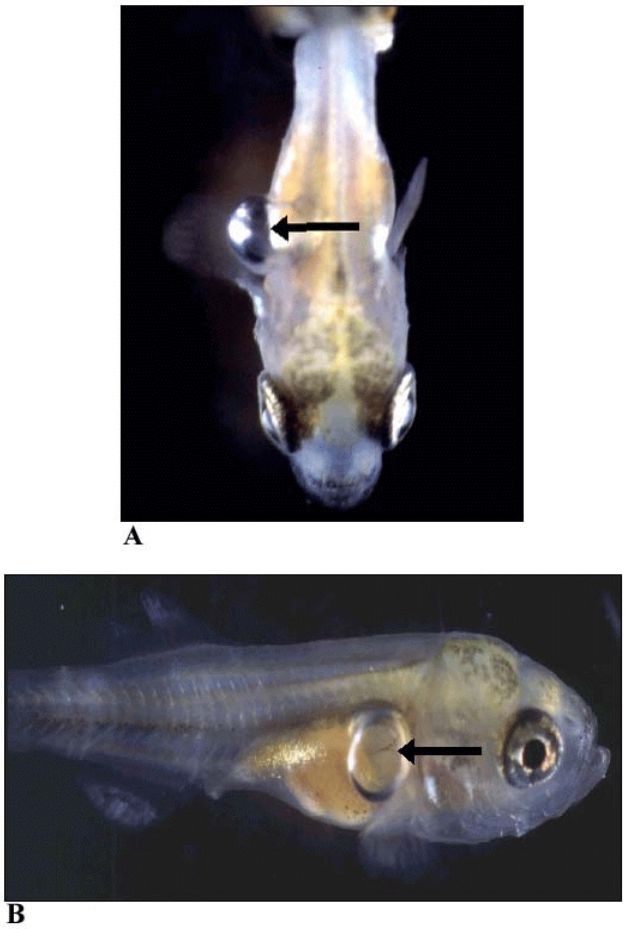


Figure 23. Partially-external swim bladder observed in largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies.

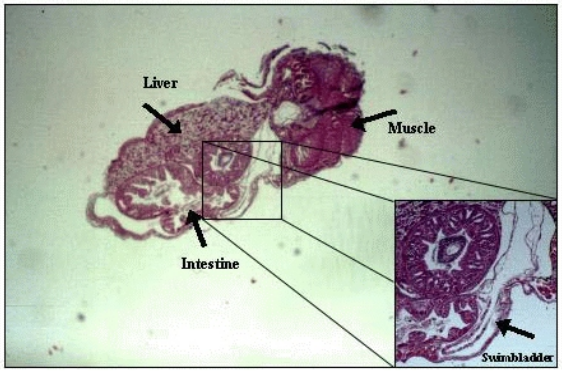


Figure 24. Cross-section of partially external swim bladder observed in largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies.

Six fish from each site were randomly selected for whole body sectioning and staining with hematoxylin and eosin. The following tissues were inspected for pathology: gills, thymus, swim bladder, liver, kidney, and gut. Kidney, gills, thymus, and gut appeared to be normal in all samples. Swim bladders were normal in all individuals from the Three-Mile Pond reference site, however a high incidence of under-inflation was noted at all Housatonic River sites: Woods Pond (83%), Rising Pond (50%), and Deep Reach (17%) (Figure 25). In general livers appeared normal, although 50% and 100% of livers from fish from Deep Reach and Woods Pond, respectively, stained strongly for the presence of glycogen (Figure 26). Increased glycogen suggests impaired glycogen breakdown, possibly as a result of interference with key enzymes (e.g. phosphorylase, phosphokinase), or interference with the regulatory system (e.g. affecting cyclic AMP levels).

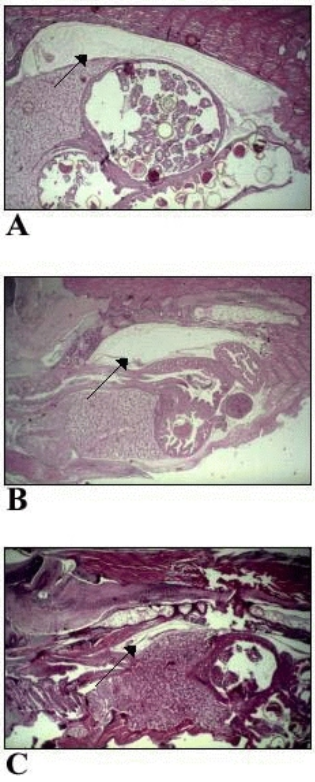


Figure 25. Relative degrees of swim bladder inflation in largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies. Panel A - fully inflated swim bladder, Panel B - partially inflated swim bladder, Panel C - uninflated swim bladder. Magnification 10X.

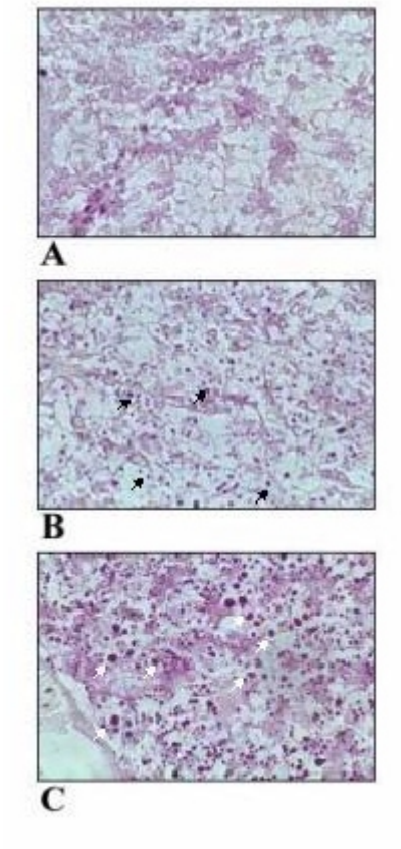
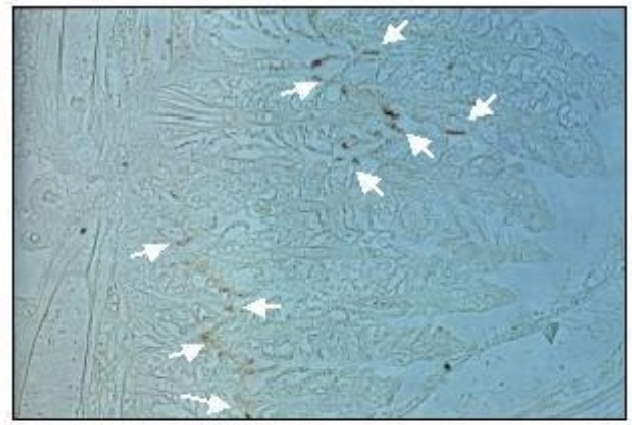


Figure 26. Glycogen deposition in livers of largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies. Panel A - no liver glycogen, Panel B - light glycogen staining, Panel C - heavy glycogen staining. Magnification 150X.

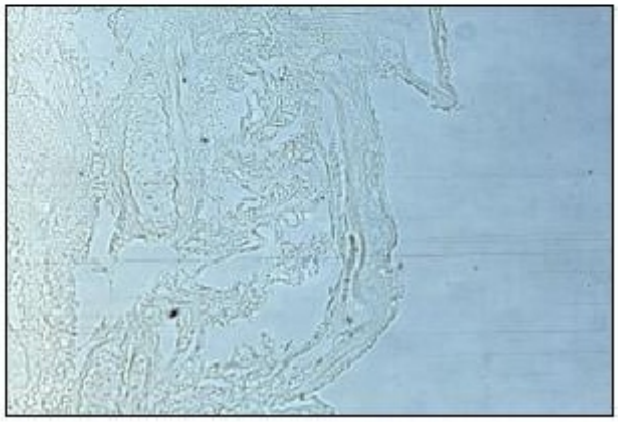
CYP 1A induction was observed in various tissues of 15-day post swim up fry (Table 20). The most frequent, and qualitatively strongest indication, of P450 activity was in the endothelial cells of the gills (Figure 27). Activity was also observed in liver, brain, kidney, vasculature, and muscle tissues (Figures 28 and 29). The Housatonic River sites had the greatest number of induced fish (five of nine individuals from each site), while three of nine individuals from the Three-Mile Pond reference site showed comparatively weak induction (Table 20).

Table 20. CYP 1A induction in tissues of largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies. Numbers indicate the percent of fry (out of a total of nine fish per site) showing induction in a particular tissue.

Tissue	Three-Mile Pond	Rising Pond	Woods Pond	Deep Reach
Gill	11%	56%	33%	44%
Liver	0%	11%	11%	0%
Brain	22%	0%	11%	11%
Kidney	11%	0%	11%	0%
Muscle	11%	0%	0%	11%
Total Induced Fish	33%	56%	56%	56%



A



B

Figure 27. Endothelial cells of the gills of largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies (CYP 1A staining indicated by arrow). Panel A - Rising Pond, Panel B - Three-Mile Pond. Magnification 50X.

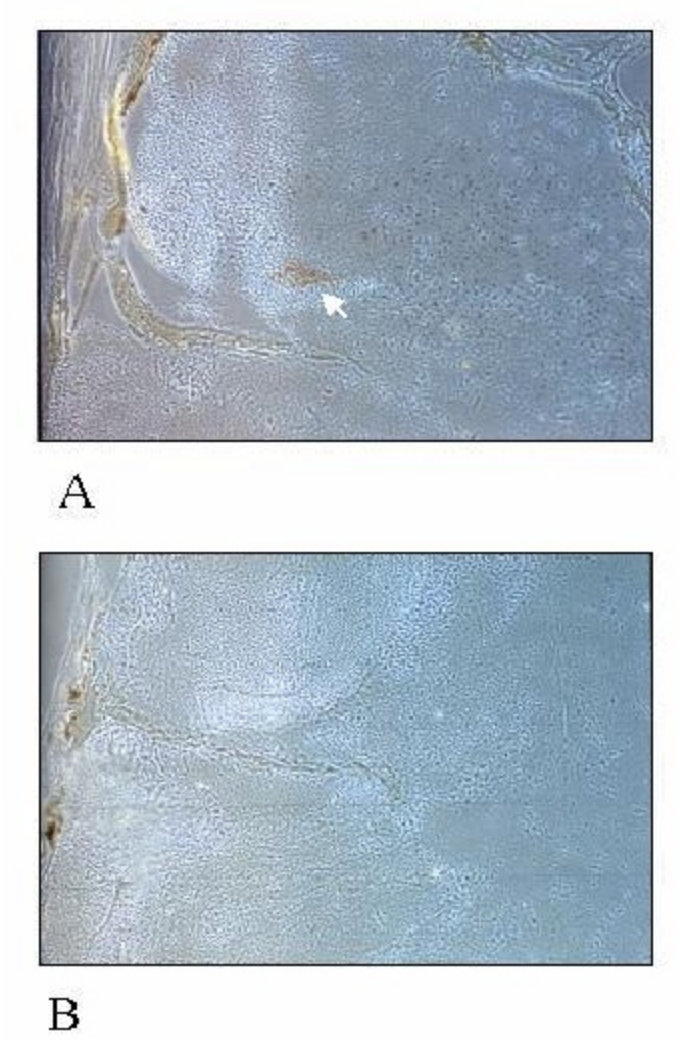


Figure 28. Brain cells of largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies (CYP 1A staining indicated by arrow). Panel A - Deep Reach, Panel B - Three-Mile Pond. Magnification 50X.

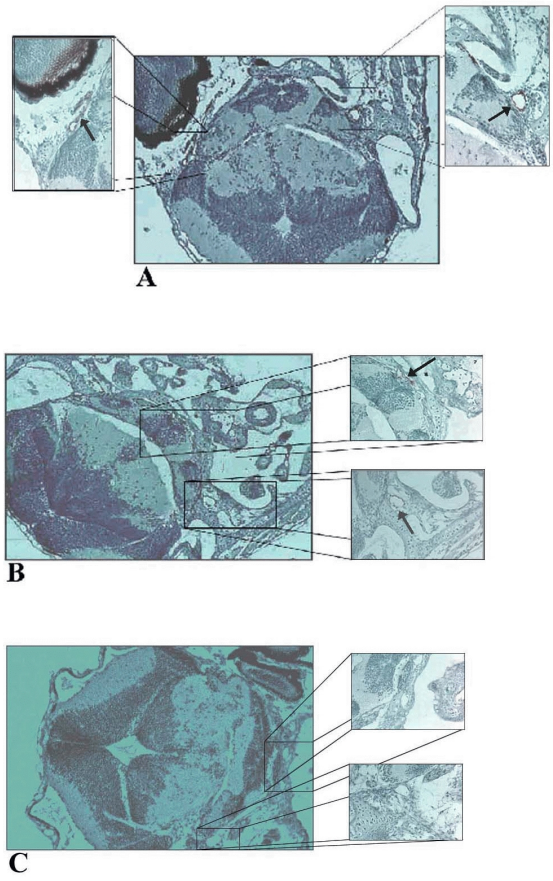


Figure 29. Endothelial cells of vasculature of largemouth bass fry at 15 days post swim up in Housatonic River Basin reproduction studies (CYP 1A staining indicated by arrows). Panel A - Rising Pond, Panel B - Woods Pond, Panel C - Three-Mile Pond. Magnification 50X.

5.5 Chemical Characterization of Fish Tissue Extracts

Organochlorine pesticides:

The concentrations of organochlorine (OC) pesticides were measured in the ovaries and tissues of largemouth bass from the Housatonic River study areas and reference site. The pesticides measured were hexachlorobenzene (HCB), pentachloroanisole (PCA), alpha-hexachlorocyclohexane (alpha-BHC), beta-hexachlorocyclohexane (beta-BHC), delta-hexachlorocyclohexane (delta-BHC), heptachlor, heptachlor epoxide, dacthal, dieldrin, endrin, oxychlordane, cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, o,p'-DDE, o,p'-DDD, o,p'-DDT, p.p'-DDE, p,p'-DDD, p,p'-DDT, endosulfan I, endosulfan II, endosulfan sulfate, methoxychlor, and mirex (Table 21). Details of the analytical results are presented in an analytical report (CERC Organic Chemistry Section, Project Report # 3307-70L1E) which is attached in Appendix 1 and summarized below.

Table 21. Organochlorine pesticides measured in tissue and ovary samples of largemouth bass collected from Housatonic River Basin sites.

Residue	CAS No.[a]	Chemical name(s)[a]
p,p'-DDE	72-55-9	2,2-bis (*p*-chlorophenyl)-1,1-dichloroethylene
p,p'-DDD (TDE)	72-54-8	2,2-bis (*p*-chlorophenyl)-1,1-dichloroethane
p-p'-DDT	50-29-3	2,2-bis (*p*-chlorophenyl)-1,1,1-trichloroethane
o,p'-DDE	3424-82-6	2-(*o*-chlorophenyl)-2-(*p*-chlorophenyl)-1,1-dichloroethylene
o,p'-DDD (TDE)	53-19-0	2-(*o*-chlorophenyl)-2-(*p*-chlorophenyl)-1,1-dichloroethane
o-p'-DDT	789-02-6	2-(*o*-chlorophenyl)-2-(*p*-chlorophenyl)-1,1,1-trichloroethane
Aldrin	309-00-2	1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4-*endo-exo*-5,8-dimethanonaphthalene
Dieldrin	60-57-1	1,2,3,4,10,10-hexachloro-6,7-epoxy 1,4,4a,5,8,8a-hexahydro-1,4-*endo-exo*-5,8-dimethanonaphthalene
Endrin	72-20-8	1,2,3,4,10,10-hexachloro-6,7-epoxy1,4,4a,5,6,7,8,8a-octahdyro-1,4-*endo-endo*-5,8-dimethanonaphthalene
Heptachlor	76-44-8	1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene
Heptachlor epoxide	1024-57-3	1,4,5,6,7,8,8-heptachloro-2,3-epoxy-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene
cis-Chlordane	5103-71-9	1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-4,7-methano-1H-indene (1.alpha.,2.alpha.,3a.alpha.,4.beta., 7.beta.,7a .alpha.)
trans-Chlordane	5103-74-2	1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-4,7-methano-1H-indene (1.alpha.,2.beta.,3a.alpha.,4.beta.,7.beta.,7a.alpha.)
cis-Nonachlor	5103-73-1	1,2,3,4,5,6,7,8,8-nonachloro-2,3,3a,4,7,7a-hexahydro-4,7-methano-1H-indene (1.alpha.,2.alpha.,3.alpha.,3a.alpha.,4.beta.,7.beta.,7a.alpha.)
trans-Nonachlor	39765-80-5	1,2,3,4,5,6,7,8,8-nonachloro-2,3,3a,4,7,7a-hexahydro-4,7-methano-1H-indene (1.alpha.,2.beta.,3.alpha,3a.alpha.,4.beta.,7.beta.,7a. alpha.)

Table 21 (Cont.). Organochlorine pesticides measured in tissue and ovary samples of largemouth bass collected from Housatonic River Basin sites.

Oxychlordane	27304-13-8	2,3,4,5,6,6a,7,7-octachloro-1a,1b,5,5a,6, 6a-hexahydro-2,5-methano-2H-indeno (1,2-b)oxirene(1a.alpha.,1b.beta.,2.alpha.,5.alpha., 5a.beta.,6.beta.,6a.alpha.)
Toxaphene	8001-35-2	chlorinated camphene mixture 62% chlorine by weight
Benzene	319-84-6	1 ,2 ,3 ,4 ,5 ,6 - hexachlorocyclohexane hexachloride (α-BHC) (alpha-isomer)
β-Benzene hexachloride (β-BHC)	319-85-7	1 ,2 ,3 ,4 ,5 ,6 – hexachlorocyclohexane (beta-isomer)
δ-Benzene hexachloride (δ-BHC)	319-86-8	1 ,2 ,3 ,4 ,5 ,6 - hexachlorocyclohexane (delta-isomer)
Lindane (γ -BHC	58-89-9	1 ,2 ,3 ,4 ,5 ,6 – hexachlorocyclohexane (gamma-isomer)
Hexachlorobenzene (HCB)	118-74-1	perchlorobenzene
Mirex	2385-85-5	1,1a,2,2,3,3a,4,5,5,5a,5b,6-dodecachloro-octahydro-1,3,4-metheno-1H-cyclobuta (cd)pentalene
Endosulfan I	33213-65-9	6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide (3α, 5aα, 6β, 9β, 9aα form)
Endosulfan II	959-98-8	6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide (3α, 5aβ, 6α, 9α, 9aβ form)
Endosulfan sulfate	1031-07-8	6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3,3-dioxide
Methoxychlor	72-43-5	1,1'-(2,2,2-Trichloroethylidene)-bis-[4-methylbenzene]
Dacthal®	1861-32-1	2,3,5,6-tetrachloro-1,4-benzenedimethyl-dicarboxylate
Pentachloroanisole (PCA)	1825-21-4	2,3,4,5,6-pentachlororanisole

[a] Chemical Abstracts Services Name and Number

Largemouth bass carcass homogenates - Concentrations of OC pesticides (ng/g, wet weight) in the ground carcass homogenates of the largemouth bass from the field studies were low (< 10 ng/g, and most <1 ng/g), with the exception of p,p'-DDE and p,p'-DDD (Table 22). The concentrations of p,p'-DDE and p,p'-DDD were 80-130 ng/g and 14-24 ng/g, respectively, in the carcass homogenates of largemouth bass collected from the Housatonic River study sites. The mean concentrations of p,p'-DDE and p,p'-DDD in the carcass homogenates of the largemouth bass collected at the reference area (Three Mile Pond) were 44 ± 0.8 ng/g and 3.4 ± 0.6 ng/g, respectively (Table 22). The mean lipid content (%) of the carcass homogenates of largemouth bass collected from Deep Reach, Woods Pond, Rising Pond, and Three Mile Pond were 2.3, 2.1, 1.8, and 1.5 %, respectively (Table 22).

The recoveries of procedural recovery standards (PRS) in this set of samples were within QA/QC data quality objectives, with the exception of two samples from Deep Reach study area. Two of the three replicates from Deep Reach had low recoveries of the PRS's (2-12 %) and as such the resultant data might be expected to have low precision. However, of the targeted chemicals with concentrations greater than 10 ng/g (ie. p,p'-DDE and p,p'-DDD) for which precision might be assessed, the concentrations of these analytes in the two samples did not appear to have exaggerated errors in precision or accuracy. The elevated value reported for endosulfan sulfate (73 ng/g) in the C-replicate of Deep Reach (DRP-C-OC) is due to an interference and is not truly endosulfan sulfate (CERC Organic Chemistry Section, Project Report # 3307-70L1E, Appendix 1).

Table 22. Organochlorine pesticide concentrations (ng/g) in whole body tissue of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	Lipid (%)	HCB	PCA	alpha-BHC	beta-BHC	Lindane	delta-BHC	Heptachlor	Heptachlor Epoxide	Dacthal
Three Mile Pond, 3MP-A	1.6	0.12	< 0.32	0.05	< 0.01	< 0.18	0.23	< 0.20	< 0.16	0.51
Three Mile Pond, 3MP-B	1.7	0.34	< 0.32	0.08	< 0.01	< 0.18	0.08	< 0.20	< 0.16	< 0.41
Three Mile Pond, 3MP-C	1.3	0.12	< 0.32	0.10	0.10	0.28	< 0.06	< 0.20	5.4	< 0.41
Mean	**1.5**	**0.19**	**< 0.32**	**0.08**						
SD		**0.13**		**0.02**						
Rising Pond, RP-A	1.9	0.62	< 0.32	< 0.01	< 0.01	< 0.18	0.12	< 0.20	0.75	< 0.41
Rising Pond, RP-B	1.8	0.60	< 0.32	0.07	< 0.01	< 0.18	< 0.06	< 0.20	< 0.16	< 0.41
Rising Pond, RP-C	1.7	1.4	< 0.32	0.10	< 0.01	0.23	< 0.06	< 0.20	2.2	< 0.41
Mean	**1.8**	**0.9**	**< 0.32**						**1.5**	
SD		**0.43**							**0.99**	
Woods Pond, WP-A	2.2	2.5	< 0.32	0.23	< 0.01	< 0.18	0.17	< 0.20	0.37	0.55
Woods Pond, WP-B	2.1	2.4	< 0.32	0.11	0.08	< 0.18	< 0.06	< 0.20	0.61	< 0.41
Woods Pond, WP-C	2.0	2.1	< 0.32	0.11	0.10	< 0.18	< 0.06	< 0.20	0.88	< 0.41
Mean	**2.1**	**2.3**	**< 0.32**	**0.15**	**0.09**				**0.62**	
SD		**0.20**		**0.07**	**0.01**				**0.25**	
Deep Reach, DR-A	2.4	3.8	< 0.32	0.09	< 0.01	< 0.18	0.31	< 0.20	1.5	0.89
Deep Reach, DR-B	2.1	2.9	0.45	< 0.01	< 0.01	< 0.18	< 0.06	< 0.20	1.2	2.6
Deep Reach, DR-C	2.3	3.2	0.33	< 0.01	< 0.01	< 0.18	< 0.06	< 0.20	0.65	< 0.41
Mean	**2.3**	**3.3**	**0.39**						**1.1**	
SD		**0.48**	**0.09**						**0.42**	
Mass adjusted method detection limit (MDL)		**0.04**	**0.32**	**0.01**	**0.01**	**0.18**	**0.06**	**0.20**	**0.16**	**0.41**

Table 22 (Cont.). Organochlorine pesticide concentrations (ng/g) in whole body tissue of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	Dieldrin	Endrin	Oxy-chlordane	cis-Chlordane	trans-Chlordane*	cis-Nonachlor	trans-Nonachlor*	o,p'-DDE	o,p'-DDD
Three Mile Pond, 3MP-A	0.60	< 0.01	0.22	0.24	0.10	< 0.42	1.4	< 0.01	< 0.37
Three Mile Pond, 3MP-B	0.69	< 0.01	0.33	0.45	0.44	< 0.42	1.9	< 0.01	< 0.37
Three Mile Pond, 3MP-C	0.63	< 0.01	0.77	0.16	0.43	< 0.42	1.3	< 0.01	< 0.37
Mean	**0.64**		**0.44**	**0.28**	**0.33**		**1.5**		
SD	**0.04**		**0.29**	**0.15**	**0.19**		**0.34**		
Rising Pond, RP-A	1.7	< 0.01	2.1	1.1	0.36	3.3	10	< 0.01	3.0
Rising Pond, RP-B	2.2	< 0.01	< 0.01	2.2	0.39	3.4	12	< 0.01	< 0.18
Rising Pond, RP-C	1.8	< 0.01	2.0	1.0	0.15	3.2	7.9	< 0.01	2.4
Mean	**1.9**		**2.0**	**1.4**	**0.30**	**3.3**	**10**		**2.7**
SD	**0.26**		**0.03**	**0.68**	**0.13**	**0.10**	**2**		**0.4**
Woods Pond, WP-A	2.4	< 0.01	1.9	3.3	0.46	3.7	14	0.27	6.0
Woods Pond, WP-B	2.2	< 0.01	1.7	1.6	0.24	2.7	1.3	0.09	5.3
Woods Pond, WP-C	2.3	< 0.01	1.7	1.7	0.35	2.2	53	< 0.01	3.4
Mean	**2.3**		**1.8**	**2.2**	**0.35**	**2.9**	**23**		**4.9**
SD	**0.10**		**0.09**	**0.94**	**0.11**	**0.78**	**27**		**1.4**
Deep Reach, DR-A	2.1	< 0.01	1.9	2.7	0.49	3.2	25	0.13	5.8
Deep Reach, DR-B	1.8	< 0.01	0.75	1.5	< 0.05	2.1	0.60	< 0.01	4.5
Deep Reach, DR-C	0.90	< 0.01	0.16	0.73	0.33	1.9	1.0	< 0.01	1.0
Mean	**1.6**		**0.9**	**1.6**	**0.41**	**2.4**	**8.9**		**3.8**
SD	**0.63**		**0.89**	**0.98**	**0.12**	**0.71**	**14**		**2**
Mass adjusted method detection limit (MDL)	**0.03**	**0.01**	**0.01**	**0.08**	**0.05**	**0.42**	**0.29**	**0.01**	**0.18**

Table 22 (Cont.). Organochlorine pesticide concentrations (ng/g) in whole body tissue of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	o,p'-DDT	p,p'-DDE	p,p'-DDD	p,p'-DDT	Endosulfan I	Endosulfan II	Endosulfan sulfate	Methoxy-chlor	Mirex
Three Mile Pond, 3MP-A	< 0.01	44	3.8	< 0.51	< 0.01	< 0.01	< 0.01	< 0.01	0.05
Three Mile Pond, 3MP-B	< 0.01	44	3.7	< 0.51	< 0.01	< 0.01	< 0.01	< 0.01	0.04
Three Mile Pond, 3MP-C	< 0.01	45	2.7	< 0.51	< 0.01	< 0.01	< 0.01	< 0.01	0.04
Mean		**44**	**3.4**						**0.04**
SD		**0.8**	**0.59**						**0.01**
Rising Pond, RP-A	< 0.01	83	15	2.5	< 0.01	< 0.01	< 0.01	< 0.01	0.25
Rising Pond, RP-B	< 0.01	78	14	4.1	< 0.01	< 0.01	< 0.01	< 0.01	0.36
Rising Pond, RP-C	< 0.01	86	14	1.4	< 0.01	< 0.01	< 0.01	< 0.01	0.29
Mean		**80**	**14**	**2.7**					**0.30**
SD		**4**	**0.36**	**1.4**					**0.05**
Woods Pond, WP-A	0.33	91	26	3.4	< 0.01	< 0.01	< 0.01	< 0.01	0.49
Woods Pond, WP-B	< 0.01	100	24	1.2	< 0.01	< 0.01	< 0.01	< 0.01	0.37
Woods Pond, WP-C	< 0.01	88	22	1.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02
Mean		**90**	**24**	**2.0**					**0.43**
SD		**7**	**2.1**	**1.2**					**0.08**
Deep Reach, DR-A	0.45	130	35	4.4	< 0.01	< 0.01	< 0.01	< 0.01	0.67
Deep Reach, DR-B	< 0.01	130	22	4.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02
Deep Reach, DR-C	< 0.01	130	10	5.4	< 0.01	< 0.01	73	< 0.01	< 0.02
Mean		**130**	**22**	**4.6**					
SD		**0.0**	**13**	**0.7**					
Mass adjusted method detection limit (MDL)	**0.01**	**2.13**	**1.18**	**0.51**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**

Largemouth bass ovaries - Concentrations (ng/g, wet weight) of the pesticides PCA, BHC (all four isomers), heptachlor, heptachlor epoxide, dacthal, trans-chlordane, cis-nonachlor, o,p'-DDE, o,p'-DDT, p,p'-DDT, endosulfan I, endosulfan II, endosulfan sulfate, and methoxychlor in the ovaries of largemouth bass from our field studies were all at or near the limit of detection (Table 23). The concentrations of the pesticides HCB, dieldrin, oxychlordane, cis-chlordane, trans-nonachlor, and mirex in the ovary samples of largemouth bass collected from the Housatonic River and the reference area were above the level of detection, but were typically between 1-10 ng/g. As observed in the carcass samples of these same largemouth bass, only p,p'-DDE and p,p'-DDD were at concentrations considered elevated above background (Table 23).

Polybrominated diphenyl ethers (PBDEs) interfered with procedural recovery standards PCB 155 and PCB 204. The recovery standard PCB 029 was used to account for procedural losses of p,p'-DDE and mirex, instead of PCB 204. All other QC samples and standards were within acceptable limits as defined by our data quality objectives for this study.

Table 23. Organochlorine pesticide concentrations (ng/g wet wt.) in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	Lipid (%)	HCB	PCA	alpha-BHC	beta-BHC	Lindane	delta-BHC
Three Mile Pond Composite	9.1	0.65	< 0.05	< 0.03	< 0.01	0.31	< 0.01
Three Mile Pond-26-12	11	0.52	0.79	< 0.03	< 0.01	0.42	< 0.01
Three Mile Pond-28-5	12	0.63	0.43	< 0.03	< 0.01	0.58	< 0.01
Three Mile Pond-28-13	6.8	0.39	< 0.05	< 0.03	< 0.01	0.22	< 0.01
Mean*	**10**	**0.51**	**0.61**			**0.41**	
SD	**2.8**	**0.12**	**0.25**			**0.18**	
Rising Pond Composite	8.8	1.9	< 0.05	< 0.03	< 0.01	0.34	< 0.01
Rising Pond-25-12	9.0	3.2	0.05	< 0.03	< 0.01	0.40	< 0.01
Rising Pond-30-7	9.5	1.1	0.20	< 0.03	< 0.01	0.39	< 0.01
Rising Pond-30-9	13	5.4	0.12	< 0.03	< 0.01	0.55	< 0.01
Mean*	**10**	**3.2**	**0.13**			**0.45**	
SD	**1.9**	**2.2**	**0.08**			**0.09**	
Woods Pond Composite	8.1	7.0	0.59	< 0.03	< 0.01	0.41	< 0.01
Woods Pond-35-6	7.7	5.7	0.59	< 0.03	< 0.01	0.52	< 0.01
Woods Pond-35-8	11	11	0.69	< 0.03	< 0.01	0.45	< 0.01
Woods Pond-35-9	6.8	4.2	0.47	< 0.03	< 0.01	0.34	< 0.01
Mean*	**8.6**	**7.0**	**0.58**			**0.44**	
SD	**2.3**	**3.6**	**0.11**			**0.09**	
Deep Reach Composite - A	9.3	7.9	0.48	< 0.03	< 0.01	0.33	< 0.01
Deep Reach Composite - B	9.7	8.5	0.45	< 0.03	< 0.01	< 0.19	< 0.01
Deep Reach Composite- C	9.7	8.0	0.60	< 0.03	< 0.01	0.44	< 0.01
Composite Mean	**9.5**	**8.1**	**0.51**	**< 0.03**	**< 0.01**	**0.39**	**< 0.01**
SD	**0.23**	**0.32**	**0.08**			**0.08**	
Deep Reach Pond-27-7	7.0	5.9	0.36	< 0.03	< 0.01	0.28	< 0.01
Deep Reach Pond-31-1	16	14	< 0.05	< 0.03	< 0.01	0.60	< 0.01
Deep Reach Pond-31-2	9.4	11	0.11	< 0.03	< 0.01	0.38	< 0.01
Mean	**11**	**10**				**0.42**	
SD	**4.5**	**3.9**				**0.16**	
Mass adjusted method detection limit (MDL)		**0.11**	**0.05**	**0.03**	**0.01**	**0.19**	**0.01**

*Geometric mean does not include composite data.

Table 23 (Cont.). Organochlorine pesticide concentrations (ng/g wet wt.) in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	Heptachlor	Epoxide	Dacthal	Dieldrin	Endrin	Oxy-chlordane	cis-Chlordane
Three Mile Pond Composite	< 0.06	1.2	< 0.89	4.0	< 0.01	2.3	0.25
Three Mile Pond-26-12	< 0.06	< 0.01	< 0.89	3.6	< 0.01	1.1	0.82
Three Mile Pond-28-5	< 0.06	0.56	< 0.89	2.7	< 0.01	1.4	0.68
Three Mile Pond-28-13	< 0.06	< 0.01	< 0.89	3.1	< 0.01	0.52	0.57
Mean*				**3.1**		**1.0**	**0.69**
SD				**0.43**		**0.47**	**0.13**
Rising Pond Composite	< 0.06	< 0.01	< 0.89	8.4	< 0.01	7.4	5.2
Rising Pond-25-12	< 0.06	2.2	< 0.89	8.6	< 0.01	17	5.9
Rising Pond-30-7	< 0.06	1.0	< 0.89	6.4	< 0.01	4.2	2.8
Rising Pond-30-9	< 0.06	1.8	< 0.89	15	< 0.01	15	12
Mean*				**10**		**12**	**6.9**
SD				**4.7**		**6.9**	**4.7**
Woods Pond Composite	< 0.06	0.83	< 0.89	6.8	< 0.01	8.4	5.6
Woods Pond-35-6	< 0.06	1.1	< 0.89	9.6	< 0.01	4.9	4.2
Woods Pond-35-8	< 0.06	2.5	< 0.89	15	< 0.01	15	16
Woods Pond-35-9	< 0.06	< 0.01	< 0.89	6.4	< 0.01	8.5	3.8
Mean*				**10**		**10**	**7.8**
SD				**4.1**		**5.2**	**6.7**
Deep Reach Composite - A	< 0.06	< 0.01	< 0.89	7.2	< 0.01	8.2	6.5
Deep Reach Composite - B	< 0.06	1.4	< 0.89	9.7	< 0.01	6.8	7.8
Deep Reach Composite- C	< 0.06	1.9	< 0.89	9.8	< 0.01	7.0	7.0
Composite Mean	**< 0.06**	**1.6**	**< 0.89**	**8.9**	**< 0.01**	**7.3**	**7.1**
SD		**0.31**		**1.5**		**0.76**	**0.65**
Deep Reach Pond-27-7	< 0.06	< 0.01	< 0.89	8.0	< 0.01	4.9	6.0
Deep Reach Pond-31-1	< 0.06	< 0.01	< 0.89	15	< 0.01	13	17
Deep Reach Pond-31-2	< 0.06	2.9	< 0.89	8.7	< 0.01	7.4	6.3
Mean				**11**		**9**	**10**
SD				**3.9**		**4.3**	**6.5**
Mass adjusted method detection limit (MDL)	**0.06**	**0.01**	**0.89**	**0.01**	**0.01**	**0.01**	**0.01**

*Geometric mean does not include composite data.

Table 23 (Cont.). Organochlorine pesticide concentrations (ng/g wet wt.) in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	trans-Chlordane	cis-Nonachlor	trans-Nonachlor	o,p'-DDE	o,p'-DDD	o,p'-DDT	p,p'-DDE
Three Mile Pond Composite	< 0.01	< 0.01	1.6	< 0.01	0.60	< 0.08	210
Three Mile Pond-26-12	< 0.01	< 0.01	0.80	0.33	1.0	< 0.08	200
Three Mile Pond-28-5	< 0.01	< 0.01	0.75	0.55	1.2	< 0.08	220
Three Mile Pond-28-13	< 0.01	< 0.01	0.59	0.45	< 0.01	< 0.08	240
Mean*			**0.71**	**0.44**	**1.1**		**220**
SD			**0.11**	**0.11**	**0.15**		**20**
Rising Pond Composite	< 0.01	< 0.01	5.6	< 0.01	< 0.01	< 0.08	320
Rising Pond-25-12	1.6	< 0.01	6.7	< 0.01	9.2	< 0.08	410
Rising Pond-30-7	< 0.01	< 0.01	3.6	< 0.01	5.7	< 0.08	280
Rising Pond-30-9	3.1	< 0.01	9.6	< 0.01	17	< 0.08	800
Mean*			**6.6**		**11**		**500**
SD			**3.0**		**5.7**		**270**
Woods Pond Composite	2.0	< 0.01	5.1	< 0.01	11	< 0.08	650
Woods Pond-35-6	1.7	< 0.01	2.6	< 0.01	8.1	< 0.08	160
Woods Pond-35-8	4.5	< 0.01	12	< 0.01	20	< 0.08	860
Woods Pond-35-9	< 0.01	< 0.01	5.5	< 0.01	< 0.01	< 0.08	200
Mean*			**6.8**				**410**
SD			**5.0**				**390**
Deep Reach Composite - A	2.5	< 0.01	4.0	< 0.01	13	< 0.08	430
Deep Reach Composite - B	1.3	< 0.01	5.3	< 0.01	15	< 0.08	410
Deep Reach Composite- C	3.1	< 0.01	3.6	< 0.01	14	< 0.08	400
Composite Mean	**2.3**	**< 0.01**	**4.3**	**< 0.01**	**14**	**< 0.08**	**410**
SD	**0.90**		**0.91**		**1.1**		**15**
Deep Reach Pond-27-7	< 0.01	< 0.01	2.3	< 0.01	< 0.01	< 0.08	110
Deep Reach Pond-31-1	7.7	< 0.01	7.0	< 0.01	< 0.01	< 0.08	900
Deep Reach Pond-31-2	< 0.01	< 0.01	2.6	< 0.01	12	< 0.08	340
Mean			**4.0**				**450**
SD			**2.7**				**410**
Mass adjusted method detection limit (MDL)	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.08**	**0.70**

*Geometric mean does not include composite data.

Table 23 (Cont.). Organochlorine pesticide concentrations (ng/g wet wt.) in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	p,p'-DDD	p,p'-DDT	Endosulfan1	Endosulfan II	Endosulfan sulfate	Methoxy -chlor	Mirex
Three Mile Pond Composite	15	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	0.31
Three Mile Pond-26-12	22	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	0.20
Three Mile Pond-28-5	20	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	0.23
Three Mile Pond-28-13	15	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	0.34
Mean*	**19**						**0.26**
SD	**3.6**						**0.07**
Rising Pond Composite	57	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.1
Rising Pond-25-12	62	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.2
Rising Pond-30-7	50	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.3
Rising Pond-30-9	100	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	2.4
Mean*	**71**						**1.6**
SD	**26**						**0.66**
Woods Pond Composite	91	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	3.8
Woods Pond-35-6	50	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.1
Woods Pond-35-8	190	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	2.7
Woods Pond-35-9	36	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.0
Mean*	**92**						**1.6**
SD	**85**						**1.0**
Deep Reach Composite - A	100	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.3
Deep Reach Composite - B	110	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.4
Deep Reach Composite- C	110	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.1
Composite Mean	**110**	**< 3.2**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**1.3**
SD	**5.8**						**0.13**
Deep Reach Pond-27-7	50	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.6
Deep Reach Pond-31-1	170	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.3
Deep Reach Pond-31-2	90	< 3.2	< 0.01	< 0.01	< 0.01	< 0.01	1.1
Mean	**100**						**1.3**
SD	**61**						**0.27**
Mass adjusted method detection limit (MDL)	**0.25**	**3.2**	**0.01**	**0.01**	**0.01**	**0.01**	**0.03**

*Geometric mean does not include composite data.

Congener-specific and total PCBs:

Congener-specific PCB analysis was conducted on carcass homogenates and ovaries of largemouth bass from the study area and reference site. A total of 139 individual congeners were reported. The sum of the concentrations of the congeners was used to quantify total concentrations of PCBs in these same samples. Details of the analytical results are presented in an analytical report (CERC Organic Chemistry Section, Project Report # 3307-70L1E) which is attached in Appendix 1 and summarized below.

Largemouth bass carcass homogenates - The concentrations of congener-specific PCBs (ng/g wet weight) in homogenates of carcasses of largemouth bass from the Housatonic River were elevated (400-1400 fold greater) at all locations relative to homogenates of largemouth bass carcasses from the reference site, Three-Mile Pond (Table 24). Concentrations (mean and standard deviation) of total PCBs in the carcasses of the largemouth bass were 149,000 ± 7,900 ng/g at Deep Reach; 108,000 ± 17,600 ng/g at Woods Pond; 43,000 ± 2,500 ng/g at Rising Pond; and 106 ± 0.3 ng/g at Three-Mile Pond (Table 24).

The QC check samples for this set of samples and analyses all had results that were within the data quality objectives for these measurements. The only exception to this generalization was one of the replicates (replicate B) from the Three-Mile Pond sample set. The variability among replicates from Three Mile Pond was greater than the data quality objectives and over ten times greater (based on coefficients of variation) than the variability among the other replicate PCB analysis of samples from the Housatonic River (Table 24). Cross-contamination should not have occurred based on the sequence of sample processing. A blank was run in between each of the samples. However, cross contamination was implicated for the Three-Mile Pond replicate B sample based on principle components analysis (PCA) of the congener-specific PCB results of this data set (See Appendix 1, CERC Organic Chemistry Section Project Report # 3307-70L1E for details). The pattern of the PCB congeners in one replicate (B) from Three Mile Pond resembled the patterns of the PCB congener analysis from Rising Pond. Thus, it is likely that the

single replicate from Three-Mile Pond (B) was contaminated during processing by a small amount of one of the samples from Rising Pond. Results and toxicological interpretation of this data, over the course of the remainder of this report, are based on the average concentration of total PCBs from the two replicates (A and C) from Three-Mile Pond, discarding the third replicate (B) as an outlier.

Table 24. Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	Lipid (%)	IUPAC Congener Number 001	003	004	005	006	007	008	009	010	015	016	017
Three Mile Pond, 3MP-B*	1.8	< 0.01	< 0.01	< 0.26	< 0.01	< 0.01	0.01	0.04	< 0.01	< 0.01	0.03	< 0.01	0.06
Three Mile Pond, 3MP-C	1.7	< 0.01	< 0.01	< 0.26	< 0.01	< 0.01	< 0.01	0.03	< 0.01	< 0.01	0.01	< 0.01	< 0.03
Three Mile Pond, 3MP-D	1.9	< 0.01	< 0.01	< 0.26	< 0.01	< 0.01	< 0.01	0.05	< 0.01	< 0.01	0.02	< 0.01	< 0.03
Mean	**1.8**	**< 0.01**	**< 0.01**	**< 0.26**	**< 0.01**	**< 0.01**	**< 0.01**	**0.04**	**< 0.01**	**< 0.01**	**0.01**	**< 0.01**	**< 0.03**
SD	**0.1**							**0.01**			**0.00**		
Rising Pond, RP-A	2.0	< 0.01	< 0.01	0.77	< 0.01	0.05	0.02	0.09	< 0.01	0.02	0.08	0.78	3.3
Rising Pond, RP-B	1.9	< 0.01	< 0.01	0.79	< 0.01	0.03	< 0.01	0.10	< 0.01	0.02	0.02	0.64	3.1
Rising Pond, RP-C	1.8	< 0.01	< 0.01	0.78	0.01	0.04	0.01	0.08	0.01	0.01	< 0.01	0.79	3.3
Mean	**1.9**	**< 0.01**	**< 0.01**	**0.78**	**< 0.01**	**0.04**		**0.09**	**< 0.01**	**0.02**		**0.73**	**3.2**
SD	**0.1**			**0.01**		**0.01**		**0.01**		**0.00**		**0.08**	**0.2**
Woods Pond, WP-A	2.3	< 0.01	< 0.01	5.5	0.02	1.2	0.06	1.3	0.27	0.30	< 0.01	3.4	20
Woods Pond, WP-B	2.5	< 0.01	< 0.01	7.0	0.03	1.5	0.09	1.6	0.25	0.37	0.10	3.8	22
Woods Pond, WP-C	2.0	< 0.01	< 0.01	5.0	0.02	1.1	0.06	1.2	0.22	0.27	0.10	3.3	18
Mean	**2.3**	**< 0.01**	**< 0.01**	**5.8**	**0.02**	**1.3**	**0.07**	**1.4**	**0.24**	**0.31**		**3.5**	**20**
SD	**0.3**			**1.0**	**0.00**	**0.2**	**0.02**	**0.2**	**0.03**	**0.05**		**0.3**	**2.3**
Deep Reach, DR-A	2.5	< 0.01	< 0.01	5.6	< 0.01	1.3	0.07	1.5	0.43	0.33	< 0.01	4.3	26
Deep Reach, DR-B	2.4	< 0.01	< 0.01	5.9	< 0.01	1.4	0.08	1.5	0.22	0.34	0.01	4.0	27
Deep Reach, DR-C	2.5	< 0.01	< 0.01	5.6	0.02	1.4	0.07	1.6	0.22	0.33	< 0.01	4.3	27
Mean	**2.5**	**< 0.01**	**< 0.01**	**5.7**		**1.3**	**0.07**	**1.5**	**0.28**	**0.33**	**< 0.01**	**4.2**	**27**
SD	**0.1**			**0.1**		**0.1**	**0.00**	**0.0**	**0.12**	**0.00**		**0.2**	**0.7**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number												
	018	019	020	022	024	025	026	027	028	031	032	033	034
Three Mile Pond, 3MP-B*	0.18	0.19	< 0.01	0.03	< 0.01	0.08	0.08	0.01	0.31	0.08	< 0.54	< 0.09	< 0.48
Three Mile Pond, 3MP-C	0.12	0.18	< 0.01	< 0.01	< 0.01	0.03	< 0.02	< 0.01	0.12	0.04	< 0.54	< 0.09	< 0.48
Three Mile Pond, 3MP-D	0.14	0.20	< 0.01	< 0.01	< 0.01	0.12	< 0.02	< 0.01	0.08	0.05	< 0.54	< 0.09	< 0.48
Mean	**0.13**	**0.19**	**< 0.01**	**< 0.01**	**< 0.01**	**0.06**	**< 0.02**	**< 0.01**	**0.10**	**0.04**	**< 0.54**	**< 0.09**	**< 0.48**
SD	**0.01**	**0.01**				**0.07**			**0.02**	**0.00**			
Rising Pond, RP-A	2.6	2.1	0.14	0.69	< 0.01	2.3	6.6	2.3	11	1.7	4.2	< 0.09	< 0.48
Rising Pond, RP-B	2.4	1.9	0.13	0.63	< 0.01	2.5	6.1	2.0	9.9	1.6	3.9	0.10	< 0.48
Rising Pond, RP-C	2.6	2.2	0.15	0.65	< 0.01	2.3	6.5	2.2	11	1.7	4.2	0.38	< 0.48
Mean	**2.5**	**2.0**	**0.14**	**0.66**	**< 0.01**	**2.3**	**6.4**	**2.2**	**11**	**1.7**	**4.1**		**< 0.48**
SD	**0.1**	**0.1**	**0.01**	**0.03**		**0.1**	**0.3**	**0.1**	**1**	**0.1**	**0.2**		
Woods Pond, WP-A	17	9.1	1.5	3.8	< 0.01	17	37	12	51	12	19	0.62	< 0.48
Woods Pond, WP-B	19	10	1.6	4.1	< 0.01	21	40	13	55	15	21	1.3	< 0.48
Woods Pond, WP-C	16	8.4	1.4	3.6	< 0.01	16	34	11	48	12	18	1.2	< 0.48
Mean	**17**	**9.3**	**1.5**	**3.8**	**< 0.01**	**18**	**37**	**12**	**51**	**13**	**19**	**1.0**	**< 0.48**
SD	**1.7**	**1.0**	**0.11**	**0.28**		**2**	**3**	**1**	**3**	**1**	**2**	**0.4**	
Deep Reach, DR-A	19	14	1.5	3.6	0.21	15	38	15	44	14	25	1.9	< 0.48
Deep Reach, DR-B	19	13	1.4	3.6	0.20	15	38	16	45	13	24	< 0.09	< 0.48
Deep Reach, DR-C	19	13	1.5	3.6	0.20	16	37	16	45	14	24	< 0.09	< 0.48
Mean	**19**	**13**	**1.5**	**3.6**	**0.20**	**15**	**38**	**16**	**45**	**14**	**24**		**< 0.48**
SD	**0.4**	**0.6**	**0.0**	**0.0**	**0.01**	**0.5**	**0.5**	**0.4**	**0.4**	**0.4**	**0.5**		

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number												
	035	037,059	040	041	042	043	044	045	046	047	048	049	051
Three Mile Pond, 3MP-B*	0.82	0.03	0.07	0.01	1.6	0.07	0.63	< 0.01	< 0.01	7.2	< 0.01	4.3	0.30
Three Mile Pond, 3MP-C	0.92	< 0.01	0.01	0.01	0.07	0.01	0.12	< 0.01	< 0.01	0.42	< 0.01	0.29	< 0.01
Three Mile Pond, 3MP-D	0.02	0.02	0.01	0.01	0.11	< 0.01	0.13	< 0.01	< 0.01	0.59	< 0.01	0.37	0.03
Mean	**0.12**		**0.01**	**0.01**	**0.09**	**< 0.01**	**0.12**	**< 0.01**	**< 0.01**	**0.50**	**< 0.01**	**0.33**	
SD	**0.64**		**0.00**	**0.00**	**0.03**		**0.01**			**0.12**		**0.06**	
Rising Pond, RP-A	8.2	1.4	1.3	0.13	62	1.1	30	1.1	1.3	316	1.8	293	22
Rising Pond, RP-B	6.0	1.2	2.8	0.11	59	1.4	28	1.0	1.2	329	2.2	312	23
Rising Pond, RP-C	5.8	1.3	3.0	0.12	62	1.3	30	1.1	1.3	292	1.9	275	21
Mean	**6.6**	**1.3**	**2.2**	**0.12**	**61**	**1.3**	**29**	**1.1**	**1.2**	**310**	**2.0**	**290**	**22**
SD	**1.3**	**0.1**	**1.0**	**0.01**	**2**	**0.2**	**1**	**0.0**	**0.1**	**20**	**0.2**	**20**	**1**
Woods Pond, WP-A	13	3.7	7.5	0.66	138	4.2	91	3.4	5.5	626	6.0	654	70
Woods Pond, WP-B	14	4.2	8.7	0.77	164	8.8	101	3.8	5.8	751	7.2	794	85
Woods Pond, WP-C	12	3.6	6.7	0.63	143	3.3	86	3.1	5.1	650	5.9	678	71
Mean	**13**	**3.8**	**7.6**	**0.69**	**148**	**5.0**	**93**	**3.4**	**5.4**	**670**	**6.4**	**710**	**75**
SD	**1.3**	**0.3**	**1.0**	**0.07**	**14**	**3.0**	**8**	**0.3**	**0.4**	**70**	**0.7**	**80**	**8**
Deep Reach, DR-A	23	5.7	7.9	0.97	130	4.1	103	4.1	6.2	705	7.7	715	89
Deep Reach, DR-B	29	4.7	7.6	0.98	122	3.8	101	4.2	6.0	752	7.4	768	99
Deep Reach, DR-C	30	4.5	7.4	1.0	120	4.3	100	4.1	5.9	713	7.8	733	94
Mean	**27**	**4.9**	**7.6**	**0.99**	**124**	**4.1**	**101**	**4.1**	**6.0**	**720**	**7.7**	**740**	**94**
SD	**3.8**	**0.6**	**0.3**	**0.03**	**5**	**0.3**	**2**	**0.1**	**0.1**	**30**	**0.2**	**30**	**5**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number												
	052	053	054	055	056,060	057	058	063	064	066	067	069	070
Three Mile Pond, 3MP-B*	3.1	0.28	0.09	< 0.01	0.33	0.04	0.15	0.10	0.24	1.5	0.04	0.03	0.80
Three Mile Pond, 3MP-C	0.34	< 0.01	0.08	< 0.01	0.18	0.04	< 0.02	0.03	0.05	0.26	0.01	< 0.01	0.34
Three Mile Pond, 3MP-D	0.40	< 0.01	0.06	< 0.01	< 0.01	0.01	< 0.02	0.03	0.04	0.27	0.01	< 0.01	0.34
Mean	**0.37**	**< 0.01**	**0.07**	**< 0.01**	**< 0.01**	**0.02**	**< 0.02**	**0.03**	**0.05**	**0.27**	**0.01**	**< 0.01**	**0.34**
SD	**0.04**		**0.02**			**0.02**		**0.00**	**0.01**	**0.01**	**0.00**		**0.00**
Rising Pond, RP-A	166	23	0.24	< 0.01	6.6	0.57	2.9	3.6	9.8	74	1.3	1.3	21
Rising Pond, RP-B	159	21	0.20	< 0.01	6.1	0.63	3.3	3.5	9.4	68	1.2	1.3	20
Rising Pond, RP-C	167	23	< 0.04	< 0.01	6.0	0.62	2.7	3.6	9.9	73	1.3	1.2	22
Mean	**160**	**22**	**0.22**	**< 0.01**	**6.2**	**0.61**	**2.9**	**3.6**	**9.7**	**71**	**1.2**	**1.3**	**21**
SD	**0**	**1**	**0.02**		**0.3**	**0.03**	**0.3**	**0.1**	**0.3**	**3.4**	**0.1**	**0.1**	**1**
Woods Pond, WP-A	592	101	1.8	0.06	25	0.99	5.6	11	35	190	3.9	3.3	88
Woods Pond, WP-B	746	123	2.1	0.02	30	1.3	5.7	13	40	231	4.1	4.8	103
Woods Pond, WP-C	615	103	1.7	0.04	24	1.1	5.9	11	32	196	3.6	2.8	83
Mean	**650**	**109**	**1.86**	**0.04**	**26.5**	**1.14**	**5.7**	**12**	**35**	**205**	**3.8**	**3.6**	**91**
SD	**80**	**12**	**0.22**	**0.02**	**3.2**	**0.18**	**0.1**	**1**	**4**	**22**	**0.2**	**1.0**	**11**
Deep Reach, DR-A	701	115	2.1	0.09	37	0.56	4.8	10	36	178	3.8	3.6	104
Deep Reach, DR-B	739	135	1.4	0.08	32	0.55	5.2	12	39	191	3.7	4.6	100
Deep Reach, DR-C	710	131	1.8	0.09	32	0.68	5.4	11	39	183	3.7	4.3	100
Mean	**720**	**127**	**1.72**	**0.09**	**33.6**	**0.59**	**5.1**	**11**	**38**	**184**	**3.7**	**4.1**	**101**
SD	**20**	**10**	**0.37**	**0.00**	**2.5**	**0.07**	**0.3**	**1**	**2**	**6**	**0.0**	**0.5**	**2**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number											
	071	**072**	**074**	**075**	**082**	**083**	**084**	**086**	**087**	**090**	**091**	**092**
Three Mile Pond, 3MP-B*	2.5	0.13	0.67	0.16	0.56	0.20	0.86	0.18	4.5	4.5	3.2	6.6
Three Mile Pond, 3MP-C	0.08	< 0.01	0.21	0.01	0.08	0.03	0.16	< 0.00	0.51	0.13	0.21	0.35
Three Mile Pond, 3MP-D	0.10	< 0.01	0.21	< 0.01	0.06	0.03	0.14	< 0.00	0.57	0.16	0.26	0.27
Mean	**0.09**	**< 0.01**	**0.21**	**< 0.01**	**0.07**	**0.03**	**0.15**	**< 0.00**	**0.54**	**0.14**	**0.23**	**0.31**
SD	**0.02**		**0.00**		**0.02**	**0.00**	**0.01**		**0.04**	**0.02**	**0.03**	**0.06**
Rising Pond, RP-A	102	10	21	3.6	22	6.9	37	6.0	181	191.1	179	356
Rising Pond, RP-B	107	11	20	4.0	21	7.2	35	4.2	188	186.6	190	380
Rising Pond, RP-C	96	9.5	21	3.9	23	6.4	34	3.2	168	164.7	172	351
Mean	**100**	**10**	**20**	**3.8**	**22**	**6.8**	**35**	**4.3**	**180**	**180**	**180**	**360**
SD	**10**	**1**	**1**	**0.2**	**1**	**0.4**	**1**	**1.4**	**10**	**10**	**10**	**20**
Woods Pond, WP-A	180	21	60	16	40	13	123	8.0	373	307.4	339	662
Woods Pond, WP-B	217	25	70	17	53	16	163	9.2	496	366.0	413	825
Woods Pond, WP-C	188	20	58	12	43	13	129	11	398	307.3	353	700
Mean	**190**	**22**	**62**	**15**	**45**	**14**	**140**	**9.3**	**420**	**330**	**370**	**730**
SD	**20**	**2**	**6**	**3**	**7**	**2**	**20**	**1.4**	**70**	**30**	**40**	**90**
Deep Reach, DR-A	207	19	74	12	54	15	143	5.6	510	325.5	377	718
Deep Reach, DR-B	220	21	70	19	60	16	168	6.4	553	366.9	415	774
Deep Reach, DR-C	208	21	71	18	58	16	160	6.4	530	326.4	394	738
Mean	**210**	**21**	**71**	**16**	**57**	**16**	**160**	**6.1**	**530**	**340**	**400**	**740**
SD	**10**	**1**	**2**	**4**	**3**	**1**	**10**	**0.5**	**20**	**20**	**20**	**30**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number												
	095	**096**	**097**	**099**	**101**	**102**	**105**	**109**	**110**	**112**	**113**	**114**	**115**
Three Mile Pond, 3MP-B*	7.5	< 0.11	3.1	12	22	< 0.38	3.6	5.9	13	< 0.17	0.35	0.29	0.16
Three Mile Pond, 3MP-C	0.58	< 0.11	0.4	1.0	1.5	< 0.38	0.63	0.41	1.2	< 0.17	0.33	0.07	0.03
Three Mile Pond, 3MP-D	0.60	< 0.11	0.4	1.1	1.7	< 0.38	0.67	0.36	1.2	< 0.17	0.33	0.04	0.03
Mean	**0.59**	**< 0.11**	**0.4**	**1.0**	**1.6**	**< 0.38**	**0.65**	**0.38**	**1.2**	**< 0.17**	**0.33**	**0.05**	**0.03**
SD	**0.02**		**0.0**	**0.1**	**0.1**		**0.03**	**0.03**	**0.0**		**0.00**	**0.02**	**0.00**
Rising Pond, RP-A	463	2.2	169	728	1,178	5.8	115	290	608	0.80	8	12	6
Rising Pond, RP-B	493	1.8	180	766	1,239	3.9	118	299	650	2.4	18	11	6
Rising Pond, RP-C	437	2.3	161	682	1,095	6.2	107	257	587	2.2	17	9	7
Mean	**460**	**2.1**	**170**	**720**	**1,170**	**5.2**	**110**	**280**	**610**	**1.6**	**14**	**11**	**6**
SD	**30**	**0.3**	**10**	**40**	**70**	**1.2**	**10**	**20**	**30**	**0.8**	**6**	**1**	**0**
Woods Pond, WP-A	1,106	7.1	296	1,059	2,101	7.7	331	565	1,219	4.6	28	33	13
Woods Pond, WP-B	1,454	8.7	381	1,283	2,696	25	438	711	1,484	6.4	60	43	18
Woods Pond, WP-C	1,157	7.3	314	1,121	2,216	12	336	592	1,199	5.8	41	36	14
Mean	**1,230**	**7.7**	**330**	**1,150**	**2,320**	**13**	**370**	**620**	**1,290**	**5.5**	**41**	**37**	**15**
SD	**190**	**0.9**	**40**	**120**	**320**	**9.0**	**60**	**80**	**160**	**0.9**	**16**	**5**	**2**
Deep Reach, DR-A	1,459	8.4	369	1,139	2,793	15	503	568	1,481	0.93	33	34	17
Deep Reach, DR-B	1,525	8.3	408	1,218	2,884	30	532	665	1,701	3.9	49	34	20
Deep Reach, DR-C	1,475	8.4	391	1,157	2,768	18	490	581	1,525	3.4	44	34	23
Mean	**1,490**	**8.4**	**390**	**1,170**	**2,810**	**20**	**510**	**600**	**1,570**	**2.3**	**41**	**34**	**20**
SD	**30**	**0.0**	**20**	**40**	**60**	**7.9**	**20**	**50**	**120**	**1.6**	**8**	**0**	**3**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number												
	117	**118**	**119**	**122**	**123**	**128**	**129**	**130**	**131**	**132**	**133**	**134**	**136**
Three Mile Pond, 3MP-B*	1.3	14.2	2.0	0.03	0.29	7.0	1.2	3.6	0.29	12	3.1	2.2	2.9
Three Mile Pond, 3MP-C	0.10	1.9	0.2	< 0.01	0.02	0.63	0.09	0.22	< 0.04	0.81	< 0.21	0.2	0.5
Three Mile Pond, 3MP-D	0.11	2.2	0.2	< 0.01	< 0.01	0.62	0.09	0.23	< 0.04	0.91	< 0.21	0.4	0.4
Mean	**0.11**	**2.1**	**0.2**	**< 0.01**	**< 0.01**	**0.62**	**0.09**	**0.23**	**< 0.04**	**0.86**	**< 0.21**	**0.56**	**0.5**
SD	**0.01**	**0.2**	**0.0**			**0.01**	**0.00**	**0.00**		**0.07**		**1.10**	**0.1**
Rising Pond, RP-A	53	505	131	2.4	13	281	53	181	13	610	172	91	156
Rising Pond, RP-B	58	618	113	2.5	13	297	53	189	13	622	181	96	168
Rising Pond, RP-C	52	525	117	2.6	12	266	51	170	13	562	160	85	149
Mean	**54**	**550**	**120**	**2.5**	**13**	**280**	**52**	**180**	**13**	**600**	**170**	**91**	**160**
SD	**3**	**60**	**10**	**0.1**	**1**	**20**	**2**	**10**	**0**	**30**	**10**	**6**	**10**
Woods Pond, WP-A	83	954	225	4.4	18	480	97	326	26	1,860	264	191	440
Woods Pond, WP-B	103	1,265	268	6.0	24	640	131	416	35	2,276	342	260	596
Woods Pond, WP-C	87	918	225	4.8	20	518	105	331	27	1,870	276	207	467
Mean	**91**	**1,040**	**240**	**5.0**	**20**	**540**	**110**	**360**	**29**	**1,990**	**290**	**218**	**500**
SD	**11**	**190**	**20**	**0.9**	**3**	**80**	**18**	**50**	**5**	**240**	**40**	**36**	**80**
Deep Reach, DR-A	95	1,251	235	5.9	21	657	141	417	38	3,119	321	265	626
Deep Reach, DR-B	106	1,265	245	6.0	23	731	153	453	42	2,792	359	279	655
Deep Reach, DR-C	100	1,163	218	5.8	22	703	147	413	40	2,645	322	273	633
Mean	**100**	**1,230**	**230**	**5.9**	**22**	**700**	**147**	**430**	**40**	**2,850**	**330**	**272**	**640**
SD	**5**	**60**	**10**	**0.1**	**1**	**40**	**6**	**20**	**2**	**240**	**20**	**7**	**20**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number												
	137	**138**	**139**	**141**	**144**	**146**	**147**	**149**	**151**	**153**	**156**	**157**	**158**
Three Mile Pond, 3MP-B*	1.9	63.8	< 1.21	17.4	4.2	23.0	0.3	49.9	18.4	131.5	3.2	0.8	6.8
Three Mile Pond, 3MP-C	0.2	5.9	< 1.21	1.0	0.2	1.5	< 0.24	2.4	1.0	8.0	< 1.45	< 0.06	0.6
Three Mile Pond, 3MP-D	0.2	6.1	< 1.21	1.1	0.2	1.5	< 0.24	2.5	1.0	8.3	< 1.45	< 0.06	0.6
Mean	**0.2**	**6.0**	**< 1.21**	**1.0**	**0.2**	**1.5**	**< 0.24**	**2.5**	**1.0**	**8.1**	**< 1.45**	**< 0.06**	**0.6**
SD	**0.0**	**0.1**		**0.0**	**0.0**	**0.0**		**0.1**	**0.0**	**0.2**			**0.0**
Rising Pond, RP-A	72	2,404	16	823	164	1,461	17	2,557	955	7,657	281	34	330
Rising Pond, RP-B	75	2,535	17	871	171	1,429	20	2,685	1,025	7,612	281	36	343
Rising Pond, RP-C	68	2,256	15	785	154	1,284	21	2,410	912	6,718	255	33	314
Mean	**72**	**2,400**	**16**	**830**	**160**	**1,390**	**19**	**2,500**	**960**	**7,300**	**270**	**34**	**330**
SD	**4**	**140**	**1**	**40**	**10**	**90**	**2**	**100**	**60**	**500**	**10**	**2**	**10**
Woods Pond, WP-A	105	6,827	28	2,186	622	2,193	46	6,397	2,659	12,179	262	56	784
Woods Pond, WP-B	136	8,822	36	2,879	844	2,733	40	8,743	3,470	15,580	432	75	1,109
Woods Pond, WP-C	114	6,994	30	2,175	622	2,196	32	6,324	2,612	12,202	278	54	823
Mean	**118**	**7,500**	**31**	**2,390**	**690**	**2,360**	**39**	**7,100**	**2,890**	**13,200**	**320**	**61**	**890**
SD	**16**	**1,110**	**4**	**400**	**130**	**310**	**7**	**1,400**	**480**	**2,000**	**90**	**11**	**180**
Deep Reach, DR-A	136	1,0376	35	3,241	844	2,834	63	9,513	3,480	16,778	336	63	1,198
Deep Reach, DR-B	149	1,0519	39	3,545	991	3,129	74	11,118	3,988	18,599	562	96	1,326
Deep Reach, DR-C	142	9639	37	3,233	908	2,832	70	10,098	3,611	16,942	511	86	1,249
Mean	**142**	**10,170**	**37**	**3,340**	**910**	**2,930**	**69**	**10,200**	**3,690**	**17,400**	**460**	**80**	**1,260**
SD	**7**	**470**	**2**	**180**	**70**	**170**	**5**	**800**	**260**	**1,000**	**120**	**17**	**60**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number												
	163	**164**	**166**	**167**	**170**	**171**	**172**	**173**	**174**	**175**	**176**	**177**	**178**
Three Mile Pond, 3MP-B*	23.6	2.1	< 0.04	2.3	46.6	7.7	7.4	0.3	19.4	1.5	2.7	14	7.3
Three Mile Pond, 3MP-C	1.5	< 0.36	< 0.04	0.21	2.0	< 0.55	0.45	< 0.14	0.90	< 0.36	0.17	0.76	0.45
Three Mile Pond, 3MP-D	1.5	< 0.36	< 0.04	0.21	1.8	< 0.55	0.33	< 0.14	0.83	< 0.36	0.19	0.69	0.42
Mean	**1.5**	**< 0.36**	**< 0.04**	**0.21**	**1.9**	**< 0.55**	**0.38**	**< 0.14**	**0.87**	**< 0.36**	**0.18**	**0.72**	**0.43**
SD	**0.0**			**0.00**	**0.1**		**0.08**		**0.05**		**0.01**	**0.05**	**0.02**
Rising Pond, RP-A	977	376	12	119	2,506	421	342	14	1,108	73	50	682	363
Rising Pond, RP-B	1,045	359	13	126	2,609	444	365	14	1,168	77	60	731	385
Rising Pond, RP-C	937	309	12	113	2,362	395	326	13	1,038	70	55	650	346
Mean	**990**	**350**	**12**	**120**	**2,500**	**420**	**340**	**14**	**1,100**	**73**	**55**	**690**	**360**
SD	**50**	**40**	**1**	**10**	**100**	**20**	**20**	**1**	**60**	**4**	**5**	**40**	**20**
Woods Pond, WP-A	1,985	759	20	218	4,670	1,053	829	63	3,415	208	91	1,820	940
Woods Pond, WP-B	2,563	1,137	24	286	6,544	1,439	1,072	98	4,858	272	107	2,439	1,248
Woods Pond, WP-C	1,937	893	20	220	4,805	1,063	833	77	3,453	209	89	1,816	946
Mean	**2,140**	**920**	**21**	**240**	**5,300**	**1,170**	**900**	**78**	**3,850**	**228**	**95**	**2,010**	**1,040**
SD	**350**	**190**	**3**	**40**	**1,000**	**220**	**140**	**18**	**820**	**37**	**10**	**360**	**180**
Deep Reach, DR-A	2,818	1,024	24	299	7,171	1,556	1,255	124	5,373	307	172	2,775	1,367
Deep Reach, DR-B	3,348	1,023	28	342	8,737	1,770	1,341	132	6,332	332	463	3,069	1,465
Deep Reach, DR-C	3,131	775	25	311	7,927	1,618	1,221	126	5,755	304	491	2,793	1,346
Mean	**3,090**	**930**	**26**	**320**	**7,900**	**1,650**	**1,270**	**127**	**5,810**	**314**	**339**	**2,880**	**1,390**
SD	**270**	**140**	**2**	**20**	**800**	**110**	**60**	**4**	**480**	**15**	**177**	**170**	**60**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number											
	179	**180**	**183**	**185**	**187**	**189**	**190**	**191**	**193**	**194**	**195**	**196**
Three Mile Pond, 3MP-B*	3.6	100	28	3.2	57	1.5	13	1.3	5.7	15	5.9	5.5
Three Mile Pond, 3MP-C	0.24	5.2	2.0	< 0.48	3.7	< 0.56	0.80	< 0.54	0.38	0.81	0.29	0.51
Three Mile Pond, 3MP-D	0.24	4.9	1.9	< 0.48	3.4	< 0.56	0.83	< 0.54	0.36	0.74	0.26	0.53
Mean	**0.24**	**5.0**	**1.9**	**< 0.48**	**3.5**	**< 0.56**	**0.82**	**< 0.54**	**0.37**	**0.78**	**0.27**	**0.52**
SD	**0.01**	**0.2**	**0.0**		**0.2**		**0.02**		**0.02**	**0.05**	**0.02**	**0.01**
Rising Pond, RP-A	195	5,646	1,090	164	1,467	69	323	74	371	621	330	256
Rising Pond, RP-B	206	5,683	1,146	172	1,409	73	328	79	379	661	347	296
Rising Pond, RP-C	186	4,947	1,023	154	1,401	66	293	70	331	591	308	247
Mean	**200**	**5,400**	**1,090**	**160**	**1,420**	**69**	**310**	**74**	**360**	**620**	**330**	**270**
SD	**10**	**400**	**60**	**10**	**40**	**4**	**20**	**5**	**30**	**40**	**20**	**30**
Woods Pond, WP-A	736	9,676	3,470	444	6,498	151	1,342	180	626	1,614	367	913
Woods Pond, WP-B	1,114	12,589	4,569	615	8,475	207	1,795	255	828	2,191	714	1,256
Woods Pond, WP-C	719	9,675	3,554	454	6,580	157	1,454	187	639	1,652	342	973
Mean	**840**	**10,600**	**3,830**	**500**	**7,130**	**170**	**1,520**	**205**	**690**	**1,800**	**450**	**1,040**
SD	**220**	**1,700**	**610**	**100**	**1,120**	**31**	**240**	**41**	**110**	**320**	**210**	**180**
Deep Reach, DR-A	1,006	14,844	5,471	681	10,932	249	2,409	291	1,025	2,671	575	1,564
Deep Reach, DR-B	1,352	16,102	5,597	775	11,622	252	2,160	312	1,089	2,937	1,202	1,611
Deep Reach, DR-C	1,221	14,651	5,098	705	10,607	234	2,011	285	992	2,705	1,069	1,527
Mean	**1,180**	**15,200**	**5,380**	**720**	**11,050**	**245**	**2,190**	**296**	**1,030**	**2,770**	**900**	**1,570**
SD	**170**	**800**	**260**	**50**	**520**	**9**	**200**	**14**	**50**	**140**	**330**	**40**

*Outlier, not used in subsequent calculations

Table 24 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in whole, ground largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 197	198	199	200	201	202	203	205	206	208	209	Total PCBs
Three Mile Pond, 3MP-B*	0.77	0.71	13	0.52	1.3	2.1	12	0.60	2.6	0.35	0.58	943
Three Mile Pond, 3MP-C	< 0.15	0.05	1.0	< 0.17	0.12	0.16	0.67	< 0.15	0.42	0.12	0.58	106
Three Mile Pond, 3MP-D	< 0.15	0.04	0.95	< 0.17	0.06	0.16	0.62	< 0.15	0.44	0.13	0.63	106
Mean	**< 0.15**	**0.05**	**0.98**	**< 0.17**	**0.08**	**0.16**	**0.64**	**< 0.15**	**0.43**	**0.12**	**0.60**	**106**
SD		**0.01**	**0.05**		**0.04**	**0.00**	**0.04**		**0.02**	**0.01**	**0.04**	**0.3**
Rising Pond, RP-A	27	34	607	23	67	87	607	42	111	10	4.3	44,168
Rising Pond, RP-B	28	36	651	25	69	91	639	44	117	11	4.3	45,525
Rising Pond, RP-C	26	33	581	22	61	81	570	40	104	9.5	4.3	40,718
Mean	**27**	**34**	**610**	**23**	**65**	**86**	**600**	**42**	**110**	**10.1**	**4.3**	**43,000**
SD	**1**	**2**	**40**	**2**	**4**	**5**	**30**	**2**	**6**	**0.6**	**0.0**	**2,500**
Woods Pond, WP-A	129	69	1,761	144	243	277	1,275	100	287	35	6.6	97,846
Woods Pond, WP-B	165	115	2,358	207	331	387	1,745	145	401	48	7.5	128,972
Woods Pond, WP-C	137	72	1,778	148	245	283	1,315	106	299	38	6.5	99,219
Mean	**143**	**83**	**1,950**	**164**	**270**	**312**	**1,430**	**115**	**325**	**39.6**	**6.9**	**108,000**
SD	**19**	**26**	**340**	**35**	**50**	**62**	**260**	**24**	**63**	**7.0**	**0.6**	**17,600**
Deep Reach, DR-A	234	108	2,873	268	405	428	2,115	171	499	68	10	143,693
Deep Reach, DR-B	196	161	3,128	257	419	482	2,355	180	576	65	10	157,968
Deep Reach, DR-C	181	147	2,848	235	381	437	2,154	172	528	58	10	144,796
Mean	**203**	**137**	**2,950**	**253**	**401**	**449**	**2,210**	**174**	**534**	**63.4**	**9.9**	**149,000**
SD	**28**	**27**	**150**	**17**	**19**	**29**	**130**	**5**	**39**	**4.9**	**0.4**	**7,900**

*Outlier, not used in subsequent calculations

Largemouth bass ovaries - The concentrations of congener-specific PCBs (ng/g wet weight) in individual and composite ovary samples of largemouth bass from the Housatonic River were elevated (300-550 fold greater) at all locations relative to ovary samples of largemouth bass from the reference site, Three-Mile Pond (Table 25). Concentrations (mean and standard deviation) of total PCBs in individual samples of ovaries of largemouth bass were 315,000 ± 230,000 ng/g at Deep Reach; 251,000 ± 140,000 ng/g at Woods Pond; 193,000 ± 70,000 ng/g at Rising Pond; and 634 ± 290 ng/g at Three-Mile Pond (Table 25). The concentrations of total PCBs in the ovary composite samples from these same locations were 448,000 ng/g at Deep Reach; 440,000 ng/g at Woods Pond; 160,000 ng/g at Rising Pond; and 560 ng/g at Three-Mile Pond (Table 25).

The QC check samples associated with this batch were all within acceptable limits of the data quality objectives. The coefficients of variation were 35-62% for among-fish variance of ovarian concentrations of total PCBs (Table 25). The analytical variation was 10%, based upon the variance associated with replicate analysis of the composite ovary sample from the Deep Reach area of the Housatonic River (Table 25).

Table 25. Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	Lipid (%)	IUPAC Congener Number 001	003	004	005	006	007	008
Three Mile Pond Composite	9.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.03
Three Mile Pond-26-12	11	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.22
Three Mile Pond-28-5	13	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	0.16
Three Mile Pond-28-13	6.9	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.76	< 0.02
Mean*	**9.8**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**			
SD	**3.0**							
Rising Pond Composite	8.8	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02
Rising Pond-25-12	9.4	< 0.01	< 0.01	6.1	< 0.01	0.32	< 0.01	0.60
Rising Pond-30-7	8.9	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02
Rising Pond-30-9	13	< 0.01	< 0.01	7.2	< 0.01	0.49	< 0.01	0.80
Mean*	**10.2**	**< 0.01**	**< 0.01**		**< 0.01**		**< 0.01**	
SD	**2.0**							
Woods Pond Composite	8.1	< 0.01	< 0.01	< 0.01	< 0.01	3.4	0.21	3.7
Woods Pond-35-6	7.9	< 0.01	< 0.01	11	< 0.01	2.5	0.16	2.8
Woods Pond-35-8	11	< 0.01	< 0.01	11	< 0.01	5.6	0.35	3.7
Woods Pond-35-9	10	< 0.01	< 0.01	18	< 0.01	6.7	0.25	4.5
Mean*	**9.5**	**< 0.01**	**< 0.01**	**13**	**< 0.01**	**4.5**	**0.24**	**3.6**
SD	**1.5**			**4.2**		**2.2**	**0.09**	**0.8**
Deep Reach Pond-27-7	6.5	< 0.01	< 0.01	43	< 0.01	6.4	0.43	8.1
Deep Reach Pond-31-1	16	< 0.01	< 0.01	17	< 0.01	3.6	0.28	4.7
Deep Reach Pond-31-2	10	< 0.01	< 0.01	14	< 0.01	2.3	0.2	2.8
Mean	**10.1**	**< 0.01**	**< 0.01**	**22**	**< 0.01**	**3.8**	**0.29**	**4.7**
SD	**4.8**			**16**		**2.1**	**0.12**	**2.7**
Deep Reach Composite - A	8.8	< 0.01	< 0.01	14	< 0.01	3.7	0.28	3.4
Deep Reach Composite - B	8.8	< 0.01	< 0.01	13	< 0.01	4.0	0.18	3.3
Deep Reach Composite - C	8.7	< 0.01	< 0.01	15	< 0.01	3.0	0.23	3.9
Composite Mean	**8.8**	**< 0.01**	**< 0.01**	**14**	**< 0.01**	**3.5**	**0.23**	**3.5**
SD				**0.9**		**0.5**	**0.05**	**0.3**
Mass adjusted method detection limit (MDL)		**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 009	010	015	016	017	018	019	020
Three Mile Pond Composite	< 0.01	< 0.01	0.25	0.03	< 0.01	0.09	< 0.05	< 0.01
Three Mile Pond-26-12	< 0.01	< 0.01	0.10	0.26	0.24	0.55	0.12	< 0.01
Three Mile Pond-28-5	0.01	< 0.01	0.17	0.16	0.16	0.44	0.09	< 0.01
Three Mile Pond-28-13	0.01	< 0.01	< 0.01	< 0.01	0.39	0.14	< 0.05	< 0.01
Mean*		**< 0.01**			**0.25**	**0.32**		**< 0.01**
SD					**0.1**	**0.2**		
Rising Pond Composite	< 0.01	< 0.01	< 0.01	2.8	13	9.8	7.4	0.31
Rising Pond-25-12	< 0.01	0.20	< 0.01	5.8	22	16	14	0.79
Rising Pond-30-7	< 0.01	< 0.01	< 0.01	0.88	5.5	4.0	2.9	< 0.01
Rising Pond-30-9	< 0.01	0.35	< 0.01	7.4	32	26	20	1.6
Mean*	**< 0.01**		**< 0.01**	**3.4**	**20**	**12**	**9**	
SD				**3.4**	**13**	**11**	**8.8**	
Woods Pond Composite	0.93	< 0.01	< 0.01	12	71	53	33	4.9
Woods Pond-35-6	0.68	0.52	< 0.01	11	53	46	30	3.8
Woods Pond-35-8	0.70	0.52	< 0.01	20	120	79	40	7.8
Woods Pond-35-9	1.1	0.92	< 0.01	17	84	71	47	5.9
Mean*	**0.82**	**0.63**	**< 0.01**	**15**	**80**	**64**	**38**	**5.6**
SD	**0.26**	**0.23**		**5**	**34**	**17**	**9**	**2.0**
Deep Reach Pond-27-7	2.1	2.0	0.23	33	150	110	92	7.7
Deep Reach Pond-31-1	0.84	0.92	< 0.01	18	110	74	54	5.2
Deep Reach Pond-31-2	0.62	0.73	< 0.01	13	66	42	44	2.6
Mean	**1.03**	**1.10**		**20**	**100**	**70**	**60**	**4.7**
SD	**0.80**	**0.69**		**10**	**42**	**34**	**25**	**2.6**
Deep Reach Composite - A	0.59	0.78	< 0.01	15	98	58	46	4.4
Deep Reach Composite - B	0.58	0.70	< 0.01	14	86	51	41	3.5
Deep Reach Composite - C	0.74	0.78	< 0.01	16	110	65	51	4.3
Composite Mean	**0.63**	**0.75**	**< 0.01**	**15**	**100**	**58**	**46**	**4.0**
SD	**0.09**	**0.04**		**1.1**	**12**	**7.1**	**5.1**	**0.51**
Mass adjusted method detection limit (MDL)	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.05**	**0.01**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 022	024	025	026	027	028	031	032
Three Mile Pond Composite	0.10	< 0.01	< 0.01	0.04	< 0.01	0.38	0.16	< 0.15
Three Mile Pond-26-12	0.27	< 0.01	0.10	0.09	0.02	0.72	0.47	0.18
Three Mile Pond-28-5	0.20	< 0.01	0.09	0.10	0.02	0.66	0.39	< 0.15
Three Mile Pond-28-13	0.07	< 0.01	0.21	< 0.02	< 0.01	0.42	0.14	0.26
Mean*	**0.15**	**< 0.01**	**0.12**			**0.59**	**0.30**	
SD	**0.10**		**0.07**			**0.16**	**0.17**	
Rising Pond Composite	2.5	< 0.01	9.9	27	8.5	46	6.9	16
Rising Pond-25-12	4.4	< 0.01	14	37	14	67	9.2	25
Rising Pond-30-7	1.1	< 0.01	4.6	13	3.5	21	3.9	6.1
Rising Pond-30-9	5.9	< 0.01	21	58	23	110	13	38
Mean*	**3.0**	**< 0.01**	**11**	**30**	**10**	**50**	**7.7**	**20**
SD	**2.5**		**8.2**	**22**	**10**	**40**	**4.5**	**16**
Woods Pond Composite	13	< 0.01	63	130	39	190	43	71
Woods Pond-35-6	9.7	< 0.01	38	86	29	130	27	53
Woods Pond-35-8	21	< 0.01	100	210	61	290	71	130
Woods Pond-35-9	15	0.03	77	140	48	210	51	85
Mean*	**14**		**67**	**140**	**44**	**200**	**46**	**80**
SD	**5.7**		**31**	**62**	**16**	**80**	**22**	**39**
Deep Reach Pond-27-7	21	0.06	80	170	86	340	72	140
Deep Reach Pond-31-1	13	0.15	63	150	66	170	61	95
Deep Reach Pond-31-2	6.5	0.08	29	71	37	89	19	70
Mean	**12**	**0.09**	**53**	**120**	**59**	**170**	**44**	**100**
SD	**7.3**	**0.05**	**26**	**52**	**25**	**130**	**28**	**35**
Deep Reach Composite - A	11	0.08	53	140	55	160	40	84
Deep Reach Composite - B	9.8	< 0.01	48	120	49	140	36	74
Deep Reach Composite - C	12	0.02	62	150	62	170	44	93
Composite Mean	**11**	**0.04**	**54**	**140**	**55**	**160**	**40**	**80**
SD	**1.1**	**0.04**	**6.9**	**15**	**6.5**	**15**	**4.3**	**9.4**
Mass adjusted method detection limit (MDL)	**0.01**	**0.01**	**0.01**	**0.02**	**0.01**	**0.06**	**0.03**	**0.15**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 033	034	035	037,059	040	041	042	043
Three Mile Pond Composite	0.22	< 0.01	0.08	0.07	0.09	< 0.02	0.40	0.06
Three Mile Pond-26-12	0.39	< 0.01	0.05	0.13	0.15	0.02	0.45	0.04
Three Mile Pond-28-5	0.30	< 0.01	0.09	0.10	0.20	0.04	0.51	0.03
Three Mile Pond-28-13	0.06	0.04	< 0.01	0.04	< 0.09	< 0.02	0.62	0.11
Mean*	**0.19**			**0.08**			**0.53**	**0.05**
SD	**0.17**			**0.04**			**0.09**	**0.04**
Rising Pond Composite	1.1	0.39	0.37	5.3	6.0	0.49	270	13
Rising Pond-25-12	1.6	0.54	0.58	6.4	7.8	0.73	300	37
Rising Pond-30-7	0.47	0.19	< 0.01	3.3	4.0	0.25	240	12
Rising Pond-30-9	2.4	0.75	1.0	12	15	0.92	600	22
Mean*	**1.2**	**0.4**		**6.3**	**7.8**	**0.6**	**350**	**21**
SD	**1.0**	**0.29**		**4.2**	**5.7**	**0.35**	**190**	**13**
Woods Pond Composite	8.9	1.9	0.67	17	17	2.4	860	38
Woods Pond-35-6	5.5	1.3	0.56	8.4	19	1.7	530	41
Woods Pond-35-8	12	2.8	1.2	22	26	3.4	1,300	84
Woods Pond-35-9	7.5	2.1	1.3	11	25	2.4	740	47
Mean*	**7.9**	**1.9**	**0.9**	**13**	**23**	**2.4**	**800**	**54**
SD	**3.3**	**0.77**	**0.38**	**7.3**	**3.7**	**0.82**	**400**	**23**
Deep Reach Pond-27-7	11	3.3	1.8	20	62	4.8	1,900	120
Deep Reach Pond-31-1	7.9	1.7	0.98	16	24	3.3	650	44
Deep Reach Pond-31-2	4.4	0.9	0.63	6.8	12	1.1	270	19
Mean	**7.3**	**1.7**	**1.04**	**13**	**26**	**2.6**	**690**	**46**
SD	**3.3**	**1.2**	**0.60**	**6.8**	**26**	**1.9**	**850**	**53**
Deep Reach Composite - A	6.2	2.0	0.93	21	37	3.3	1,000	46
Deep Reach Composite - B	6.1	1.8	0.81	19	25	2.8	940	38
Deep Reach Composite - C	6.0	2.2	0.98	22	33	3.6	1,200	49
Composite Mean	**6.1**	**2.0**	**0.90**	**20**	**31**	**3.2**	**1,040**	**44**
SD	**0.08**	**0.21**	**0.09**	**1.8**	**6.0**	**0.42**	**140**	**5.9**
Mass adjusted method detection limit (MDL)	**0.03**	**0.01**	**0.01**	**0.01**	**0.09**	**0.02**	**0.26**	**0.03**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 044	045	046	047	048	049	051	052
Three Mile Pond Composite	0.52	0.03	< 0.01	1.7	< 2.3	1.1	< 0.07	1.4
Three Mile Pond-26-12	0.83	0.11	0.03	1.6	< 2.3	1.3	< 0.07	1.7
Three Mile Pond-28-5	0.72	0.20	0.03	< 1.6	< 2.3	1.4	< 0.07	1.7
Three Mile Pond-28-13	0.94	0.05	< 0.01	3.4	< 2.3	2.1	0.12	2.4
Mean*	**0.82**	**0.10**			**< 2.3**	**1.53**		**1.95**
SD	**0.11**	**0.08**				**0.4**		**0.40**
Rising Pond Composite	130	4.4	5.0	1,500	11	960	74	750
Rising Pond-25-12	140	6.0	7.4	1,800	11	1,200	110	840
Rising Pond-30-7	99	2.9	2.8	1,300	4.3	750	52	590
Rising Pond-30-9	260	10	11	2,700	14	2,000	160	1,400
Mean*	**150**	**5.7**	**6.1**	**1,800**	**9**	**1,200**	**100**	**890**
SD	**84**	**3.7**	**4.0**	**710**	**5.1**	**630**	**54**	**410**
Woods Pond Composite	360	13	19	3,700	23	2,900	320	2,500
Woods Pond-35-6	290	13	26	3,000	14	2,000	340	1,500
Woods Pond-35-8	530	23	28	6,400	30	4,700	620	3,800
Woods Pond-35-9	380	19	43	4,200	34	3,200	550	2,600
Mean*	**390**	**18**	**32**	**4,300**	**24**	**3,100**	**490**	**2,460**
SD	**120**	**4.9**	**10**	**1,700**	**11**	**1,400**	**150**	**1,150**
Deep Reach Pond-27-7	1,000	43	81	9,400	51	7,600	1,100	6,000
Deep Reach Pond-31-1	360	15	24	3,800	22	2,700	400	2,700
Deep Reach Pond-31-2	170	8.9	20	2,100	20	1,300	320	930
Mean	**390**	**18**	**34**	**4,200**	**28**	**3,000**	**520**	**2,470**
SD	**430**	**18**	**34**	**3,800**	**17**	**3,310**	**430**	**2,570**
Deep Reach Composite - A	460	20	34	5,300	26	3,800	620	2,700
Deep Reach Composite - B	420	18	30	4,800	25	3,500	570	3,000
Deep Reach Composite - C	540	24	40	5,900	27	4,300	700	3,700
Composite Mean	**470**	**21**	**34**	**5,300**	**26**	**3,900**	**630**	**3,110**
SD	**61**	**3.0**	**4.8**	**550**	**1.4**	**400**	**66**	**510**
Mass adjusted method detection limit (MDL)	**0.16**	**0.01**	**0.01**	**1.6**	**2.3**	**0.82**	**0.07**	**0.68**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 053	054	055	056,060	057	058	063	064
Three Mile Pond Composite	< 0.10	< 0.01	< 0.01	0.51	< 2.0	0.09	0.25	0.27
Three Mile Pond-26-12	0.14	0.03	< 0.01	0.74	2.2	0.11	0.22	0.30
Three Mile Pond-28-5	0.17	0.03	< 0.01	0.70	4.0	0.18	0.30	0.32
Three Mile Pond-28-13	0.36	< 0.01	< 0.01	0.62	9.8	< 0.01	0.04	0.31
Mean*	**0.21**		**< 0.01**	**0.69**	**4.38**		**0.14**	**0.31**
SD	**0.12**			**0.07**	**4.0**		**0.14**	**0.01**
Rising Pond Composite	99	1.6	< 0.01	26	11	15	19	41
Rising Pond-25-12	140	2.7	< 0.01	34	10	12	22	52
Rising Pond-30-7	60	0.93	< 0.01	19	38	14	15	32
Rising Pond-30-9	210	1.7	0.02	53	19	29	40	84
Mean*	**120**	**1.6**		**33**	**19**	**17**	**23**	**52**
SD	**75**	**0.90**		**17**	**14**	**9.4**	**13**	**26**
Woods Pond Composite	340	1.6	0.09	100	4.6	30	51	130
Woods Pond-35-6	360	4.1	0.12	57	4.2	12	33	83
Woods Pond-35-8	590	2.6	0.25	110	9.1	47	82	220
Woods Pond-35-9	570	8.2	0.19	76	9.9	22	52	120
Mean*	**490**	**4**	**0.18**	**78**	**7.2**	**23**	**52**	**130**
SD	**130**	**2.9**	**0.06**	**27**	**3.1**	**18**	**25**	**70**
Deep Reach Pond-27-7	1,200	19	0.47	170	7.7	68	130	370
Deep Reach Pond-31-1	450	5.7	0.40	130	3.3	13	39	140
Deep Reach Pond-31-2	310	5.4	< 0.01	25	7.1	13	15	44
Mean	**550**	**8**	**0.43**	**82**	**5.7**	**23**	**42**	**132**
SD	**480**	**7.8**		**75**	**2.4**	**32**	**61**	**170**
Deep Reach Composite - A	580	7.3	0.27	120	4.5	18	58	140
Deep Reach Composite - B	540	6.7	0.30	110	4.1	21	54	130
Deep Reach Composite - C	680	7.8	0.28	140	6.3	20	70	180
Composite Mean	**600**	**7**	**0.28**	**123**	**4.9**	**19**	**60**	**149**
SD	**72**	**0.50**	**0.01**	**15**	**1.1**	**1.4**	**8.4**	**26**
Mass adjusted method detection limit (MDL)	**0.10**	**0.01**	**0.01**	**0.26**	**2.0**	**0.01**	**0.01**	**0.03**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 053	054	055	056, 060	057	058	063	064
Three Mile Pond Composite	< 0.10	< 0.01	< 0.01	0.51	< 2.0	0.09	0.25	0.27
Three Mile Pond-26-12	0.14	0.03	< 0.01	0.74	2.2	0.11	0.22	0.30
Three Mile Pond-28-5	0.17	0.03	< 0.01	0.70	4.0	0.18	0.30	0.32
Three Mile Pond-28-13	0.36	< 0.01	< 0.01	0.62	9.8	< 0.01	0.04	0.31
Mean*	**0.21**		**< 0.01**	**0.69**	**4.38**		**0.14**	**0.31**
SD	**0.12**			**0.07**	**4.0**		**0.14**	**0.01**
Rising Pond Composite	99	1.6	< 0.01	26	11	15	19	41
Rising Pond-25-12	140	2.7	< 0.01	34	10	12	22	52
Rising Pond-30-7	60	0.93	< 0.01	19	38	14	15	32
Rising Pond-30-9	210	1.7	0.02	53	19	29	40	84
Mean*	**120**	**1.6**		**33**	**19**	**17**	**23**	**52**
SD	**75**	**0.90**		**17**	**14**	**9.4**	**13**	**26**
Woods Pond Composite	340	1.6	0.09	100	4.6	30	51	130
Woods Pond-35-6	360	4.1	0.12	57	4.2	12	33	83
Woods Pond-35-8	590	2.6	0.25	110	9.1	47	82	220
Woods Pond-35-9	570	8.2	0.19	76	9.9	22	52	120
Mean*	**490**	**4**	**0.18**	**78**	**7.2**	**23**	**52**	**130**
SD	**130**	**2.9**	**0.06**	**27**	**3.1**	**18**	**25**	**70**
Deep Reach Pond-27-7	1,200	19	0.47	170	7.7	68	130	370
Deep Reach Pond-31-1	450	5.7	0.40	130	3.3	13	39	140
Deep Reach Pond-31-2	310	5.4	< 0.01	25	7.1	13	15	44
Mean	**550**	**8**	**0.43**	**82**	**5.7**	**23**	**42**	**132**
SD	**480**	**7.8**		**75**	**2.4**	**32**	**61**	**170**
Deep Reach Composite - A	580	7.3	0.27	120	4.5	18	58	140
Deep Reach Composite - B	540	6.7	0.30	110	4.1	21	54	130
Deep Reach Composite - C	680	7.8	0.28	140	6.3	20	70	180
Composite Mean	**600**	**7**	**0.28**	**123**	**4.9**	**19**	**60**	**149**
SD	**72**	**0.50**	**0.01**	**15**	**1.1**	**1.4**	**8.4**	**26**
Mass adjusted method detection limit (MDL)	**0.10**	**0.01**	**0.01**	**0.26**	**2.0**	**0.01**	**0.01**	**0.03**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 066	067	069	070	071	072	074	075
Three Mile Pond Composite	1.1	0.03	0.02	1.4	< 0.37	0.02	0.83	< 0.01
Three Mile Pond-26-12	1.3	0.07	< 0.01	1.8	0.39	0.02	0.94	< 0.01
Three Mile Pond-28-5	1.4	0.03	0.01	1.8	0.41	0.03	1.0	< 0.01
Three Mile Pond-28-13	1.6	0.01	< 0.01	2.3	0.47	< 0.01	1.1	< 0.01
Mean*	1.44	0.03		1.94	0.42		1.03	< 0.01
SD	0.13	0.03		0.29	0.04		0.10	
Rising Pond Composite	310	5.2	6.7	87	370	39	85	23
Rising Pond-25-12	380	7.2	8.1	97	560	42	99	35
Rising Pond-30-7	250	3.7	5.8	75	350	30	68	23
Rising Pond-30-9	640	11	15	150	820	77	160	47
Mean*	**390**	**6.6**	**9**	**100**	**540**	**46**	**100**	**33**
SD	**200**	**3.6**	**4.9**	**38**	**240**	**24**	**47**	**12**
Woods Pond Composite	830	16	16	360	1,300	100	260	80
Woods Pond-35-6	550	11	10	220	660	62	140	46
Woods Pond-35-8	1,200	26	36	480	2,000	130	300	130
Woods Pond-35-9	850	18	16	320	1,000	110	220	69
Mean*	**820**	**17**	**18**	**320**	**1,100**	**96**	**210**	**75**
SD	**330**	**7.6**	**14**	**130**	**700**	**35**	**80**	**43**
Deep Reach Pond-27-7	2,000	23	54	570	2,500	190	500	180
Deep Reach Pond-31-1	670	13	21	470	1,000	70	250	56
Deep Reach Pond-31-2	250	4.9	7.6	89	550	28	74	31
Mean	**690**	**11**	**21**	**290**	**1,110**	**72**	**210**	**68**
SD	**910**	**9.1**	**24**	**250**	**1,000**	**84**	**210**	**80**
Deep Reach Composite - A	780	19	35	370	1,600	100	270	86
Deep Reach Composite - B	730	17	33	340	1,500	99	250	82
Deep Reach Composite - C	950	22	41	430	1,900	120	310	90
Composite Mean	**810**	**19**	**36**	**380**	**1,660**	**106**	**280**	**86**
SD	**115**	**2.6**	**4.1**	**46**	**210**	**12**	**31**	**4.1**
Mass adjusted method detection limit (MDL)	**0.20**	**0.01**	**0.01**	**0.13**	**0.37**	**0.01**	**0.08**	**0.01**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 082	083	084	086	087	090	091
Three Mile Pond Composite	0.24	0.05	0.61	< 0.03	2.4	0.98	0.87
Three Mile Pond-26-12	0.25	0.05	0.64	0.03	2.2	0.78	0.77
Three Mile Pond-28-5	0.29	0.04	0.77	< 0.03	2.3	0.57	0.82
Three Mile Pond-28-13	0.32	0.08	0.79	0.05	3.5	1.6	1.4
Mean*	**0.29**	**0.06**	**0.73**		**2.62**	**0.90**	**0.96**
SD	**0.04**	**0.02**	**0.08**		**0.7**	**0.6**	**0.4**
Rising Pond Composite	94	26	160	28	680	820	650
Rising Pond-25-12	96	25	170	39	690	810	670
Rising Pond-30-7	87	24	140	18	630	540	600
Rising Pond-30-9	190	63	310	38	1,500	1,500	1,100
Mean*	**120**	**34**	**190**	**30**	**870**	**900**	**760**
SD	**57**	**22**	**91**	**12**	**490**	**500**	**270**
Woods Pond Composite	190	79	450	74	2,300	1,400	1,700
Woods Pond-35-6	89	47	250	38	1,100	920	910
Woods Pond-35-8	290	96	680	87	2,500	2,400	3,000
Woods Pond-35-9	120	66	330	60	1,500	1,600	1,300
Mean*	**150**	**67**	**380**	**58**	**1,600**	**1,500**	**1,530**
SD	**110**	**25**	**230**	**24**	**700**	**700**	**1,100**
Deep Reach Pond-27-7	510	170	1,200	140	3,700	3,500	4,800
Deep Reach Pond-31-1	200	66	490	55	2,300	900	1,500
Deep Reach Pond-31-2	62	22	160	25	570	660	660
Mean	**180**	**63**	**450**	**58**	**1,690**	**1,300**	**1,680**
SD	**230**	**76**	**530**	**60**	**1,600**	**1,600**	**2,200**
Deep Reach Composite - A	200	91	520	73	2,400	2,100	1,900
Deep Reach Composite - B	180	85	460	73	2,300	1,900	1,800
Deep Reach Composite - C	240	110	610	97	2,800	2,400	2,200
Composite Mean	**210**	**95**	**530**	**80**	**2,490**	**2,100**	**1,960**
SD	**31**	**13**	**75**	**14**	**260**	**250**	**210**
Mass adjusted method detection limit (MDL)	**0.06**	**0.03**	**0.15**	**0.03**	**0.80**	**0.41**	**0.54**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 092	095	096	097	099	101	102	105
Three Mile Pond Composite	1.5	2.0	< 0.01	1.5	4.8	7.6	< 0.01	2.4
Three Mile Pond-26-12	1.6	2.0	< 0.01	1.5	4.4	6.7	0.04	2.7
Three Mile Pond-28-5	1.5	2.1	< 0.01	1.4	4.7	7.4	< 0.01	2.7
Three Mile Pond-28-13	2.5	2.6	0.02	2.1	7.0	12	0.02	3.9
Mean*	**1.81**	**2.21**		**1.66**	**5.24**	**8.50**		**3.05**
SD	**0.5**	**0.4**		**0.36**	**1.4**	**3.1**		**0.67**
Rising Pond Composite	1,300	1,500	5.9	540	2,400	5,100	22	480
Rising Pond-25-12	1,400	1,600	7.7	570	2,500	5,200	33	500
Rising Pond-30-7	1,200	1,400	4.3	510	2,300	4,800	18	450
Rising Pond-30-9	2,600	3,000	11	990	4,300	9,100	31	1,000
Mean*	**1,600**	**1,900**	**7.2**	**660**	**2,900**	**6,100**	**26.2**	**610**
SD	**760**	**870**	**3.3**	**260**	**1,100**	**2,400**	**8.0**	**300**
Woods Pond Composite	4,000	5,200	21	1,300	6,600	14,000	31	1,400
Woods Pond-35-6	1,700	2,700	16	580	2,700	6,000	33	480
Woods Pond-35-8	5,200	6,500	41	1,600	8,200	18,000	99	1,400
Woods Pond-35-9	2,700	3,600	26	850	4,700	8,900	69	890
Mean*	**2,900**	**4,000**	**26**	**920**	**4,700**	**9,900**	**61**	**840**
SD	**1,800**	**2,000**	**13**	**500**	**2,800**	**6,000**	**33**	**460**
Deep Reach Pond-27-7	7,300	10,000	74	2,400	12,000	27,000	180	2,100
Deep Reach Pond-31-1	3,100	5,600	21	1,000	4,200	15,000	70	1,300
Deep Reach Pond-31-2	1,100	1,800	14	350	1,900	4,100	28	340
Mean	**2,900**	**4,700**	**28**	**940**	**4,600**	**11,800**	**71**	**980**
SD	**3,200**	**4,100**	**33**	**1,000**	**5,300**	**11,000**	**78**	**880**
Deep Reach Composite - A	3,500	5,600	31	1,300	5,300	14,000	40	1,400
Deep Reach Composite - B	3,300	5,200	29	1,200	5,000	13,000	34	1,300
Deep Reach Composite - C	4,100	6,400	36	1,500	6,100	15,000	44	1,600
Composite Mean	**3,600**	**5,700**	**32**	**1,330**	**5,400**	**14,000**	**39**	**1,430**
SD	**420**	**610**	**3.6**	**150**	**570**	**1,000**	**5.1**	**150**
Mass adjusted method detection limit (MDL)	**0.92**	**1.4**	**0.01**	**0.50**	**1.4**	**3.5**	**0.01**	**0.47**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 109	110	112	113	114	115	117	118
Three Mile Pond Composite	< 0.55	4.4	< 0.01	1.5	0.18	0.22	0.54	9.3
Three Mile Pond-26-12	1.3	4.6	0.02	1.8	0.19	0.18	0.41	9.0
Three Mile Pond-28-5	1.6	5.0	0.02	0.93	0.22	0.18	0.47	9.2
Three Mile Pond-28-13	2.8	8.6	< 0.01	< 0.02	0.36	0.16	0.74	13
Mean*	**1.78**	**5.84**			**0.25**	**0.17**	**0.52**	**10.14**
SD	**0.80**	**2.2**			**0.09**	**0.01**	**0.17**	**2.1**
Rising Pond Composite	220	2,400	14	74	18	28	200	2,400
Rising Pond-25-12	200	2,500	15	76	30	30	210	2,400
Rising Pond-30-7	190	2,700	8.7	57	29	26	200	2,300
Rising Pond-30-9	390	4,700	25	140	67	35	380	4,200
Mean*	**250**	**3,200**	**14.9**	**84.8**	**38.7**	**30**	**250**	**2,900**
SD	**110**	**1,200**	**8.4**	**43**	**20**	**4.7**	**100**	**1,100**
Woods Pond Composite	450	5,700	30	150	110	72	440	12,000
Woods Pond-35-6	210	2,800	16	86	32	31	220	2,200
Woods Pond-35-8	540	6,800	52	200	48	86	560	5,400
Woods Pond-35-9	290	3,900	21	140	58	47	350	4,000
Mean*	**320**	**4,200**	**26**	**134**	**45**	**50**	**350**	**3,600**
SD	**170**	**2,100**	**20**	**60**	**10**	**28**	**170**	**1,600**
Deep Reach Pond-27-7	870	11,000	78	300	300	130	850	8,200
Deep Reach Pond-31-1	340	5,300	34	130	100	66	320	3,900
Deep Reach Pond-31-2	190	1,900	1.2	56	20	21	160	1,600
Mean	**380**	**4,800**	**15**	**130**	**84**	**56**	**350**	**3,700**
SD	**360**	**4,600**	**39**	**130**	**140**	**55**	**360**	**3,400**
Deep Reach Composite - A	470	6,100	38	200	92	71	470	5,100
Deep Reach Composite - B	500	6,500	37	180	80	64	430	4,100
Deep Reach Composite - C	560	6,900	50	240	93	79	530	5,600
Composite Mean	**510**	**6,500**	**41**	**205**	**88**	**71**	**470**	**4,900**
SD	**46**	**400**	**7.4**	**31**	**7.1**	**7.5**	**50**	**760**
Mass adjusted method detection limit (MDL)	**0.55**	**1.5**	**0.01**	**0.02**	**0.13**	**0.08**	**0.14**	**1.6**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 119	122	123	128	129	130	131	132
Three Mile Pond Composite	0.71	0.03	0.18	2.8	0.40	1.2	< 0.11	3.3
Three Mile Pond-26-12	0.62	0.02	0.15	2.6	0.34	1.0	< 0.11	2.4
Three Mile Pond-28-5	0.77	0.02	0.16	2.7	0.38	1.1	< 0.11	3.0
Three Mile Pond-28-13	1.2	0.04	0.42	4.6	0.72	1.9	0.12	6.2
Mean*	**0.84**	**0.02**	**0.21**	**3.16**	**0.45**	**1.27**		**3.55**
SD	**0.31**	**0.01**	**0.15**	**1.1**	**0.21**	**0.52**		**2.0**
Rising Pond Composite	400	10	61	1,100	210	670	54	1,700
Rising Pond-25-12	460	13	59	1,000	190	610	47	1,700
Rising Pond-30-7	360	9.6	57	1,100	210	650	55	1,800
Rising Pond-30-9	740	23	110	1,900	360	1,300	100	2,500
Mean*	**500**	**14**	**72**	**1,300**	**240**	**800**	**64**	**2,000**
SD	**200**	**7.0**	**30**	**490**	**93**	**390**	**29**	**440**
Woods Pond Composite	1,100	27	110	2,500	560	1,700	160	4,900
Woods Pond-35-6	470	12	62	1,000	180	610	49	1,700
Woods Pond-35-8	1,500	26	130	2,300	490	1,600	170	4,100
Woods Pond-35-9	780	17	96	1,600	260	1,000	68	2,000
Mean*	**820**	**18**	**92**	**1,500**	**280**	**990**	**83**	**2,400**
SD	**530**	**7**	**34**	**700**	**160**	**500**	**70**	**1,300**
Deep Reach Pond-27-7	1,900	43	160	3,400	770	2,400	250	7,800
Deep Reach Pond-31-1	680	27	85	2,200	500	1,200	120	4,500
Deep Reach Pond-31-2	280	7.6	43	870	160	440	33	2,000
Mean	**710**	**21**	**84**	**1,900**	**390**	**1,080**	**100**	**4,100**
SD	**840**	**18**	**59**	**1,300**	**310**	**990**	**110**	**2,900**
Deep Reach Composite - A	920	25	130	2,500	510	1,400	140	7,800
Deep Reach Composite - B	870	24	120	2,300	470	1,300	130	7,200
Deep Reach Composite - C	1,100	29	150	2,900	580	1,600	160	8,800
Composite Mean	**960**	**26**	**133**	**2,600**	**520**	**1,430**	**143**	**7,900**
SD	**120**	**2.9**	**15**	**310**	**56**	**150**	**15**	**810**
Mass adjusted method detection limit (MDL)	**0.30**	**0.01**	**0.01**	**0.89**	**0.21**	**0.38**	**0.11**	**2.4**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

	IUPAC Congener Number							
Site / Sample ID	**133**	**134**	**136**	**137**	**138**	**139**	**141**	**144**
Three Mile Pond Composite	0.55	1.4	1.6	1.0	24	0.22	3.8	0.87
Three Mile Pond-26-12	0.57	1.2	1.1	0.90	20	0.20	2.9	< 0.75
Three Mile Pond-28-5	0.67	0.35	1.0	0.84	22	0.19	3.7	1.3
Three Mile Pond-28-13	1.1	3.2	2.3	1.6	38	0.37	7.6	1.7
Mean*	**0.75**	**1.10**	**1.39**	**1.06**	**25.95**	**0.24**	**4.31**	
SD	**0.29**	**1.5**	**0.67**	**0.41**	**9.6**	**0.10**	**2.5**	
Rising Pond Composite	520	360	520	290	9,900	62	3,100	730
Rising Pond-25-12	470	350	590	270	9,300	60	2,700	660
Rising Pond-30-7	500	320	540	290	11,000	69	3,000	730
Rising Pond-30-9	960	650	920	490	17,000	85	5,200	1,200
Mean*	**610**	**420**	**660**	**340**	**12,000**	**70**	**3,500**	**830**
SD	**270**	**180**	**210**	**120**	**4,000**	**13**	**1,400**	**290**
Woods Pond Composite	990	960	2,000	620	27,000	170	5,600	2,500
Woods Pond-35-6	460	410	810	240	9,000	62	2,700	780
Woods Pond-35-8	1,300	1,200	2,300	610	24,000	170	7,200	2,100
Woods Pond-35-9	790	570	1,100	410	15,000	99	4,500	1,200
Mean*	**780**	**650**	**1,270**	**390**	**14,800**	**101**	**4,400**	**1,250**
SD	**420**	**420**	**800**	**190**	**7,500**	**50**	**2,300**	**700**
Deep Reach Pond-27-7	1,700	1,700	3,200	910	34,000	250	11,000	2,900
Deep Reach Pond-31-1	820	1,200	2,800	430	21,000	110	8,600	2,300
Deep Reach Pond-31-2	370	270	475	230	8,600	57	2,400	640
Mean	**800**	**820**	**1,620**	**450**	**18,300**	**116**	**6,100**	**1,620**
SD	**680**	**730**	**1,500**	**350**	**12,700**	**100**	**4,400**	**1,200**
Deep Reach Composite - A	1,100	1,000	2,000	630	25,000	160	8,300	2,200
Deep Reach Composite - B	1,000	970	1,800	580	23,000	140	7,700	2,000
Deep Reach Composite - C	1,300	1,200	2,200	710	28,000	170	9,400	2,500
Composite Mean	**1,130**	**1,050**	**1,990**	**640**	**25,300**	**156**	**8,400**	**2,220**
SD	**150**	**120**	**200**	**66**	**2,500**	**15**	**860**	**250**
Mass adjusted method detection limit (MDL)	**0.28**	**0.30**	**0.57**	**0.18**	**9.4**	**0.06**	**2.4**	**0.75**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 146	147	149	151	153	156	157	158
Three Mile Pond Composite	6.8	0.91	9.2	3.6	37	0.82	0.54	1.9
Three Mile Pond-26-12	5.3	< 0.21	< 7.0	< 3.4	29	0.85	0.41	1.6
Three Mile Pond-28-5	5.9	< 0.21	8.9	3.6	33	1.2	0.46	1.9
Three Mile Pond-28-13	11	0.41	20	7.4	59	1.2	0.56	3.4
Mean*	**6.92**				**38.38**	**1.09**	**0.47**	**2.16**
SD	**2.9**				**16**	**0.22**	**0.08**	**1.0**
Rising Pond Composite	4,500	570	9,500	3,200	26,000	710	140	1,200
Rising Pond-25-12	4,000	550	8,900	3,300	23,000	570	120	1,100
Rising Pond-30-7	4,500	570	10,000	3,200	27,000	640	150	1,200
Rising Pond-30-9	7,700	960	18,000	6,400	43,000	1,600	250	2,200
Mean*	**5,200**	**670**	**11,700**	**4,100**	**29,900**	**840**	**170**	**1,400**
SD	**2,000**	**230**	**5,000**	**1,800**	**11,000**	**580**	**68**	**610**
Woods Pond Composite	5,800	1,400	33,000	13,000	31,000	2,900	270	3,700
Woods Pond-35-6	3,700	560	10,000	3,900	20,000	470	110	1,100
Woods Pond-35-8	9,800	1,700	31,000	14,000	51,000	1,900	240	2,900
Woods Pond-35-9	6,400	980	16,000	6,700	34,000	1,200	200	1,700
Mean*	**6,100**	**980**	**17,100**	**7,200**	**32,600**	**1,020**	**170**	**1,800**
SD	**3,100**	**580**	**10,800**	**5,200**	**15,500**	**700**	**67**	**900**
Deep Reach Pond-27-7	13,000	2,300	47,000	17,000	72,000	2,800	300	4,200
Deep Reach Pond-31-1	6,700	860	32,000	12,000	41,000	2,400	200	3,100
Deep Reach Pond-31-2	3,600	430	8,600	3,000	18,000	450	110	940
Mean	**6,800**	**950**	**23,500**	**8,500**	**37,600**	**1,450**	**190**	**2,300**
SD	**4,800**	**980**	**19,400**	**7,100**	**27,100**	**1,300**	**95**	**1,700**
Deep Reach Composite - A	9,200	1,500	35,000	12,000	52,000	2,000	290	3,200
Deep Reach Composite - B	8,600	1,300	33,000	11,000	48,000	1,900	250	2,900
Deep Reach Composite - C	11,000	1,700	39,000	14,000	59,000	2,300	260	3,700
Composite Mean	**9,500**	**1,490**	**35,600**	**12,300**	**52,800**	**2,060**	**270**	**3,300**
SD	**1,200**	**200**	**3,100**	**1,500**	**5,600**	**210**	**21**	**400**
Mass adjusted method detection limit (MDL)	**2.7**	**0.21**	**7.0**	**3.3**	**14**	**0.44**	**0.08**	**1.1**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 163	164	166	167	170	171	172	173
Three Mile Pond Composite	5.1	1.8	< 0.01	0.87	10	1.9	2.2	0.21
Three Mile Pond-26-12	4.0	1.5	< 0.01	0.70	8.1	1.4	1.4	0.15
Three Mile Pond-28-5	4.6	1.9	< 0.01	0.77	9.0	1.7	1.7	0.13
Three Mile Pond-28-13	9.0	3.4	< 0.01	1.3	19	3.6	4.0	0.28
Mean*	**5.47**	**2.13**	**< 0.01**	**0.90**	**11.23**	**2.05**	**2.12**	**0.17**
SD	**2.7**	**1.0**		**0.35**	**6.3**	**1.2**	**1.4**	**0.08**
Rising Pond Composite	4,300	1,300	< 0.01	370	7,600	1,400	1,300	86
Rising Pond-25-12	3,600	1,500	< 0.01	370	7,100	1,100	1,000	75
Rising Pond-30-7	3,900	1,400	< 0.01	420	9,500	1,600	1,300	86
Rising Pond-30-9	6,000	3,900	< 0.01	780	16,000	1,900	2,100	120
Mean*	**4,400**	**2,000**	**< 0.01**	**490**	**10,300**	**1,500**	**1,400**	**90**
SD	**1,300**	**1,400**		**220**	**4,600**	**400**	**570**	**24**
Woods Pond Composite	3,500	4,700	< 0.01	1,100	26,000	5,500	3,500	190
Woods Pond-35-6	3,100	1,400	< 0.01	300	6,100	1,300	890	58
Woods Pond-35-8	8,400	4,300	< 0.01	860	19,000	4,200	2,500	180
Woods Pond-35-9	4,900	3,000	< 0.01	560	11,000	2,000	1,600	86
Mean*	**5,000**	**2,600**	**< 0.01**	**520**	**10,800**	**2,200**	**1,500**	**100**
SD	**2,700**	**1,500**		**280**	**6,500**	**1,500**	**810**	**64**
Deep Reach Pond-27-7	13,000	4,700	< 0.01	1,300	27,000	5,700	3,400	240
Deep Reach Pond-31-1	8,200	3,900	< 0.01	760	19,000	4,100	2,500	140
Deep Reach Pond-31-2	2,800	1,400	< 0.01	300	7,300	1,200	1,100	55
Mean	**6,700**	**2,900**	**< 0.01**	**670**	**15,500**	**3,000**	**2,100**	**120**
SD	**5,100**	**1,700**		**500**	**9,900**	**2,300**	**1,200**	**93**
Deep Reach Composite - A	10,000	3,100	< 0.01	870	22,000	4,100	3,000	190
Deep Reach Composite - B	9,300	3,300	< 0.01	800	20,000	3,900	2,700	170
Deep Reach Composite - C	11,000	4,200	< 0.01	1,000	25,000	4,800	3,400	200
Composite Mean	**10,100**	**3,500**	**< 0.01**	**890**	**22,200**	**4,200**	**3,000**	**190**
SD	**850**	**590**		**100**	**2,500**	**470**	**350**	**15**
Mass adjusted method detection limit (MDL)	**2.6**	**1.1**	**0.01**	**0.33**	**7.8**	**1.3**	**1.3**	**0.13**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 174	175	176	177	178	179	180	183
Three Mile Pond Composite	< 4.3	0.38	< 0.58	3.1	2.1	< 0.87	24	8.1
Three Mile Pond-26-12	< 4.3	0.28	< 0.58	< 2.4	1.5	< 0.87	17	5.8
Three Mile Pond-28-5	< 4.3	0.37	< 0.58	3.1	1.9	0.94	20	7.1
Three Mile Pond-28-13	8.8	1.1	0.82	6.8	3.8	2.1	43	14
Mean*		**0.48**			**2.20**		**24.38**	**8.38**
SD		**0.43**			**1.2**		**14**	**4.6**
Rising Pond Composite	3,800	190	230	2,600	1,500	720	17,000	4,800
Rising Pond-25-12	3,200	150	220	2,300	1,300	780	13,000	3,600
Rising Pond-30-7	4,300	210	350	2,700	1,400	830	18,000	5,000
Rising Pond-30-9	6,100	360	300	4,900	2,700	1,100	28,000	7,000
Mean*	**4,400**	**220**	**280**	**3,100**	**1,700**	**890**	**19,000**	**5,000**
SD	**1,500**	**110**	**66**	**1,400**	**780**	**170**	**7,600**	**1,700**
Woods Pond Composite	18,000	870	870	8,500	4,700	2,500	16,000	14,000
Woods Pond-35-6	4,100	160	200	2,100	1,200	920	11,000	3,500
Woods Pond-35-8	12,000	740	500	6,900	3,900	3,300	32,000	11,000
Woods Pond-35-9	6,800	270	240	4,000	2,300	1,300	21,000	6,100
Mean*	**6,900**	**320**	**290**	**3,900**	**2,200**	**1,580**	**19,000**	**6,200**
SD	**4,000**	**310**	**160**	**2,400**	**1,400**	**1,300**	**11,000**	**3,800**
Deep Reach Pond-27-7	18,000	850	1,300	9,300	4,800	4,300	44,000	15,000
Deep Reach Pond-31-1	18,000	700	900	7,300	3,900	4,400	33,000	10,000
Deep Reach Pond-31-2	3,800	160	150	1,900	1,000	560	14,000	3,900
Mean	**10,700**	**460**	**560**	**5,100**	**2,700**	**2,200**	**27,000**	**8,400**
SD	**8,200**	**360**	**580**	**3,800**	**2,000**	**2,200**	**15,200**	**5,600**
Deep Reach Composite - A	16,000	580	980	7,600	4,100	2,800	39,000	12,000
Deep Reach Composite - B	15,000	540	770	7,000	3,800	2,600	36,000	11,000
Deep Reach Composite - C	18,000	670	840	8,700	4,700	3,100	45,000	14,000
Composite Mean	**16,300**	**590**	**860**	**7,700**	**4,200**	**2,830**	**40,000**	**12,300**
SD	**1,500**	**67**	**110**	**860**	**460**	**250**	**4,600**	**1,500**
Mass adjusted method detection limit (MDL)	**4.3**	**0.23**	**0.58**	**2.4**	**1.1**	**0.87**	**16**	**4.6**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

	IUPAC Congener Number							
Site / Sample ID	**185**	**187**	**189**	**190**	**191**	**193**	**194**	**195**
Three Mile Pond Composite	0.65	16	0.63	4.2	0.36	1.5	4.2	< 1.6
Three Mile Pond-26-12	< 0.51	12	< 0.38	< 3.8	< 0.32	< 1.1	< 3.7	< 1.6
Three Mile Pond-28-5	0.56	14	0.46	< 3.8	0.32	1.2	< 3.7	< 1.6
Three Mile Pond-28-13	1.2	28	0.92	7.7	0.79	2.9	7.7	3.2
Mean*		**16.71**						
SD		**9.1**						
Rising Pond Composite	640	12,000	250	1,800	220	1,000	2,400	1,100
Rising Pond-25-12	510	10,000	200	1,600	200	830	1,800	730
Rising Pond-30-7	670	11,000	250	1,900	260	1,000	2,700	1,200
Rising Pond-30-9	1,100	18,000	400	2,900	380	1,600	3,200	1,600
Mean*	**720**	**13,000**	**270**	**2,100**	**270**	**1,100**	**2,500**	**1,100**
SD	**310**	**4,400**	**100**	**680**	**92**	**400**	**710**	**440**
Woods Pond Composite	2,300	32,000	640	4,100	820	2,700	6,500	4,200
Woods Pond-35-6	540	8,500	140	1,300	180	710	1,500	730
Woods Pond-35-8	1,800	26,000	400	3,200	530	2,000	4,000	2,700
Woods Pond-35-9	890	17,000	270	2,300	320	1,400	2,700	1,500
Mean*	**950**	**16,000**	**250**	**2,100**	**310**	**1,300**	**2,500**	**1,400**
SD	**650**	**8,800**	**130**	**1,000**	**180**	**650**	**1,300**	**1,000**
Deep Reach Pond-27-7	2,400	32,000	530	4,300	730	2,600	5,100	3,400
Deep Reach Pond-31-1	1,800	26,000	440	3,200	640	2,100	4,100	2,900
Deep Reach Pond-31-2	480	13,000	210	1,800	210	1,000	2,300	1,100
Mean	**1,280**	**22,000**	**370**	**2,900**	**460**	**1,800**	**3,600**	**2,200**
SD	**980**	**9,700**	**170**	**1,300**	**280**	**820**	**1,400**	**1,200**
Deep Reach Composite - A	1,900	34,000	480	3,900	630	2,600	5,500	3,300
Deep Reach Composite - B	1,800	31,000	440	3,700	600	2,400	5,100	3,100
Deep Reach Composite - C	2,200	38,000	550	4,400	730	2,900	6,200	3,800
Composite Mean	**1,960**	**34,000**	**490**	**4,000**	**650**	**2,600**	**5,600**	**3,400**
SD	**210**	**3,500**	**56**	**360**	**68**	**250**	**560**	**360**
Mass adjusted method detection limit (MDL)	**0.51**	**7.7**	**0.38**	**3.8**	**0.32**	**1.1**	**3.7**	**1.6**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 196	197	198	199	200	201	202
Three Mile Pond Composite	2.5	0.42	0.24	5.2	< 0.27	0.52	1.1
Three Mile Pond-26-12	< 1.8	0.29	< 0.16	< 3.1	< 0.27	0.32	0.50
Three Mile Pond-28-5	2.0	0.29	0.22	4.2	< 0.27	0.38	0.73
Three Mile Pond-28-13	4.4	0.94	0.50	9.6	0.45	0.88	1.5
Mean*		**0.42**				**0.48**	**0.81**
SD		**0.38**				**0.31**	**0.51**
Rising Pond Composite	950	94	130	2,100	120	260	330
Rising Pond-25-12	630	70	100	1,500	110	180	280
Rising Pond-30-7	1,000	110	150	2,300	190	300	380
Rising Pond-30-9	1,400	110	190	3,100	210	350	460
Mean*	**1,000**	**90**	**140**	**2,200**	**160**	**270**	**370**
SD	**380**	**23**	**45**	**800**	**50**	**87**	**90**
Woods Pond Composite	3,800	370	400	7,500	650	950	1,300
Woods Pond-35-6	720	80	96	1,500	150	200	270
Woods Pond-35-8	2,400	230	270	4,800	370	660	890
Woods Pond-35-9	1,300	140	160	3,100	250	370	510
Mean*	**1,300**	**140**	**160**	**2,800**	**240**	**370**	**500**
SD	**850**	**75**	**88**	**1,700**	**110**	**230**	**310**
Deep Reach Pond-27-7	2,900	290	360	5,900	590	820	1,100
Deep Reach Pond-31-1	2,600	260	280	5,300	670	680	1,100
Deep Reach Pond-31-2	970	100	110	2,200	110	220	270
Mean	**1,900**	**200**	**220**	**4,100**	**350**	**500**	**690**
SD	**1,000**	**100**	**130**	**2,000**	**300**	**310**	**480**
Deep Reach Composite - A	3,000	290	330	6,400	580	780	1,000
Deep Reach Composite - B	2,900	270	310	6,000	530	710	970
Deep Reach Composite - C	3,500	340	380	7,400	660	890	1,100
Composite Mean	**3,100**	**300**	**340**	**6,600**	**590**	**790**	**1,020**
SD	**320**	**36**	**36**	**720**	**66**	**91**	**68**
Mass adjusted method detection limit (MDL)	**1.8**	**0.26**	**0.16**	**3.1**	**0.27**	**0.28**	**0.34**

*Geometric mean does not include composite data.

Table 25 (Cont.). Concentrations (ng/g, wet wt.) of PCB congeners in ovaries of largemouth bass collected from Housatonic River Basin sites.

Site / Sample ID	IUPAC Congener Number 203	205	206	208	209	Total PCBs
Three Mile Pond Composite	3.9	0.37	2.5	1.0	1.1	560
Three Mile Pond-26-12	< 2.5	0.29	1.5	0.53	0.64	490
Three Mile Pond-28-5	3.1	0.38	1.6	0.61	0.58	520
Three Mile Pond-28-13	7.6	0.63	4.8	1.7	2.9	1,000
Mean*		**0.41**	**2.26**	**0.81**	**1.02**	**634**
SD		**0.17**	**1.9**	**0.63**	**1.3**	**290**
Rising Pond Composite	2,300	72	330	66	36	160,000
Rising Pond-25-12	1,400	55	210	42	34	150,000
Rising Pond-30-7	2,300	83	410	93	43	170,000
Rising Pond-30-9	3,400	86	360	71	30	280,000
Mean*	**2,200**	**70**	**310**	**70**	**40**	**193,000**
SD	**1,000**	**17**	**100**	**25**	**6.3**	**70,000**
Woods Pond Composite	6,600	180	1,200	140	30	440,000
Woods Pond-35-6	1,200	46	200	48	32	150,000
Woods Pond-35-8	4,500	121	730	100	32	420,000
Woods Pond-35-9	2,500	81	380	87	36	250,000
Mean*	**2,400**	**80**	**380**	**70**	**30**	**251,000**
SD	**1,700**	**37**	**270**	**27**	**2.6**	**140,000**
Deep Reach Pond-27-7	5,800	140	860	130	36	590,000
Deep Reach Pond-31-1	4,100	110	660	110	19	380,000
Deep Reach Pond-31-2	1,900	67	340	57	36	140,000
Mean	**3,600**	**100**	**580**	**90**	**30**	**315,000**
SD	**2,000**	**37**	**260**	**38**	**9.8**	**230,000**
Deep Reach Composite - A	5,300	150	970	160	51	440,000
Deep Reach Composite - B	5,000	140	880	150	45	410,000
Deep Reach Composite - C	6,100	160	1,000	180	53	500,000
Composite Mean	**5,400**	**150**	**950**	**160**	**50**	**448,000**
SD	**570**	**10**	**62**	**15**	**4.4**	**46,000**
Mass adjusted method detection limit (MDL)	**2.5**	**0.26**	**0.74**	**0.16**	**0.46**	**130**

*Geometric mean does not include composite data.

Congener PCB patterns:

The congener PCB patterns in the tissues and ovaries of the largemouth bass from the Housatonic River were similar at all study locations on the river (Figure 30). The patterns of PCB congeners in the largemouth bass tissue homogenate and ovary samples from Three Mile Pond were different from the Housatonic River samples based on principle components analysis (PCA) of the congener PCBs (Figure 30). The PCA included four Aroclor standards (1242, 1248, 1254 and 1260) to assist with the interpretation of the analysis and the method standards (Aroclor 1242:1248:1254:1260 mixture at a 1:1:1:1 ratio, and a blank sample spiked with this mixture). The congener patterns of the standards in the PCA fell in the center of the tetrahedron formed by the four Aroclor standards (Figure 30). The matrix spike sample patterns were located in the same place on the PCA plot as the Aroclor 1:1:1:1 standards, as would be expected if the sample preparation methods had no effect on the PCB patterns.

In general, the patterns of the PCB congeners measured in largemouth bass samples from the Housatonic River were most similar to the Aroclor 1260 standard. More specifically, the PCA Scores Plot (Figure 30) of the first two principle components reveals that the patterns of the PCB congeners in the fish tissue samples from the Deep Reach portion of the river most closely resembled the Aroclor 1260 standard. Samples of largemouth bass collected at the two sites downstream from Deep Reach were still more similar to the Aroclor 1260 standard than to the other Aroclor standards, but were slightly further away. Ovary samples were the furthest away from the Aroclor 1260 standard and fell along the axis in the direction of the Aroclor 1254 standard. The PCA Loading Plot (Figure 31), which identifies the contribution of specific congeners to the pattern separations, indicated that a slight enrichment of the mono-ortho-chloro-substituted PCBs may have contributed to the movement the ovary samples in the direction of the Aroclor 1254 standard.

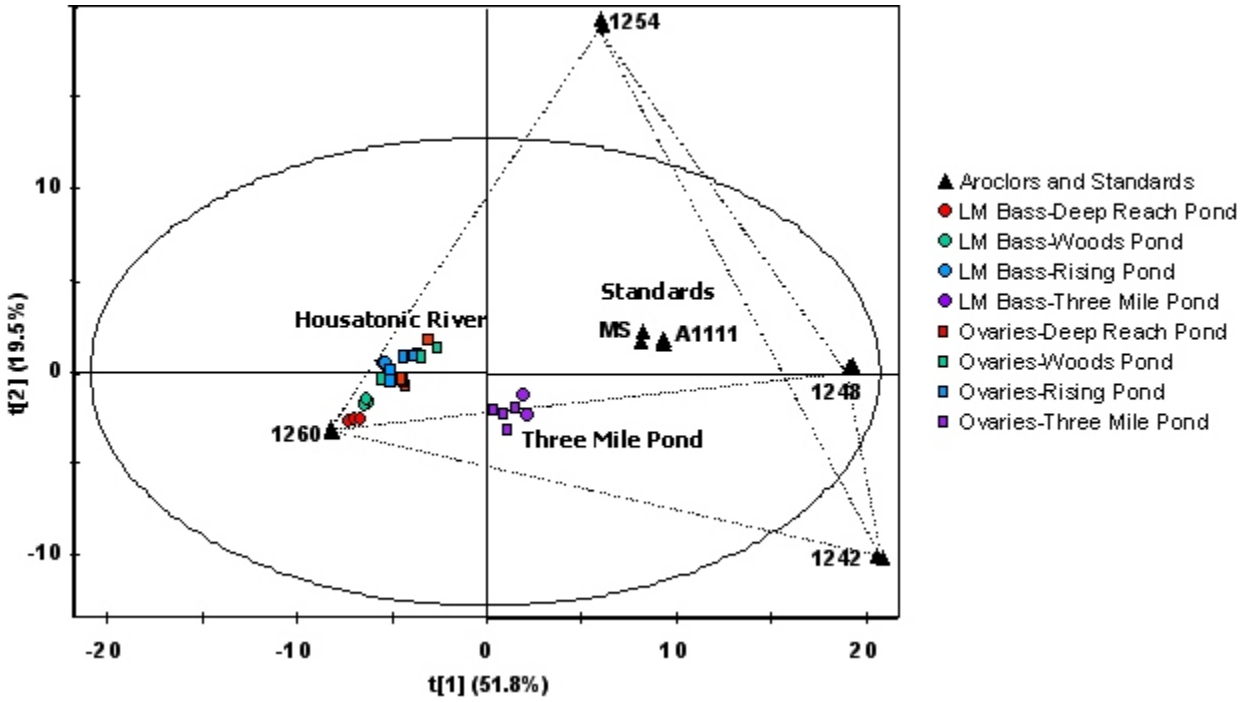


Figure 30. Principal components analysis (PCA) Scores Plot of the first two principal components for the congener PCB analysis in largemouth bass from the Housatonic River.

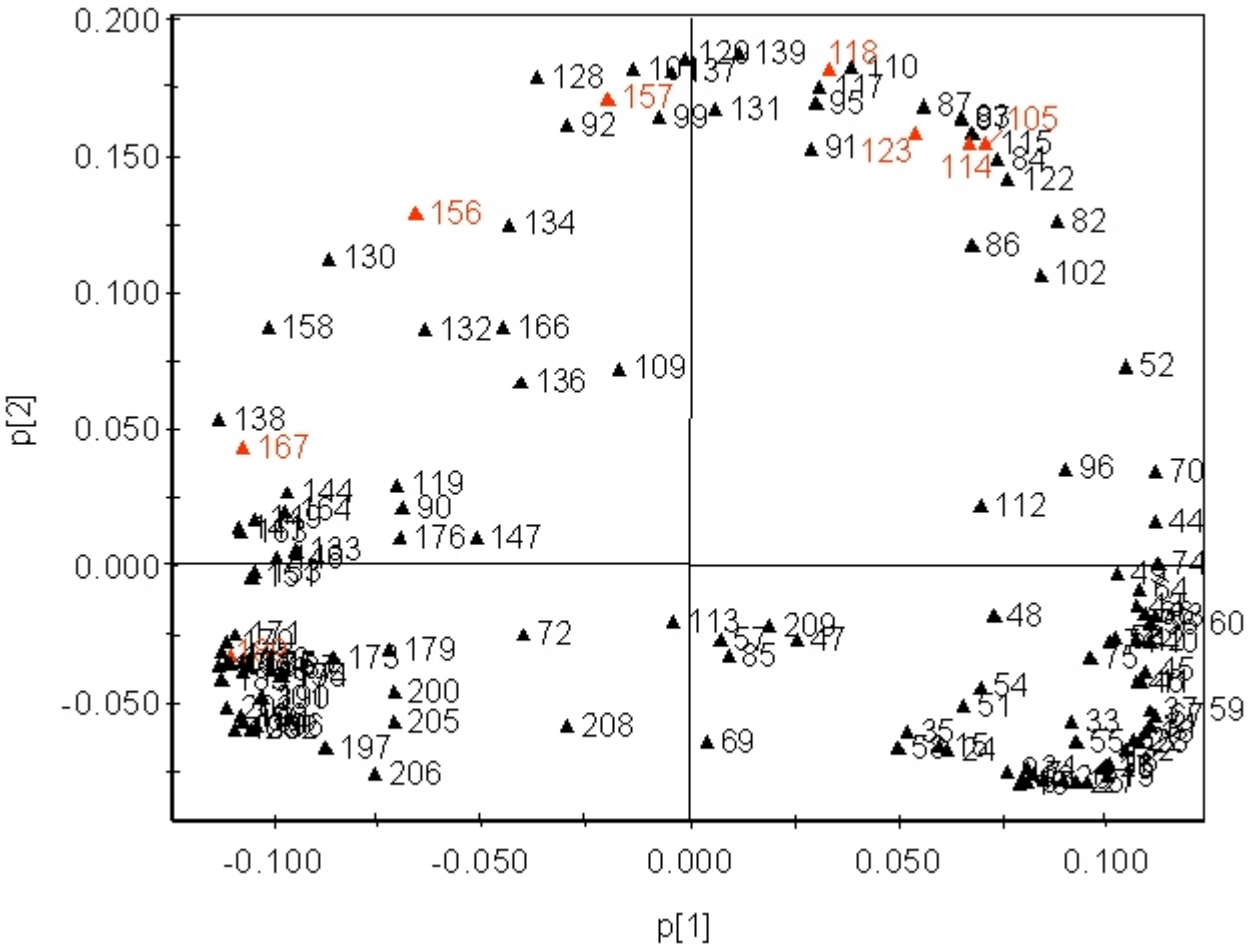


Figure 31. Principal components analysis (PCA) Loading Plot showing IUPAC congener numbers for PCBs analyzed in largemouth bass from the Housatonic River (mono-ortho-chloro congeners in red).

Non-ortho-PCB congeners:

Concentrations of non-ortho-substituted PCB congeners (PCB 81, PCB 77, PCB 126, and PCB 169) were measured in carcass homogenates and ovaries of largemouth bass from the study area and reference site. These PCB congeners act on developmental and reproductive processes through the Ah-receptor in fish. The dioxin-like toxicity imposed by these PCB congeners was summarized with an additive model of toxicity with the TEF/TEQ approach (van den Berg et al. 1998) in a subsequent section of this report. Details of the analytical results are presented in an analytical report (CERC Organic Chemistry Section, Project Report # 3307-70L1E) which is attached in Appendix 1 and summarized below.

Largemouth bass carcass homogenates - The concentrations of non-ortho-PCBs (pg/g, wet weight) in the carcass homogenates of largemouth bass from all locations along the Housatonic River were elevated (40-700 fold greater) relative to concentrations observed in carcass homogenates of largemouth bass collected at the reference site, Three-Mile Pond (Table 26). Concentrations of the non-ortho PCB congeners 81 and 169 were at or near the limit of quantitation in the carcass homogenates of the largemouth bass from Three-Mile Pond (Table 26). The concentrations of the other two non-ortho PCB congeners measured in the carcass homogenates from Three-Mile Pond were 36 ± 13 pg PCB 77/g and 13 ± 2 pg PCB 126/g. The fish collected at Rising Pond, the furthest downstream site on the Housatonic River, contained 64 ± 11 pg/g; 2,000 ± 200 pg/g; 3,200 ± 100 pg/g; and 570 ± 30 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively. The concentrations of non-ortho PCBs in largemouth bass carcass homogenates collected at the two upstream sites on the Housatonic River, Woods Pond and Deep Reach, were similar to one another. The concentrations in the carcasses of largemouth bass collected from Woods Pond were 280 ± 70 pg/g; 7,600 ± 2,000 pg/g; 8,800 ± 990 pg/g; and 1,400 ± 170 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively. Concentrations of these same PCB congeners in the carcasses of largemouth bass collected from the Deep Reach section of the Housatonic River were 320 ± 130 pg/g; 7,000 ± 3,200 pg/g; 8,200 ± 3,200 pg/g; and 1,400 ± 510 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively.

The QC check samples associated with this batch were within acceptable limits of the data quality objectives for most of the samples. An exception to this were the recoveries of C^{13}-PCB 81 procedural internal standards in two of the replicates of homogenate fish carcass samples from Rising Pond on the Housatonic River.

Table 26. Concentrations (pg/g, wet wt.) of non-ortho-chloro substituted polychlorinated biphenyls in whole, ground samples of largemouth bass collected from Housatonic River Basin sites.

		Non-ortho Polychlorinated Biphenyls			
		Tetra:		Penta:	Hexa:
Site / Sample ID		3,4,4',5-TCB (81)	3,3',4,4'-TCB (77)	3,3',4,4',5-PeCB (126)	3,3',4,4',5,5'-HxCB (169)
Three Mile Pond, 3MP-B		2.2 C-IF	52	15	2.1 LQ
Three Mile Pond, 3MP-C		1.9 C-IF	32	13	1.8
Three Mile Pond, 3MP-D		0.6 C-IF, LQ	27	12	1.6
	Mean	**1.4**	**36**	**13**	**1.8**
	SD	**0.9**	**13**	**2**	**0.3**
Rising Pond, RP-A		53 C-IF	1,800	3,100	540
Rising Pond, RP-B		74 C-IF	2,200	3,200	570
Rising Pond, RP-30-C		66	2,000	3,3000	600
	Mean	**64**	**2,000**	**3,200**	**570**
	SD	**11**	**200**	**100**	**30**
Woods Pond, WP-A		350	10,000	10,000	1,600
Woods Pond, WP-B		290	7,200	8,4000	1,300
Woods Pond, WP-C		210 C-IF	6,200	8,200	1,300
	Mean	**280**	**7,600**	**8,800**	**1,400**
	SD	**70**	**2,000**	**990**	**170**
Deep Reach, DR-A		480	11,000	12,000	2,000
Deep Reach, DR-B		300 C-IF	6,900	8,100	1,300
Deep Reach, DR-C		220	4,600	5,600	1,000
	Mean	**320**	**7,000**	**8,200**	**1,400**
	SD	**130**	**3,200**	**3,200**	**510**

LQ Less than method quantification limit due to incomplete ion cluster or inaccurate ion ratio (outside +/- 15% tolerances).
C-IF Corrected value for PCB 81; Interference from nearly co-eluting PCB 87, contributing from 10 to 70% of the PCB 81 peak, was subtracted.

Largemouth bass ovaries - The concentrations of non-ortho-PCBs (pg/g, wet weight) in the ovary samples of largemouth bass from all locations along the Housatonic River were elevated (25-400 fold greater) relative to concentrations observed in ovaries of largemouth bass collected at the reference site, Three-Mile Pond (Table 27). Mean concentrations and standard deviations of non-ortho PCBs in individual ovary samples of largemouth bass from the reference site, Three-Mile Pond were 7.1 ± 2 pg/g, 130 ± 25 pg/g, 45 ± 6 pg/g, and 7.5 ± 2.7 pg/g, of PCB 81, PCB 77, PCB 126, and PCB 169, respectively (Table 27). The concentrations of these same non-ortho PCBs in the composite of ovary samples from Three-Mile Pond were 5.5 pg/g, 120 pg/g, 51 pg/g, and 9.2 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively. Mean concentrations and standard deviations of non-ortho PCBs in individual ovary samples of largemouth bass from Rising Pond on the Housatonic River were 270 ± 190 pg/g; 8,200 ± 6,100 pg/g; 13,000 ± 6,500 pg/g; and 1,800 ± 1,200 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively. Composite ovary samples from largemouth bass collected at Rising Pond contained non-ortho PCB concentrations of 200 pg/g; 6,200 pg/g; 10,000 pg/g; and 1,500 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively. The concentrations of non-ortho PCBs in ovary samples of largemouth bass from the two upstream sites on the Housatonic River were similar to one another, as was the case with the carcass samples from these same fish. Mean concentrations and standard deviations of non-ortho PCBs in individual ovary samples of largemouth bass from Woods Pond were 380 ± 180 pg/g; 12,000 ± 3,900 pg/g; 17,000 ± 6,700 pg/g; and 1,900 ± 900 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively. The concentrations of non-ortho PCB congeners in composite ovary samples collected from Woods Pond were 590 pg/g; 15,000 pg/g; 23,000 pg/g; and 3,800 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively. The mean concentrations and standard deviations of non-ortho PCBs in individual ovary samples from largemouth bass collected from the Deep Reach portion of the Housatonic River were 510 ± 470 pg/g; 12,000 ± 11,000 pg/g; 17,000 ± 11,000 pg/g; and 2,300 ± 800 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively. The composite samples of ovaries from largemouth bass collected at Deep Reach contained non-ortho PCB concentrations of 500 ± 15 pg/g; 11,100 ± 300 pg/g; 14,600 ± 100 pg/g; and 1,800 ± 100 pg/g of PCB 81, PCB 77, PCB 126, and PCB 169, respectively.

The QC check samples associated with this batch all were within acceptable limits of the data quality objectives.

Table 27. Concentrations (pg/g, wet wt.) of non-ortho-chloro substituted polychlorinated biphenyls in ovaries of largemouth bass collected from Housatonic River Basin sites.

	Non-ortho Polychlorinated Biphenyls			
	Tetra:		Penta:	Hexa:
Site / Sample ID	3,4,4',5-TCB (81)	3,3',4,4'-TCB (77)	3,3',4,4',5-PeCB (126)	3,3',4,4',5,5'-HxCB (169)
Three Mile Pond, 3MP-Composite	5.5	120	51	9.2
Three Mile Pond, 3MP-26-12	7.2	130	42	5.1
Three Mile Pond, 3MP-28-13	5.3	110	42	11
Three Mile Pond, 3MP-28-5	9.2	160	52	7.9
Mean*	**7.1**	**130**	**45**	**7.5**
SD	**2.0**	**25**	**6**	**2.7**
Rising Pond, RP-Composite	200 C-IF	6,200	10,000	1,500
Rising Pond, RP-25-12	280 C-IF	8,900	12,000	1,500
Rising Pond, RP-30-7	140 C-IF	3,900	8,400	1,100
Rising Pond, RP-30-9	520 C-IF	16,000	21,000	3,400
Mean*	**270**	**8,200**	**13,000**	**1,800**
SD	**190**	**6,100**	**6,500**	**1,200**
Woods Pond, WP-Composite	590 C-IF	15,000	23,000	3,800
Woods Pond, WP-35-6	280 C-IF	9,800	13,000	1,400
Woods Pond, WP-35-8	610 C-IF	17,000	25,000	3,100
Woods Pond, WP-35-9	310 C-IF	11,000	14,000	1,700
Mean*	**380**	**12,000**	**17,000**	**1,900**
SD	**180**	**3,900**	**6,700**	**900**
Deep Reach, DR-Compos.-Rep A	480 C-IF	10,900	14,700	1,720
Deep Reach, DR-Compos.-Rep B	510 C-IF	10,900	14,500	1,750
Deep Reach, DR-Compos.-Rep C	500 C-IF	11,500	14,500	1,900
Composite Mean	**500**	**11,100**	**14,600**	**1,800**
SD	**15**	**300**	**100**	**100**
Deep Reach, DR-27-7	170 C-IF	4,100	10,000	1,900
Deep Reach, DR-31-1	1,100 C-IF	26,000	31,000	3,300
Deep Reach, DR-31-2	730 C-IF	17,000	15,000	1,900
Mean	**510**	**12,000**	**17,000**	**2,300**
SD	**470**	**11,000**	**11,000**	**800**

*Geometric mean, not including the composite data.
C-IF Corrected value for PCB 81; Interference from nearly co-eluting PCB 87, contributing from 10 to 20% of the PCB 81 peak, was subtracted.

Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans:

Concentrations of 2,3,7,8-substituted polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) were measured in carcass homogenates and ovaries of largemouth bass from the study area and reference site. These PCDD/F congeners act on developmental and reproductive processes through the Ah-receptor in fish. The dioxin-like toxicity imposed by these PCDD/F congeners was summarized with an additive model of toxicity using the TEF/TEQ approach (van den Berg et al. 1998) and is discussed in a later section of this report. Non-2,3,7,8-substituted PCDFs were found in many of the samples from the Housatonic River. Details of the analytical results are presented in an analytical report (CERC Organic Chemistry Section, Project Report # 3307-70L1E) which is attached in Appendix 1 and summarized below.

Largemouth bass carcass homogenates - The concentrations of PCDD/F congeners in carcass homogenates of largemouth bass collected from the Housatonic River sites were elevated relative to the reference site, Three-Mile Pond (Table 28). The PCDD/F congeners were at or near the limits of detection (or quantitation) in the carcass homogenates of fish collected from the reference site, Three-Mile Pond. Only 2,3,7,8-TCDF was found at concentrations above the procedural blanks in a single one of the replicates of the fish collected at Three-Mile Pond. The concentration of 2,3,7,8-TCDF in that one replicate sample from Three-Mile Pond was about twice the limit of quantitation for this sample set (approximately 0.6 pg/g for 2,3,7,8-TCDF). PCDD/F congeners in the largemouth bass collected from the Housatonic River were found at similar concentrations among all of the collection sites (Table 28). The concentrations of PCDFs in the carcass samples of the largemouth bass were greater than the concentrations of PCDDs, as would be expected with the major source of chemicals being PCBs. 2,3,4,7,8-pentachlorodibenzofuran (2,3,4,7,8-PCDF) was the PCDD/F found to be in the greatest amount (over and above concentrations in the procedural blanks) in the largemouth bass carcasses from the Housatonic River. The 2,3,7,8-tetrachlorodibenzofuran (2,3,7,8-TCDF) congener was also elevated in the largemouth bass samples at all of the Housatonic River locations. 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) was the only PCDD congener that was elevated

above background or procedural blank samples in the carcasses of largemouth bass collected in the Housatonic River.

The QC check samples were all within expected range, with a few exceptions. Some of the samples had low recoveries of the hexa- and heptachloro-PCDFs on the alumina column (CERC Organic Chemistry Section, Project Report # 3307-70L1E, Appendix 1). The concentrations of PCDFs and PCDDs the matrix spike samples were at expected concentrations, except for OCDD, OCDF, and 1,2,3,4,6,7,8-heptachlorodibenzofuran. However, the concentrations of these congeners were small in all of the samples and not expected to contribute significantly to the toxicity of these chemicals (see section on TEF/TEQs below).

Table 28. Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in whole, ground largemouth bass collected from Housatonic River Basin sites.

		Three Mile Pond						
	TEF Value*	3MP-B	3MP-C	3MP-D	Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins								
2,3,7,8-Tetrachloro	1.0	0.3 LQ	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.2**	**25**
1,2,3,7,8-Pentachloro	1.0	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.2**	**22**
1,2,3,4,7,8-Hexachloro	0.5	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.1**	**11**
1,2,3,6,7,8-Hexachloro	0.01	0.5 LQ	0.2 ND	0.2 ND	**0.3**	**0.1**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.5 LQ	0.2 ND	0.4 LQ	**0.4**	**0.2**	**0.0**	**0**
Octachloro	0.0001	1.7 LQ	1.3	2.0	**1.7**	**0.4**	**0.0**	**0**
Furans								
2,3,7,8-Tetrachloro	0.05	1.3	0.6 LQ	0.6 LQ	**0.8**	**0.4**	**0.0**	**5**
1,2,3,7,8-Pentachloro	0.05	0.5 LQ	0.2 ND	0.2 ND	**0.3**	**0.2**	**0.0**	**2**
2,3,4,7,8-Pentachloro	0.5	0.3 LQ	0.2 ND	0.2 LQ	**0.2**	**0.1**	**0.1**	**13**
1,2,3,4,7,8-Hexachloro	0.1	0.2 ND, LRB	0.2 ND, LRA	0.2 ND	**0.2**	**0.0**	**0.0**	**2**
1,2,3,6,7,8-Hexachloro	0.1	0.2 ND, LRB	0.2 ND, LRA	0.2 ND	**0.2**	**0.0**	**0.0**	**2**
1,2,3,7,8,9-Hexachloro	0.1	0.2 LRA	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**2**
2,3,4,6,7,8-Hexachloro	0.1	1.8	0.2 ND	0.2 ND	**0.7**	**0.9**	**0.1**	**8**
1,2,3,4,6,7,8-Heptachloro	0.01	8.1 LQ, LRB	4.6 LRA	6.2 LQ	**6.3**	**1.7**	**0.1**	**7**
1,2,3,4,7,8,9-Heptachloro	0.01	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**0**
Octachloro	0.0001	17	47	38	**34.1**	**15.6**	**0.0**	**0**
					Mean TEQ		**(SD)**	
Total D/F TEQs		**1.2**	**0.8**	**0.8**	**0.9**		**0.2**	
					Mean Lipid		**(SD)**	
Percent Lipid:		**1.8**	**1.7**	**1.9**	**1.8**		**0.1**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp. 106: 775-791.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.
LRA Denotes recovery of ^{13}C-labeled surrogate below 25%, but > 10% (See Appendix 1). %CV = 25%.
LRB Denotes recovery of ^{13}C-labeled surrogate below 10% (See Appendix 1). %CV = 50%.

Table 28 (Cont.). Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in whole, ground largemouth bass collected from Housatonic River Basin sites.

		Rising Pond						
	TEF Value*	RP-A	RP-B	RP-C	Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins								
2,3,7,8-Tetrachloro	1.0	3.3	2.2	1.9	**2.5**	**0.8**	**2.5**	**12**
1,2,3,7,8-Pentachloro	1.0	0.6	0.8	0.5 LQ	**0.6**	**0.1**	**0.6**	**3**
1,2,3,4,7,8-Hexachloro	0.5	0.2 ND	0.5	0.2 ND	**0.3**	**0.2**	**0.1**	**1**
1,2,3,6,7,8-Hexachloro	0.01	0.4 LQ	0.5	0.4	**0.4**	**0.1**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.2	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.4 LQ	0.3	0.5 LQ	**0.4**	**0.1**	**0.0**	**0**
Octachloro	0.0001	1.6 LQ	2.5	1.9 LQ	**2.0**	**0.4**	**0.0**	**0**
Furans								
2,3,7,8-Tetrachloro	0.05	8.3	7.8	8	**8**	**0.2**	**0.4**	**2**
1,2,3,7,8-Pentachloro	0.05	2.9	2.2	2.4 LQ	**2.5**	**0.4**	**0.1**	**1**
2,3,4,7,8-Pentachloro	0.5	35	28	31	**31.4**	**3.4**	**15.7**	**78**
1,2,3,4,7,8-Hexachloro	0.1	1.3 LQ	1.5	1.2	**1.3**	**0.2**	**0.1**	**1**
1,2,3,6,7,8-Hexachloro	0.1	1.1 LQ	1.7	1.5	**1.4**	**0.3**	**0.1**	**1**
1,2,3,7,8,9-Hexachloro	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**0**
2,3,4,6,7,8-Hexachloro	0.1	2.8 LQ	5.3	3.7	**3.9**	**1.3**	**0.4**	**2**
1,2,3,4,6,7,8-Heptachloro	0.01	2.3	3.0	3.1	**3**	**0.4**	**0.0**	**0**
1,2,3,4,7,8,9-Heptachloro	0.01	0.3 LQ	1.0	0.2 ND	**0.5**	**0.4**	**0.0**	**0**
Octachloro	0.0001	31	31	36	**32.8**	**3.1**	**0.0**	**0**
					Mean TEQ		**(SD)**	
Total D/F TEQs		**22.8**	**18.8**	**19.2**	**20.2**		**2.2**	
					Mean Lipid		**(SD)**	
Percent Lipid:		**2.0**	**1.9**	**1.8**	**1.9**		**0.1**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp. 106: 775-791.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.

Table 28 (Cont.). Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in whole, ground largemouth bass collected from Housatonic River Basin sites.

		Woods Pond						
	TEF Value*	WP-A	WP-B	WP-C	Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins								
2,3,7,8-Tetrachloro	1.0	2.7	3.2	2.8	**2.9**	**0.3**	**2.9**	**14**
1,2,3,7,8-Pentachloro	1.0	0.7 LQ	1.2	0.7	**0.8**	**0.3**	**0.8**	**4**
1,2,3,4,7,8-Hexachloro	0.5	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.1**	**0**
1,2,3,6,7,8-Hexachloro	0.01	0.4 LQ	0.4 LQ	0.2 ND	**0.3**	**0.1**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.4 LQ	0.3 LQ	0.4 LQ	**0.4**	**0.1**	**0.0**	**0**
Octachloro	0.0001	1.7 LQ	0.8 LQ	1.2	**1.2**	**0.5**	**0.0**	**0**
Furans								
2,3,7,8-Tetrachloro	0.05	14	14	11.1	**13.2**	**1.8**	**0.7**	**3**
1,2,3,7,8-Pentachloro	0.05	3.7	3.8	2.9 LQ	**3.4**	**0.5**	**0.2**	**1**
2,3,4,7,8-Pentachloro	0.5	26	26	22	**24.6**	**1.9**	**12.3**	**61**
1,2,3,4,7,8-Hexachloro	0.1	3.8 LQ	2.4 LQ	1.9	**2.7**	**1.0**	**0.3**	**1**
1,2,3,6,7,8-Hexachloro	0.1	7.6 LQ	3.8	2.8	**4.7**	**2.5**	**0.5**	**2**
1,2,3,7,8,9-Hexachloro	0.1	0.2 ND	0.2	0.2 ND	**0.2**	**0.0**	**0.0**	**0**
2,3,4,6,7,8-Hexachloro	0.1	45	16	8.8 LQ	**23.2**	**19.4**	**2.3**	**12**
1,2,3,4,6,7,8-Heptachloro	0.01	18 LQ	8.9	4.9	**10.6**	**6.7**	**0.1**	**1**
1,2,3,4,7,8,9-Heptachloro	0.01	4.9	2.2	1.2	**2.8**	**1.9**	**0.0**	**0**
Octachloro	0.0001	55	42	27	**41.1**	**14.0**	**0.0**	**0**
					Mean TEQ		**(SD)**	
Total D/F TEQs		**23.2**	**20.5**	**16.9**	**20.2**		**3.2**	
					Mean Lipid		**(SD)**	
Percent Lipid:		**2.3**	**2.5**	**2.0**	**2.3**		**0.3**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp.106: 775-791.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.

Table 28 (Cont.). Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in whole, ground largemouth bass collected from Housatonic River Basin sites.

		Deep Reach						
	TEF Value*	DR-A	DR-B	DR-C	Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins								
2,3,7,8-Tetrachloro	1.0	2.3 LQ, LRA	2.5 LQ	1.9	**2.2**	**0.3**	**2.2**	**11**
1,2,3,7,8-Pentachloro	1.0	1.0	0.8	0.8 LQ	**0.9**	**0.1**	**0.9**	**4**
1,2,3,4,7,8-Hexachloro	0.5	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.1**	**0**
1,2,3,6,7,8-Hexachloro	0.01	0.4	0.2 LQ	0.4 LQ	**0.3**	**0.1**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.2 ND	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.4 LQ	0.3 LQ	0.4 LQ	**0.4**	**0.0**	**0.0**	**0**
Octachloro	0.0001	1.3 LQ, LRA	2.7 LQ	1.4 LQ	**1.8**	**0.8**	**0.0**	**0**
Furans								
2,3,7,8-Tetrachloro	0.05	21	17	13 LQ	**17.0**	**3.9**	**0.8**	**4**
1,2,3,7,8-Pentachloro	0.05	2.7	3.4	3.6	**3.3**	**0.4**	**0.2**	**1**
2,3,4,7,8-Pentachloro	0.5	28 LRA	27	25	**26.7**	**1.5**	**13.4**	**65**
1,2,3,4,7,8-Hexachloro	0.1	3.0 LQ	2.2 LQ	1.5 LQ	**2.2**	**0.7**	**0.2**	**1**
1,2,3,6,7,8-Hexachloro	0.1	8.0	3.4 LQ	1.2 LQ	**4.2**	**3.5**	**0.4**	**2**
1,2,3,7,8,9-Hexachloro	0.1	0.2 ND, LRA	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**0**
2,3,4,6,7,8-Hexachloro	0.1	30	18	5.5 LQ	**17.8**	**12.2**	**1.8**	**9**
1,2,3,4,6,7,8-Heptachloro	0.01	20	9.4	3.1 LQ	**10.9**	**8.6**	**0.1**	**1**
1,2,3,4,7,8,9-Heptachloro	0.01	5.6 LQ, LRA	2.3 LQ	1.2 LQ	**3.7**	**2.3**	**0.0**	**0**
Octachloro	0.0001	62	49	35	**48.4**	**13.6**	**0.0**	**0**
					Mean TEQ		**(SD)**	
Total D/F TEQs		**24.3**	**20.5**	**17.0**	**20.6**		**3.7**	
					Mean Lipid		**(SD)**	
Percent Lipid:		**2.5**	**2.4**	**2.5**	**2.5**		**0.1**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp. 106: 775-791.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.
LRA Denotes recovery of ^{13}C-labeled surrogate below 25%, but > 10% (See Appendix 1). %CV = 25%.

Largemouth bass ovaries - The concentrations of PCDD/F congeners in ovaries from largemouth bass collected from the Housatonic River sites were elevated relative to the reference site, Three-Mile Pond (Table 29) The PCDD/F congeners were at or below the limits of detection (or quantitation) in the ovary samples from the reference site, Three-Mile Pond. Only 2,3,7,8-TCDF was found to be at concentrations above procedural blank values for the PCDD/F congeners. The congener with the greatest concentrations in the ovary samples (over and above the procedural blanks) was 2,3,4,7,8-PCDF, as was observed in the carcass samples from the same largemouth bass from the Housatonic River (above). 2,3,7,8-TCDF and 2,3,4,6,7,8-hexachlorodibenzofuran were also elevated in the largemouth bass ovary samples from the Housatonic River, as compared to the reference location, Three-Mile Pond. The variation in the PCDF congeners among individual fish was sometimes great and certainly much greater than the analytical variation observed in measurements from the same sample (CERC Organic Chemistry Section, Project Report # 3307-70L1E, Appendix 1).

The QC check samples were all within expected range, with a few exceptions. Some of the samples had low recoveries of the hexa- and heptachloro-PCDFs on the alumina column (CERC Organic Chemistry Section, Project Report # 3307-70L1E, Appendix 1). The concentrations of PCDFs and PCDDs the matrix spike samples were at expected concentrations, except for OCDD, OCDF, and 1,2,3,4,6,7,8-heptachlorodibenzofuran. However, the concentrations of these congeners were small in all of the samples and not expected to contribute significantly to the toxicity of these chemicals (see section on TEF/TEQs below).

Table 29. Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in ovaries of largemouth bass collected from Housatonic River Basin sites.

	Three Mile Pond								
	TEF Value*	3MP Composite	3MP 26-12	3MP 28-5	3MP 28-13	** Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins									
2,3,7,8-Tetrachloro	1.0	0.1 ND	0.2	0.4 LQ	0.2 LQ	**0.3**	**0.1**	**0.3**	**38**
1,2,3,7,8-Pentachloro	1.0	0.2	0.2 LQ	0.1 ND	0.2 LQ	**0.2**	**0.1**	**0.2**	**22**
1,2,3,4,7,8-Hexachloro	0.5	0.1 ND	0.1 ND	0.1 ND	0.1 ND	**0.1**	**0.0**	**0.1**	**6**
1,2,3,6,7,8-Hexachloro	0.01	0.1 ND	0.1	0.1 ND	0.1 ND	**0.1**	**0.0**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.1 ND	0.1 LQ	0.1 ND	0.1 ND	**0.1**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.4 LQ	0.3 LQ	0.2 ND	0.3 LQ	**0.2**	**0.0**	**0.0**	**0**
Octachloro	0.0001	1.8	1.8	1.0 LQ	1.1 LQ	**1.3**	**0.4**	**0.0**	**0**
Furans									
2,3,7,8-Tetrachloro	0.05	1.0	1.1	2.3	0.9	**1.4**	**0.8**	**0.1**	**9**
1,2,3,7,8-Pentachloro	0.05	0.2	0.2 LQ	0.2	0.1	**0.2**	**0.1**	**0.0**	**1**
2,3,4,7,8-Pentachloro	0.5	0.3	0.2 LQ	0.2 LQ	0.2 LQ	**0.2**	**21**	**0.1**	**12**
1,2,3,4,7,8-Hexachloro	0.1	0.1 ND	0.1ND	0.1 ND	0.1 ND	**0.1**	**0.0**	**0.0**	**1**
1,2,3,6,7,8-Hexachloro	0.1	0.1 ND	0.2	0.1 ND	0.1 ND	**0.1**	**0.0**	**0.0**	**2**
1,2,3,7,8,9-Hexachloro	0.1	0.2 ND, LR	0.2 ND, LR	0.2 ND	0.2 ND	**0.2**	**0.0**	**0.0**	**3**
2,3,4,6,7,8-Hexachloro	0.1	0.1 ND	0.2 LQ	0.1 ND	0.1 ND	**0.1**	**0.1**	**0.0**	**2**
1,2,3,4,6,7,8-Heptachloro	0.01	4.3	4.0	1.1 LQ	1.4 LQ	**2.2**	**1.6**	**0.0**	**3**
1,2,3,4,7,8,9-Heptachloro	0.01	0.3 ND, LR	0.3 ND, LR	0.3 ND	0.3 ND	**0.3**	**0.0**	**0.0**	**0**
Octachloro	0.0001	16	15	9 LQ	7.9 LQ	**10.6**	**3.7**	**0.0**	**0**
						Mean TEQ		**(SD)**	
Total D/F TEQs		**0.6**	**0.8**	**0.9**	**0.7**	**0.8**		**0.1**	
						Mean Lipid		**(SD)**	
Percent Lipid:		**9.0**	**11**	**13**	**6.9**	**10.2**		**3.0**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp. 106: 775-791.
**Composite not included in mean.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.
LR Denotes recovery of ^{13}C-labeled surrogate below 25%, but > 10% (See Appendix 1). %CV is about 25%.

Table 29 (Cont.). Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in ovaries of largemouth bass collected from Housatonic River Basin sites.

		Rising Pond							
	TEF Value*	RP Composite	RP 25-12	RP 30-7	RP 30-9	** Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins									
2,3,7,8-Tetrachloro	1.0	5.6	7.9 LQ	3.5	11 LQ	**7.5**	**3.8**	**7.5**	**8**
1,2,3,7,8-Pentachloro	1.0	2.4 LQ	2.3 LQ	0.5 ND	7.0	**3.2**	**3.3**	**3.2**	**4**
1,2,3,4,7,8-Hexachloro	0.5	0.5 ND	0.5 ND	0.5 ND	0.5 ND	**0.5**	**0.0**	**0.3**	**0**
1,2,3,6,7,8-Hexachloro	0.01	1.2 LQ	1.1	0.5 ND	2.5	**1.3**	**1.0**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.5 ND	0.5 ND	0.5 ND	0.5 ND	**0.5**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.9 LQ	1.0 ND	1.0 ND	1.3 LQ	**1.1**	**0.2**	**0.0**	**0**
Octachloro	0.0001	2.2	1.0 ND	1.0 ND	4.3	**2.1**	**1.9**	**0.0**	**0**
Furans									
2,3,7,8-Tetrachloro	0.05	23	41	9	64	**38.1**	**27.4**	**1.9**	**2**
1,2,3,7,8-Pentachloro	0.05	5.2	10 LQ	1.5	16	**9.1**	**7.2**	**0.5**	**0**
2,3,4,7,8-Pentachloro	0.5	85	130	22	300	**150.5**	**93**	**75.3**	**81**
1,2,3,4,7,8-Hexachloro	0.1	2.3 LQ	2.3 LQ	2.7 LQ	8.3	**4.4**	**3.3**	**0.4**	**0**
1,2,3,6,7,8-Hexachloro	0.1	2.8 LQ	4.0 LQ	2.7	18	**8.2**	**8.4**	**0.8**	**1**
1,2,3,7,8,9-Hexachloro	0.1	1.0 ND	1.0 ND	1.0 ND	1.0 ND	**1.0**	**0.0**	**0.1**	**0**
2,3,4,6,7,8-Hexachloro	0.1	11 LQ	12 LQ	15 LQ	66	**30.9**	**30.3**	**3.1**	**3**
1,2,3,4,6,7,8-Heptachloro	0.01	7.9	5.6 LQ	9.7 LQ	41	**18.9**	**19.6**	**0.2**	**0**
1,2,3,4,7,8,9-Heptachloro	0.01	3.3 LQ	2.4 LQ	2.7 LQ	16 LQ	**7.0**	**7.7**	**0.1**	**0**
Octachloro	0.0001	14 LQ	16 LQ	19	31	**22.1**	**7.9**	**0.0**	**0**
						Mean TEQ		**(SD)**	
Total D/F TEQs		**53.6**	**79.8**	**18.0**	**180**	**92.5**		**81.6**	
						Mean Lipid		**(SD)**	
Percent Lipid:		**8.8**	**9.4**	**8.9**	**13**	**10.4**		**2.0**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp. 106: 775-791.
**Composite not included in mean.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.

Table 29 (Cont.). Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in ovaries of largemouth bass collected from Housatonic River Basin sites.

		Woods Pond							
	TEF Value*	WP Composite	WP 35-6	WP 35-8	WP 35-9	** Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins									
2,3,7,8-Tetrachloro	1.0	5.3 LQ	4.9	11	6.6	**7.4**	**2.9**	**7.4**	**19**
1,2,3,7,8-Pentachloro	1.0	2.7 LQ	1.8 LQ	3.5	2.1 LQ	**2.5**	**0.9**	**2.5**	**6**
1,2,3,4,7,8-Hexachloro	0.5	0.5 ND	1.5 ND	0.5 ND	0.5 ND	**0.5**	**0.0**	**0.3**	**1**
1,2,3,6,7,8-Hexachloro	0.01	0.6 LQ	0.5 LQ	0.8 LQ	0.7	**0.7**	**0.1**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.5 ND	0.5 ND	0.5 ND	0.5 ND	**0.5**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.7 LQ	0.6	1.0 LQ	0.8 LQ	**0.8**	**0.2**	**0.0**	**0**
Octachloro	0.0001	2.5 LQ	3.0	3.5 LQ	2.2	**2.9**	**0.7**	**0.0**	**0**
Furans									
2,3,7,8-Tetrachloro	0.05	36	32	62	66	**53.3**	**18.3**	**2.7**	**7**
1,2,3,7,8-Pentachloro	0.05	7.1	6.7 LQ	11	12	**10.0**	**2.9**	**0.5**	**1**
2,3,4,7,8-Pentachloro	0.5	47	43	53	43	**46.5**	**12**	**23.2**	**58**
1,2,3,4,7,8-Hexachloro	0.1	4.1	1.1	2.5 LQ	2.2	**1.9**	**0.7**	**0.2**	**0**
1,2,3,6,7,8-Hexachloro	0.1	10	2.5	11	3.4	**5.5**	**4.5**	**0.5**	**1**
1,2,3,7,8,9-Hexachloro	0.1	1.0 ND	1.0 ND	1.0 ND	1.0 ND	**1.0**	**0**	**0.1**	**0**
2,3,4,6,7,8-Hexachloro	0.1	31	8	48 LQ	9.2 LQ	**21.5**	**22.5**	**2.2**	**5**
1,2,3,4,6,7,8-Heptachloro	0.01	26	5.9 LQ	34	7.5	**15.8**	**15.9**	**0.2**	**0**
1,2,3,4,7,8,9-Heptachloro	0.01	7.7	1.7 LQ	8.4	2.3	**4.1**	**3.7**	**0.0**	**0**
Octachloro	0.0001	22 LQ	13	30	15	**19.5**	**9.1**	**0.0**	**0**
						Mean TEQ		**(SD)**	
Total D/F TEQs		**38.8**	**32.0**	**51.1**	**36.0**	**39.7**		**10.1**	
						Mean Lipid		**(SD)**	
Percent Lipid:		**8.1**	**7.9**	**11**	**10**	**9.6**		**1.5**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp. 106: 775-791.
**Composite not included in mean.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.

Table 29 (Cont.). Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in ovaries of largemouth bass collected from Housatonic River Basin sites.

		Deep Reach Composites						
	TEF Value*	Composite A	Composite B	Composite C	** Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins								
2,3,7,8-Tetrachloro	1.0	4.3 LQ	4.1 LQ	4.0	**4.1**	**0.2**	**4.1**	**12**
1,2,3,7,8-Pentachloro	1.0	2.0 LQ	2.4 LQ	2.4 LQ	**2.3**	**0.2**	**2.3**	**7**
1,2,3,4,7,8-Hexachloro	0.5	0.5 ND	0.5 ND	0.5 ND	**0.5**	**0.0**	**0.3**	**1**
1,2,3,6,7,8-Hexachloro	0.01	0.5 ND	1.2 LQ	0.6	**0.8**	**0.4**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.5 ND	0.5 ND	0.5 ND	**0.5**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.7 LQ	0.5 LQ	0.8 LQ	**0.7**	**0.2**	**0.0**	**0**
Octachloro	0.0001	3.4 LQ	2.8	3.0 LQ	**3.1**	**0.3**	**0.0**	**0**
Furans								
2,3,7,8-Tetrachloro	0.05	39	35	34	**36.1**	**2.3**	**1.8**	**5**
1,2,3,7,8-Pentachloro	0.05	6.9	5.7 LQ	6.2	**6.3**	**0.6**	**0.3**	**1**
2,3,4,7,8-Pentachloro	0.5	46	48	45	**46.3**	**3**	**23.2**	**67**
1,2,3,4,7,8-Hexachloro	0.1	2.1	1.5 LQ	2.7 LQ	**2.1**	**0.6**	**0.2**	**1**
1,2,3,6,7,8-Hexachloro	0.1	3.7 LQ	3.3 LQ	7.0	**4.7**	**2.0**	**0.5**	**1**
1,2,3,7,8,9-Hexachloro	0.1	1.0 ND	1.0 ND	1.0 ND	**1.0**	**0.0**	**0.1**	**0**
2,3,4,6,7,8-Hexachloro	0.1	11 LQ	11	26 LQ	**15.8**	**8.4**	**1.6**	**5**
1,2,3,4,6,7,8-Heptachloro	0.01	11	9.5	18	**12.7**	**4.5**	**0.1**	**0**
1,2,3,4,7,8,9-Heptachloro	0.01	3.2 LQ	2.0 LQ, LR	6.0	**3.7**	**2.1**	**0.0**	**0**
Octachloro	0.0001	13 LQ	11	15 LQ	**13.1**	**1.9**	**0.0**	**0**
					Mean TEQ		**(SD)**	
Total D/F TEQs		**33.8**	**34.5**	**35.2**	**34.5**		**0.7**	
					Mean Lipid		**(SD)**	
Percent Lipid:		**8.8**	**8.8**	**8.7**	**8.8**		**0.1**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp. 106: 775-791.
**Composite not included in mean.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.
LR Denotes recovery of ^{13}C-labeled surrogate below 25%, but > 10% (See Appendix 1). %CV is about 25%.

Table 29 (Cont.). Concentrations (pg/g, wet wt.) of chlorinated dibenzo-p-dioxin and dibenzofurans in ovaries of largemouth bass collected from Housatonic River Basin sites.

		Deep Reach						
	TEF Value*	DR 27-7	DR 31-1	DR 31-2	** Mean	SD	Mean TEQ	TEQ (% Total)
Dioxins								
2,3,7,8-Tetrachloro	1.0	2.8 LQ	12	5.4	**6.8**	**4.8**	**6.8**	**14**
1,2,3,7,8-Pentachloro	1.0	1.7 LQ	3.4	3.2	**2.8**	**0.9**	**2.8**	**6**
1,2,3,4,7,8-Hexachloro	0.5	0.5 ND	0.5 ND	0.5 ND	**0.5**	**0.0**	**0.3**	**1**
1,2,3,6,7,8-Hexachloro	0.01	0.7 LQ	0.9 LQ	0.6 LQ	**0.7**	**0.2**	**0.0**	**0**
1,2,3,7,8,9-Hexachloro	0.01	0.5 ND	0.5 ND	0.5 ND	**0.5**	**0.0**	**0.0**	**0**
1,2,3,4,6,7,8-Heptachloro	0.001	0.9 LQ	0.9 LQ	0.5	**0.8**	**0.2**	**0.0**	**0**
Octachloro	0.0001	2.1 LQ	2	2.5 LQ	**2.3**	**0.2**	**0.0**	**0**
Furans								
2,3,7,8-Tetrachloro	0.05	15	160	54	**76.4**	**75.0**	**3.8**	**8**
1,2,3,7,8-Pentachloro	0.05	2.7	17	10	**10.1**	**7.4**	**0.5**	**1**
2,3,4,7,8-Pentachloro	0.5	31	90	58	**59.4**	**50**	**29.7**	**61**
1,2,3,4,7,8-Hexachloro	0.1	2.3 LQ	2.2 LQ	4.7 LQ	**3.1**	**1.4**	**0.3**	**1**
1,2,3,6,7,8-Hexachloro	0.1	3.9 LQ	7.7 LQ	10 LQ	**7.1**	**3.0**	**0.7**	**1**
1,2,3,7,8,9-Hexachloro	0.1	1.0 ND	1.0 ND	1.0 ND	**1.0**	**0.0**	**0.1**	**0**
2,3,4,6,7,8-Hexachloro	0.1	11	29	52	**30.7**	**20.6**	**3.1**	**6**
1,2,3,4,6,7,8-Heptachloro	0.01	9.2	21	31	**20.6**	**11.1**	**0.2**	**0**
1,2,3,4,7,8,9-Heptachloro	0.01	2.7 LQ	5.7 LQ	8.2 LQ	**5.5**	**2.7**	**0.1**	**0**
Octachloro	0.0001	15	15	25	**18.2**	**5.6**	**0.0**	**0**
					Mean TEQ		**(SD)**	
Total D/F TEQs		**23.3**	**75.5**	**48.1**	**49.0**		**26.1**	
					Mean Lipid		**(SD)**	
Percent Lipid:		**6.5**	**16**	**10**	**10.8**		**4.8**	

*Dioxin Toxicity Equivalent Factors from van den Berg et al., Environ Health Persp. 106: 775-791.
**Composite not included in mean.
Values not annotated have a percent of variation of about 10%.
LQ Less than method quantification limit due to incomplete ion cluster of +/- 15% tolerances.
ND Not detected at specified detection limit.

Dioxin Toxic Equivalents (TEQs):

The toxicity of chlorinated dioxins, furans, and planar PCBs is expressed through the aryl hydrocarbon receptor (Ah-R). The untoward effects of PCDDs, PCDFs, and planar PCBs in fish and wildlife largely occur through an additive model of toxicity (van den Berg et al. 1998; Tillitt 1999). Therefore, we have taken the exposure data (concentrations of doxins, furans, and planar PCBs) from the largemouth bass and converted the chemical concentrations into dioxin-like potency, using dioxin toxic equivalence factors (TEFs) and an additive model of toxicity. The TEFs used for this section and report were those TEFs designated for ecological risk assessment of PCBs, PCDDs, and PCDFs in fish (van den Berg et al. 1998). We used the fish-specific TEF values from the World Health Organization report of the international workshop on the TEF/TEQ approach. The analytes that were found to have concentrations at or below the limits of detection or quantitation were assigned the limit of detection or quantitation, respectively, for purposes of TEQ calculation in the samples.

Largemouth bass carcass homogenates - Dioxin toxic equivalents (TEQs) in the homogenates of largemouth bass carcasses used in the fish reproduction studies were derived from measured concentrations of planar (non-ortho) PCBs, 2,3,7,8-substituted PCDDs, and 2,3,7,8-substituted PCDFs in the samples. The fish-based TEFs from van den Berg et al. (1998) were used to develop potency values (TEQs), which were in turn used to evaluate exposure to the largemouth bass and their offspring. The concentrations of TEQs in the largemouth bass from Three Mile Pond were small. Mean TEQs were 1.0 ± 0.2 pg/g in the carcass homogenates of largemouth bass from the reference site, Three Mile Pond (Table 30). Contributions to the total TEQs in the largemouth bass carcass samples from the reference site, Three Mile Pond, were mainly from chlorinated dioxins and furans (80%). The contribution of PCBs was 20% of the total TEQs in the carcass homogenates of largemouth bass from Three Mile Pond. The PCB-related TEQs in the largemouth bass carcasses from Three Mile Pond were solely from PCB 126. The samples had a small amount of PCB 77, but not sufficient to account for a significant amount of TEQs. The exact proportions of the relative contributions of the different classes of compounds to the total TEQs are not considered to be very accurate for these samples due to the small amounts

present in the Three Mile Pond samples. Most of the PCDDs and PCDFs were below detection in these samples. Thus, the estimated total TEQs in the carcasses of largemouth bass from Three Mile Pond reported here, were likely to be an over-estimate, biased by the use of detection limits in the calculations. The dioxin-like potencies in the carcass homogenates of largemouth bass from Three Mile Pond are considered small and at or near background.

The concentrations of TEQs in largemouth bass carcasses were elevated at all three of the collection site on the Housatonic River. The mean concentrations of TEQs in largemouth bass carcasses were 37 ± 2, 65 ± 8, and 62 ± 20 pg TEQs/g from Rising Pond, Woods Pond, and Deep Reach locations on the river, respectively (Table 30). The contributions of PCB-related TEQs and PCDF-related TEQs were the greatest at all three sites and combined to account for approximately 89-94% of the measured TEQs. The large majority (98%) of the PCB-related TEQs from all three studies areas on the Housatonic River were due to the contribution of PCB 126 (Table 30). The pentachlorinated dibenzofuran, 2,3,4,7,8-PCDF, contributed the greatest (61-78%) to the dioxin and furan-related TEQs in the largemouth bass carcasses from the Housatonic River study sites. Carcass homogenates of largemouth bass from Rising Pond contained 16 ± 0.5 pg TEQ/g from PCBs, 17 ± 1.6 pg TEQ/g from PCDFs, and 4 ± 0.5 pg TEQ/g from PCDDs. The TEQs in largemouth bass derived from PCDDs were similar at all of the three Housatonic River locations. Similarly, the PCDF-related toxic potency (TEQs) in the largemouth bass carcass samples was similar at all three Housatonic River study locations. However, the PCB-related toxic potency (TEQs) in the largemouth bass carcass samples from the two upstream locations (Deep Reach and Woods Pond) were greater (2.5-3 fold) than the PCB-related TEQs in largemouth bass carcass samples from the study site furthest downstream.

Table 30. Concentrations (pg/g, wet wt.) of TEQs derived from polychlorinated biphenyls and polychlorinated dioxins and furans in the ground carcasses of largemouth bass collected from Housatonic River Basin sites.

Site/Sample ID		Non-ortho PCB TEQs (pg/g)	PCDD TEQs (pg/g)	PCDF TEQs (pg/g)	Total TEQs (pg/g)
Three Mile Pond, 3MP-B		0.1	0.6	0.6	1.3
Three Mile Pond, 3MP-C		0.1	0.5	0.3	0.9
Three Mile Pond, 3MP-D		0.1	0.5	0.3	0.9
	Mean	**0.1**	**0.5**	**0.4**	**1.0**
	SD	**0.01**	**0.06**	**0.17**	**0.2**
Rising Pond, RP-A		16	4	19	39
Rising Pond, RP-B		16	3	16	35
Rising Pond, RP-30-9		17	4	17	37
	Mean	**16**	**4**	**17**	**37**
	SD	**0.5**	**0.5**	**1.6**	**2**
Woods Pond, WP-A		51	4	20	74
Woods Pond, WP-B		43	5	16	63
Woods Pond, WP-C		42	4	13	59
	Mean	**45**	**4**	**16**	**65**
	SD	**5**	**0.6**	**3**	**8**
Deep Reach Pond, DR-A		61	4	20	85
Deep Reach Pond, DR-B		41	3	17	62
Deep Reach Pond, DR-C		29	3	14	46
	Mean	**42**	**3**	**17**	**62**
	SD	**17**	**0.4**	**3**	**20**

Largemouth bass ovaries - Dioxin toxic equivalents (TEQs) in the ovaries of the largemouth bass that were used in the fish reproduction studies were derived from measured concentrations of planar (non-ortho) PCBs, 2,3,7,8-substituted PCDDs, and 2,3,7,8-substituted PCDFs in the samples. The fish-based TEFs from van den Berg et al. (1998) were used to develop potency values (TEQs), which were in turn used to evaluate exposure to the largemouth bass and their offspring. The concentrations of TEQs in the ovaries of largemouth bass from the reference site, Three Mile Pond, were small. Mean TEQs were 1.0 ± 0.1 pg/g in the ovaries of largemouth bass from Three Mile Pond (Table 31). As with the TEQs in the carcasses of these same fish from Three Mile Pond (above), the relative contributions of the different classes of chemicals (PCBs, PCDDs, and PCDFs) have little meaning due to the small amounts of these chemicals present in the ovaries. Most of the PCDDs and PCDFs were below detection in these samples. Thus, the estimated total TEQs in the ovaries of largemouth bass from Three Mile Pond reported here, were likely to be an over-estimate, biased by the use of detection limits in the calculations. The dioxin-like potencies in the ovaries of largemouth bass from Three Mile Pond are considered small and at or near background concentrations.

The concentrations of TEQs in the ovaries of largemouth bass were elevated at all three of the collection site on the Housatonic River (Table 31). The mean concentrations of TEQs in the largemouth bass ovaries were 135 ± 114, 123 ± 44, and 129 ± 81 pg TEQs/g from Rising Pond, Woods Pond, and Deep Reach locations on the river, respectively (Table 31). The contributions of PCB-related TEQs and PCDF-related TEQs were the greatest at all three sites and combined to account for approximately 92-93% of the measured TEQs. The large majority (97-98%) of the PCB-related TEQs from all three studies areas on the Housatonic River were due to the contribution of PCB 126 (Table 31). The pentachlorinated dibenzofuran, 2,3,4,7,8-PCDF, contributed the greatest (58-81%) to the dioxin and furan-related TEQs in the ovaries of largemouth bass from the Housatonic River study sites. The contribution of 2,3,4,7,8-PCDF to the PCDD/F-related TEQs was 81% in the ovaries of largemouth bass from Rising Pond on the Housatonic River. The contributions of 2,3,4,7,8-PCDF towards the PCDD/F-related toxic potency in ovaries of largemouth bass from the other two Housatonic River locations (Woods Pond and Deep Reach) were slightly less (58-61%) than the observed at Rising Pond, but still the

majority of the PCDD/F-related TEQs. Mean concentrations of TEQs in the ovaries of largemouth bass from Rising Pond were 65 ± 33 pg TEQ/g from PCBs, 9 ± 7 pg TEQ/g from PCDDs, and 54 ± 74 pg TEQ/g from PCDFs. The TEQs in ovaries of largemouth bass derived from PCDDs were similar at all of the three Housatonic River locations. PCDF-related toxic potency (TEQs) was greatest in largemouth bass ovary samples from Rising Pond (54 ± 74 pg/g), followed by Deep Reach (35 ± 20 pg/g) and Woods Pond (29 ± 6 pg/g). Mean concentrations of PCB-related TEQs in the ovaries of largemouth bass were 65 ± 33 pg/g at Rising Pond, 84 ± 34 pg/g at Woods Pond, and 85 ± 56 pg/g at Deep Reach (Table 31). The PCB-related toxic potency (TEQs) in the ovaries of largemouth bass from the two upstream locations (Deep Reach and Woods Pond) were greater (20%) than the PCB-related TEQs in largemouth bass ovary samples from the study site furthest downstream, Rising Pond.

Table 31. Concentrations (pg/g, wet wt.) of TEQs derived from polychlorinated biphenyls and polychlorinated dioxins and furans in the ovaries of largemouth bass collected from Housatonic River Basin sites.

Site/Sample ID	Non-ortho PCB TEQs (pg/g	PCDD TEQs (pg/g)	PCDF TEQs (pg/g)	Total TEQs (pg/g)
Three Mile Pond, 11 ovary composite	0.3	0.4	0.3	1.0
Three Mile Pond, 3MP-26-12	0.2	0.5	0.3	1.0
Three Mile Pond, 3MP-28-5	0.3	0.6	0.3	1.2
Three Mile Pond, 3MP-28-13	0.2	0.5	0.2	0.9
Mean*	**0.2**	**0.5**	**0.3**	**1.0**
SD	**0.0**	**0.1**	**0.1**	**0.1**
Rising Pond, 11 ovary composite	51	8	46	105
Rising Pond, RP-25-12	61	10	69	141
Rising Pond, RP-30-7	43	4	14	61
Rising Pond, RP-30-9	107	18	161	286
Mean*	**65**	**9**	**54**	**135**
SD	**33**	**7**	**74**	**114**
Woods Pond, 11 ovary composite	117	8	30	156
Woods Pond, WP-35-6	66	7	25	98
Woods Pond, WP-35-8	127	14	37	178
Woods Pond, WP-35-9	71	9	27	107
Mean*	**84**	**10**	**29**	**123**
SD	**34**	**4**	**6**	**44**
Deep Reach, 18 ovary composite, A	75	7	27	109
Deep Reach, 18 ovary composite, B	74	7	28	108
Deep Reach, 18 ovary composite, C	74	7	29	109
Mean	**74**	**7**	**28**	**109**
SD	**0.6**	**0.1**	**0.7**	**0.4**
Deep Reach, DR-27-7	51	5	18	74
Deep Reach, DR-31-1	158	16	58	232
Deep Reach, DR-31-2	77	9	39	125
Mean	**85**	**9**	**35**	**129**
SD	**56**	**6**	**20**	**81**

*Mean values do not include the composite values

6.0 SUMMARY AND CONCLUSIONS (Phase I)

Exposure Assessment

The exposure of largemouth bass from the Housatonic River to PCBs and PCB-related contaminants such as PCDFs was far greater than that observed in largemouth bass from the reference site, Three Mile Pond. The concentrations of organochlorine pesticides was small in largemouth bass from both the Housatonic River and the reference site, below concentrations considered to be thresholds for toxicity in fish (URL:http://www.epa.gov/fedrgstr/EPA-WATER/1998/December/Day-10/w30272.htm). The concentrations of PCDDs in both largemouth bass carcasses and ovaries were elevated (6 to 8-fold and 14 to 20-fold, respectively) at all of the Housatonic River sites compared to the reference location. Concentrations of PCBs and PCDFs in the largemouth bass carcasses and ovaries were elevated an even greater extent (300-1500 fold) as compared to concentrations measured in largemouth bass from the reference area. The resultant TEQs (dioxin-like toxic potency) of the mixtures of PCBs, PCDFs, and PCDDs present in the largemouth bass were elevated 100-140 fold over the TEQs observed in the largemouth bass from the reference site, Three Mile Pond.

Adult Largemouth Bass

Adult largemouth bass collected from the Housatonic River had several pathological symptoms consistent with PCB-related toxicosis and indicative of contaminant-induced stress. Mean EROD activities were elevated in both male and female largemouth bass from all study locations on the Housatonic River at a rate of 5 to 22- fold greater than the reference fish from Three Mile Pond. Although the mean EROD induction observed in the Housatonic River largemouth bass was not statistically different from the reference site fish at all of the study locations, the pattern of elevated EROD activity was consistent at all of the Housatonic River sites. Measurements of P450 proteins (western blot and immunochemical staining) were comparable with EROD analysis and correlated well in most cases. The pathological endpoints (gonadal histopathology and macrophage aggregates in the liver) measured in the adult largemouth bass from the

Housatonic River were also consistent with PCB-related toxicity. The testes in the adult male largemouth bass from the Housatonic River displayed lobule walls that were thickened relative to the reference site. This type of lobule wall thickening has been observed in laboratory exposures of fish to PCBs (Freeman et al. 1982). Thickening of the lobule walls in the testes of largemouth bass from the Housatonic River was the greatest in fish from the Deep Reach area, which were three times as thick as the lobule walls in the testes of the largemouth bass from the reference site. Ovaries of largemouth bass from the Housatonic River contained immature ova and had signs of delayed or incomplete spawning, all of which have been associated with PCB exposures in fish (Monosson 1999). Macrophage aggregates in the livers of largemouth bass from the Housatonic River were more prevalent and were scored as having a greater index of severity as compared to fish from Three Mile Pond. These findings are consistent with an elevated level of stress in the largemouth bass from the Housatonic River (reviewed in Schmitt and Dethloff 2000).

Certain health parameters did not show any significant differences among the Housatonic River study sites or the reference population of largemouth bass from Three Mile Pond. In general, the steroid hormones and organ weights did not show differences between the Housatonic River and the reference site. The gross morphological measurements (length, weight, GSI, LSI) likewise were not significantly different among fish from the study areas. The only exception to this was the LSI in female largemouth bass from Rising Pond. These females also had the greatest EROD activities among female bass in the study. LSI has been positively correlated with EROD activity in fish exposed to Ah-R ligands (Andersson et al. 1988; Schell et al. 1987; Steadman et al. 1991), but this relationship has not been consistent in field or laboratory studies (Whyte et al. 2000). Additionally, the concentrations of 11-ketotestosterone and the estrogen-responsive yolk protein, vitellogenin, were not different among the male largemouth bass within or among sites. Estradiol was elevated in male and female largemouth bass from Rising Pond and Deep Reach, but not in the fish from Woods Pond relative to the reference site, Three Mile Pond. Perhaps this may explain the observation of delayed spawning in the females from Woods Pond and Deep Reach.

Largemouth Bass Offspring

The offspring of largemouth bass collected from all of the study locations of the Housatonic River expressed symptoms consistent with PHH-related toxicity. These symptoms were observed in both swim-up fry and 15-day juvenile stages of the largemouth bass offspring. The suite of symptoms observed in the offspring of largemouth bass from the Housatonic River included delayed development, reduced survival at swim-up, cytochrome P450 induction, developmental deformities, and wasting syndrome (reduced weight gain). These symptoms are the same suite of symptoms that have classically been observed in fish exposed to dioxin-like chemicals, including PCBs (Peterson et al. 1993; Walker and Peterson 1994; Monosson 1999; Wright and Tillitt 1999).

Swim-up stage largemouth bass offspring from Housatonic River adults had reduced survival and delayed development compared to the swim-up fry of largemouth bass collected from Three Mile Pond. Survival at swim-up was lower in all Housatonic River offspring and significantly lower in swim-up fry of adult fish collected from the Deep Reach portion of the Housatonic River. Swim-up fry from Deep Reach and Woods Pond had delayed development compared to those fry of adult largemouth bass collected from Three Mile Pond. There were no differences in gross pathologies, growth or histopatology of swim-up fry from the Housatonic River locations compared to the reference site. Swim-up fry from the Housatonic River displayed greater numbers and rates of developmental deformities, particularly of the eye. Also, all swim-up fry of largemouth bass from the Housatonic River stained positive for cytochrome P4501A and the pattern of that staining was consistent with PCB-related exposures. The swim-up fry from Three-Mile did not have the pattern or extent of P4501A immunohistochemical staining as observed in Housatonic River fishes, and indeed only one fry stained slight positive in the kidney.

Symptoms of Ah-R toxicity in 15-day old fry of largemouth bass from the Housatonic River were even more apparent than those observed in the swim-up fry. Gross pathological lesions, abnormal histopathology, developmental deformities, P4501A induction, and wasting syndrome

were all observed in 15-day old fry of largemouth bass from the Housatonic River at significantly elevated rates as compared to 15-day old fry from Three Mile Pond. Survival of the fry to this stage was low in all of the experimental groups of fish, including Three Mile Pond, and average survival was not different among sites. It was thought that the reduced survival was associated with a poor conversion of the fry to exogenous feeding. The median survival to this stage was significantly lower in 15-day old fry from Rising Pond. The symptoms of P4501A induction (tissue-specific pattern and degree of expression), lack of swim bladder inflation, and developmental deformities were observed in 15-day old fry from all three study locations on the Housatonic River. Additionally, reduced weight gain (wasting syndrome) was measured in 15-day old fry from all of the Housatonic River locations (significantly reduced in fry from Deep Reach and Woods Pond). Observation of this suite of effects in 15-day old fry from all of the Housatonic River locations together with the lack of these effects in fry from Three Mile Pond, are consistent with the hypothesis that PCBs and other dioxin-like chemicals affect the growth, development, and reproductive performance of largemouth bass at the Housatonic River locations. The tissue-specific pattern of CYP1A staining in the vasculature, gills, liver, brain, and kidney of the 15-day old fry observed in largemouth bass fry from the Housatonic River was the same as that observed in PCB or TCDD-exposed fry in laboratory studies (Smolowitz et al. 1991; Stegeman and Hahn 1994; Cantrell et al. 1996; 1998). The lack of swim bladder inflation and abnormal swim bladder development, only observed in fry from the Housatonic River, are also classic symptoms of PCB or dioxin-like poisoning in laboratory exposures of fish embryos (Wisk and Cooper 1990; Kim and Cooper 1998). Wasting syndrome (reduced weight gain) is another classic symptom of PCB or dioxin-like effects in developing fish embryos (Helder 1981; Peterson et al. 1993; Walker and Peterson 1994). Reduced weight gain was observed in fry from all locations of the Housatonic River relative to fry from Three Mile Pond. This reduction was significant in 15-day old fry from both Woods Pond and Deep Reach study locations. The slopes of the length-weight regressions for 15-day old fry from Woods Pond and Deep Reach were significantly smaller than the slope of the weight-length regressions of fry from Three Mile Pond.

Conclusions

The concentrations of PCBs observed in the tissues and ovaries of largemouth bass from the Housatonic River were elevated compared to the reference site, Three Mile Pond. Indicators of chemical exposure (CYP1A/EROD) and adverse affects (gonadal histopoathology and macrophage aggregates) were also elevated in the adult largemouth bass taken from the Housatonic River. A suite of symptoms (elevated mortality at swim-up, delayed development, tissue-specific staining of CYP1A, developmental deformities of the swim bladder, eye and tail, and reduced weight gain or wasting syndrome) observed in the offspring of largemouth bass from the Housatonic River were not observed in offspring of largemouth bass from the reference area, Three Mile Pond. Taken together, these finding are consistent with the hypothesis that PCBs present in the Housatonic River cause reproductive and developmental effects in largemouth bass. The Phase II experiments of these studies are designed determine if there are causal linkages between the PCBs and related dioxin-like chemicals present in fish from the Housatonic River and adverse effects on reproduction and development in those fish.

7.0 PERSONNEL AND ACKNOWLEDGMENTS

7.1 Project Personnel

The following individuals participated in conducting the studies described in this report.

Alan Allert	*Technical Assistance*
Jesse Arms	*Chemical Analysis*
Sean Birke	*EROD Analysis*
James Candrl	*Fish Culture*
Paulo Carvalho	*Technical Assistance*
Rachel Claunch	*Technical Assistance*
Tricia Dietrich	*Technical Assistance*
Kathy Echols	*Chemical Analysis*
Kevin Feltz	*Chemical Analysis*
Mandy Fross	*Histology*
Eugene Greer	*Fish Culture*
Chris Ivey	*Fish Culture*
Allen Johnson	*Fish Culture*
John Meadows	*Chemical Analysis*
Tim McTague	*Chemical Analysis*
Eric Nelson	*Technical Assistance*
Diane Nicks	*EROD Analysis*
Carl Orazio	*Chemical Analysis*
Lori Patton	*Technical Assistance*
Paul Peterman	*Chemical Analysis*
Aaron Roberts	*Technical Assistance*
Shawn Sanders	*Fish Culture*
Mike Tanner	*Chemical Analysis*
George Tegerdine	*Chemical Analysis*
Jeff Whyte	*EROD Analysis*

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9.0 APPENDIX 1

PCBs, PCDD/PCDFs and Pesticides in Tissues and Ovaries of Largemouth Bass from the Housatonic River (see attached report).

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May 21, 2001

PCBs, PCDD/PCDFs and Pesticides in Tissues and Ovaries of Largemouth Bass from the Housatonic River

USGS Report
Section 31 Project # 3307-70L1E

Analytical Investigation by the Organic Chemistry Section

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Submitted to

Don Tillitt and Diana Papoulias, Principal Investigators of:

Fish Reproductive Health Assessment in PCB Contaminated Regions of the Housatonic River, MA, USA; Investigation of Causal Linkages Between PCBs and Fish Health

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I. Project Summary:

The Housatonic River runs from Vermont though Massachusetts and then into Connecticut, Long Island Sound and finally into the Atlantic Ocean. For about 50 years, a General Electric (GE) facility in Pittsfield MA, located adjacent to the river, produced approximately 39 thousand pounds of PCBs for use in transformers. PCB-contaminated wastewater from GE was released into the Housatonic River. The sediments at downstream sites, including those at Woods Pond and Deep Reach Pond remain contaminated with PCBs despite the factory being closed for years.

The contaminant residue information provided in this report is part of a larger study concerned with assessing fish reproductive health in PCB contaminated regions of the Housatonic River. The larger study investigates causal linkages between polyhalogenated contaminants (PHHs) and fish health.

Reported herein are the results of the trace-level analyses of the following contaminants in largemouth bass tissues and ovaries:

persistent organochlorine pesticides (OC pesticides),
polychlorinated dibenzo-p-dioxins and furans (PCDD/PCDFs),
polychlorinated biphenyls (PCBs), and
non-*ortho* PCBs (n-PCBs)

Purified concentrates of PHHs were also prepared from the fish tissues for subsequent use in fish egg injection studies; the composition of the above listed PHHs (excluding OC pesticides) was determined in the dosing solution and is reported under a separate cover.

II. Summary of Analytical Methods

1. Sample Preparation

A mass of 15-18 kg of largemouth bass (*Micropterus salmoides*) was collected just prior to spawning from each of the following four reference points on the Housatonic River: 3-Mile Pond (reference area), Rising Pond, Woods Pond, Deep Reach Pond.

After removal of the ovaries from the females, composites of ground fish were created for each site. The four large composites were column extracted and then the solvent was removed by rotoevaporation. Contaminants were isolated from the lipids using large-scale dialysis through a polyethylene membrane, and any remaining co-dialyzed lipids were removed from the extracts by reactive clean-up and high performance gel permeation chromatography (1,2). Dosing solutions were prepared containing graded doses of the isolated contaminants using triolein as the injection vehicle [3]. The dosing solutions were provided for egg injection studies that reintroduced the extracted contaminants into hatching large mouth bass eggs to replicate environmentally-observed toxic responses. Levels of PHHs were determined in the fish tissue, ovaries,

and dosing solutions to complement the information gained from the embryotoxicity studies.

Samples of the original fish tissue composites and ovaries were analyzed for OC and PHH residues according to the procedures outlined in Figures 1 and 2. Triplicate samples of the composites of fish tissue from each of the four sites were analyzed. For the ovaries, one composite and three individual ovaries from each site were analyzed. The following quality control samples were incorporated into the various analyses:

4 procedural blanks
4 bluegill matrix blank
4 bluegill matrix spikes
4 positive control Saginaw Carp

The matrix QC samples (blanks and spikes) prepared from clean bluegill were analyzed with each set of samples. Positive control samples were prepared from CERC's standard positive control matrix (common carp tissue from Saginaw Bay, MI). One of each category of QC sample (procedural blank, matrix blank, matrix spike, and positive control) was analyzed with each set of samples.

All samples, including QC samples had method recovery compounds added to them before extraction to monitor recoveries through the cleanup procedures. The following compounds were added to samples undergoing PHH analysis:

PCB 029 (2,4,6-trichlorobiphenyl)
PCB155 (2,2',4,4',6,6'-hexachlorobiphenyl)
PCB 204 (2,2',3,4,4',5,6,6'-octachlorobiphenyl)
Four ^{13}C-labeled non-*ortho* PCB congeners
Seventeen ^{13}C-labeled 2,3,7,8 substituted dioxin/furans

For those portions of samples undergoing OC analysis, the following method recovery compounds were added:

PCB 029 (2,4,6-trichlorobiphenyl)
PCB155 (2,2',4,4',6,6'-hexachlorobiphenyl)
PCB 204 (2,2',3,4,4',5,6,6'-octachlorobiphenyl)
tetra-chloro-*meta*-xylene
dibutylchlorendate

Matrix spikes in the PHH portion of the analysis also received:

PCBs (mixed Aroclors 1242, 1248, 1254, 1260)
native (^{12}C) dioxin and furan congeners

Matrix spikes in the OC portion of the analysis also received:

Organochlorine pesticides (24 compounds)
PCBs (mixed Aroclors 1242, 1248, 1254, 1260)

Figure 1: Analysis for Congener-specific PCB, PCDD, and PCDF Residues

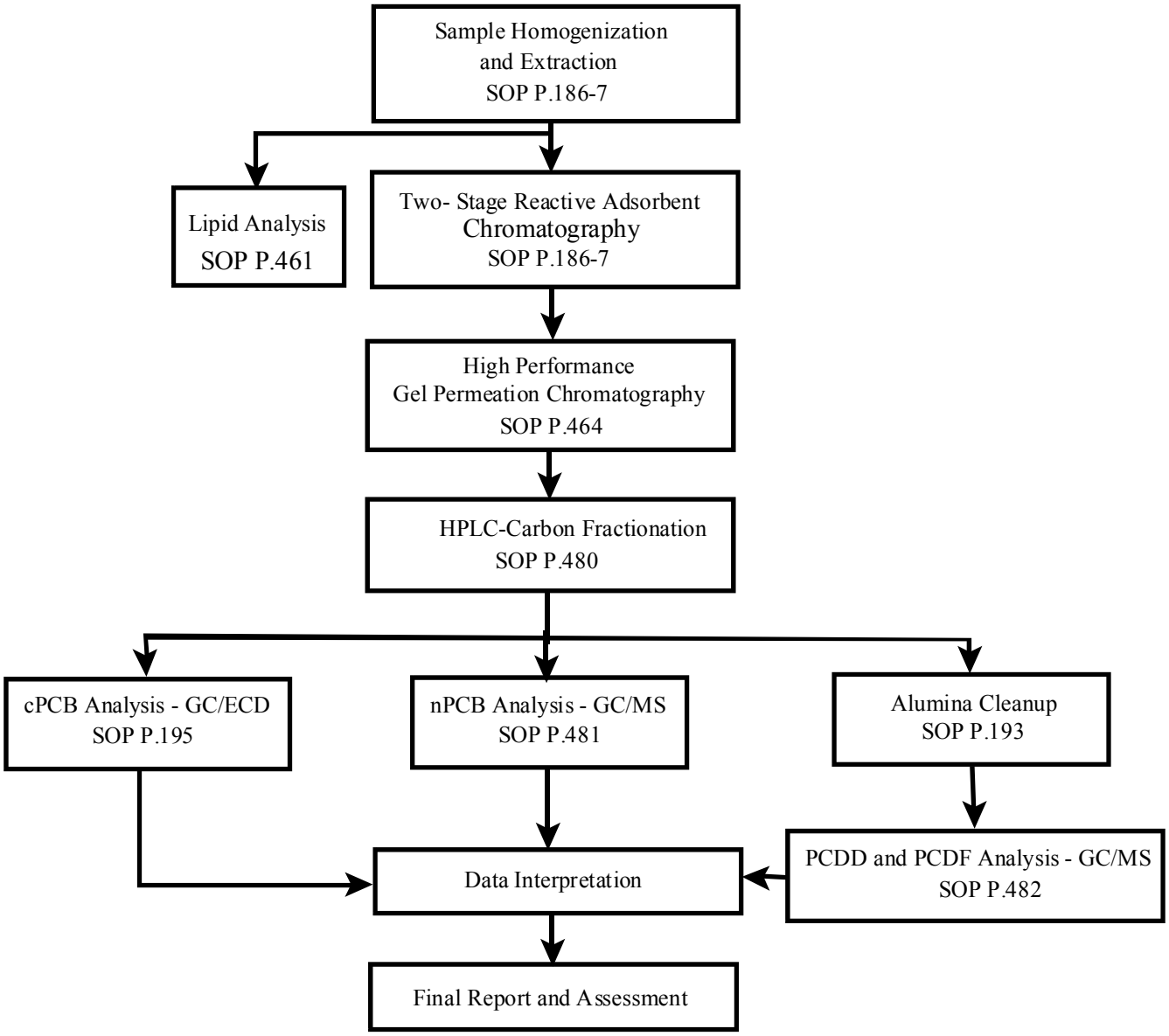
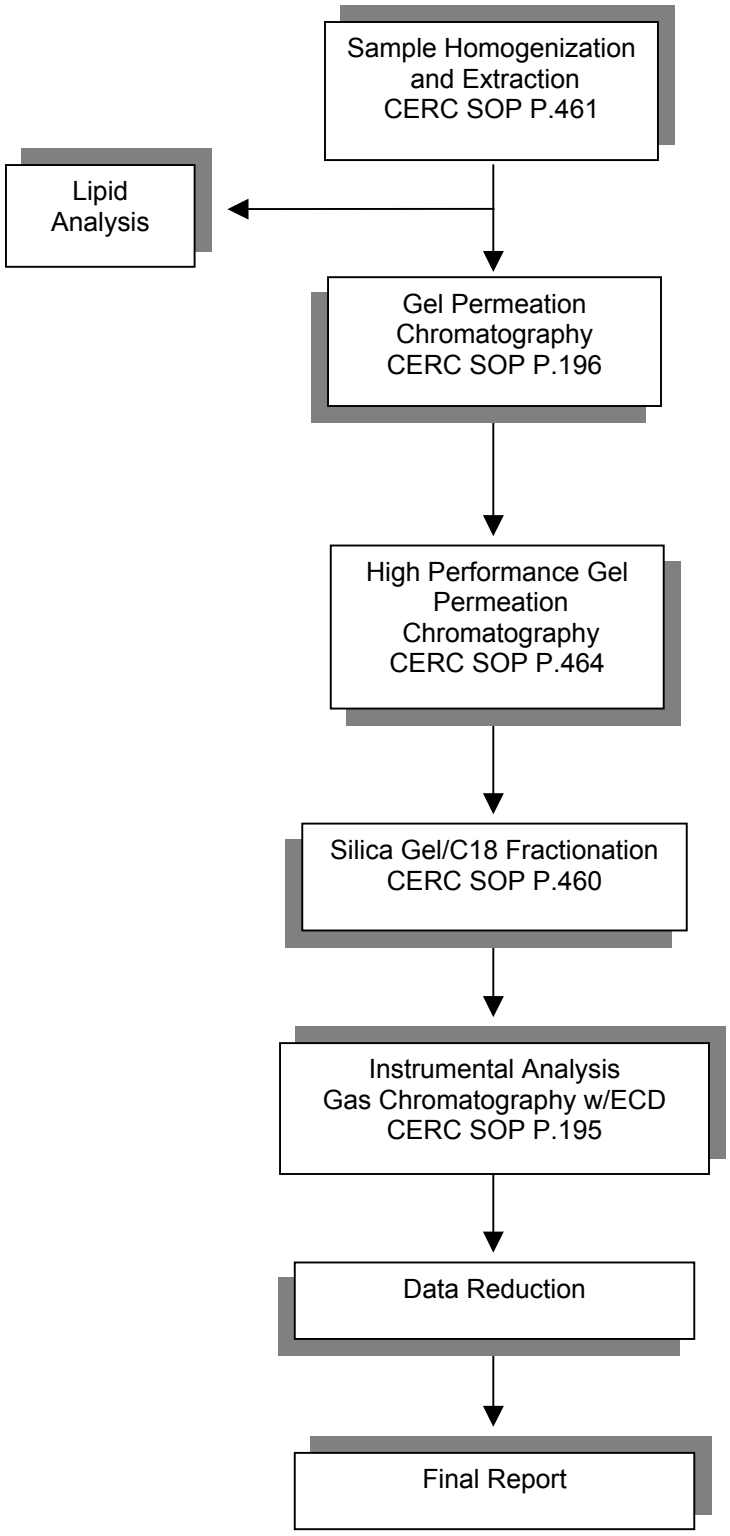


Figure 2: Analysis Scheme for Organochlorine Pesticides and PCBs



For both analytical procedures, the tissue and ovary samples were dehydrated by addition of anhydrous sodium sulfate and method recovery compounds were added. The exact mass of tissue analyzed is reported in the attached tables of data. Samples were extracted with methylene chloride, and a small portion of the extract (1%) was used to determine percent lipid (3). In the analytical protocol where congener-specific and non-*ortho* PCBs were targeted, extracts were subjected to acid- and base-treated silica gels and adsorbent chromatography on activated silica gel (4). All extracts were further purified by high performance gel permeation chromatography (HPGPC) (5) and then fractioned on high performance porous graphitic carbon (PGC) (6) into the following fractions:

PGC 1 *ortho*-chlorinated PCB congeners
- Analysis by GC/ electron-capture detection (ECD)

PGC 2 non-*ortho*-chlorinated PCBs
- Analysis by GC/ high resolution mass spectrometry (GC/HRMS)

PGC 3 polychlorinated dibenzo-*p*-dioxins and -furans (PCDD/PCDFs)
- Analysis by GC/ high resolution mass spectrometry (GC/HRMS)

PGC 3 was further purified on basic alumina (7).

In the analytical protocol targeting organochlorine pesticides, lipids and co-extracted biogenic materials were removed from the extracts by passage through gravity-driven gel permeation chromatography (8) followed by HPGPC (5). The extracts were then fractionated on a two-layered octadecyl silica/activated silica gel column into two fractions: one fraction containing PCBs and four of the targeted OCs (SODS-1), and a second fraction containing the remainder of the OCs (SODS-2) (9).

2. Summary of gas chromatographic method for congener-specific PCBs

The sample extracts were adjusted to a final volume of 10 mL. Two instrumental internal standards were used: PCB congeners 030 and 207 (400 ng each). Individual PCB congeners were measured in PGC1 fractions by GC/ECD. Analyses were performed using Hewlett-Packard 5890 Series II GCs with cool on-column capillary injection systems and Hewlett-Packard model 7673 autosamplers (10). For all analyses, a 3-m section of 0.53 mm i.d. uncoated and deactivated (Restek Corp., Inc.) capillary retention gap was attached to the front of each analytical column by a "Press-Tight" (Restek Corp., Inc.) union. The analytical columns were a 60-m x 0.25-mm DB-5 (0.25µm 5% phenyl-, 95% methylsilicone, J&W Scientific) and a 60-m x 0.25-mm DB-17 (0.25µm 50% phenyl-, 50% methylsilicone, J&W Scientific). The H_2-carrier gas was pressure regulated at 25 psi. The temperature program for the PCB analysis was as follows: initial temperature 60°C, immediately ramped to 150°C at 15°C/min, then ramped to 250°C at 1°C/min, and finally ramped to 320°C at 10°C/min, and held for 1 min. Electron capture detector temperature was 330°C.

Capillary GC/ECD data were collected, archived in digital form, and processed using a Perkin Elmer chromatography data system, which included the model 970 interface and version 6.1 of Turbochrom Workstation™ chromatography software, on a Pentium III microcomputer (11). Six levels of PCB standards, a combination of Aroclors 1242, 1248, 1254, 1260 in 1:1:1:1 w/w/w/w ratio (designated A1111), were used for PCB congeners calibration, with total PCB concentrations ranging from 50 to 8000 ng/mL.

The method detection limits (MDLs) for individual PCB congeners and for total PCBs were based on procedural blank (PB) results according to the method outlined by Keith *et al.* (12,13). Briefly, an average and standard deviation are determined. The MDL (ng) is calculated using the following formula:

$$MDL = (PB\ Avg) + 3(PB\ SD)$$

The MDL is then expressed in units of concentration, e.g. mass of analyte per mass of sample. An average mass for the set is used.

Analytical standards have been verified against certified standards (Accustandard, New Haven CT). The extraction efficiency and method are monitored by analysis of positive control, Saginaw Bay carp. Recoveries of analytes are monitored by the following measures:

(1) procedural internal standards spiked into each sample,
(2) PCB-spiked control egg or bluegill tissue analyzed with each set.

Three procedural standard standards are used to account for analytical recoveries of the PCBs: PCB 029, a trichlorobiphenyl, is representative of more volatile early eluting PCBs (Cl_1 - Cl_3); PCB 155, a hexachlorobiphenyl, is representative of mid-range eluting congeners (Cl_4 - Cl_6); and PCB 204, an octachlorobiphenyl, is less volatile and representative of later eluting PCBs (Cl_7 - Cl_{10}).

3. Summary of gas chromatographic method for OC pesticides

Organochlorine pesticide fractions (PGC 1 and SODS-2) were adjusted to a final volume of 4 mL and the instrumental internal standards (IIS) were added (PCB congeners 030 and 207). Individual organochlorine pesticides were measured in both fractions by GC/ECD. Analyses were performed using Hewlett-Packard 5890 Series II GCs with cool on-column capillary injection systems and Hewlett-Packard model 7673 autosamplers (14). For all analyses, a 3-m section of 0.53 mm i.d. uncoated and deactivated (Restek Corp., Inc.) capillary retention gap was attached to the front of the analytical column by a "Press-Tight" (Restek Corp., Inc.) union. The analytical column for the SODS-2 fraction was a 30-m x 0.25-mm DB-1 (J&W Scientific). The H_2-carrier gas was pressure regulated at 11 psi. The temperature program for the analysis was as follows: initial temperature 90°C, immediately ramped to 165°C at 15°C/min, held 3 minutes, then ramped to 260°C at 2.5°C/min with a 5 minute hold, and finally ramped to 320°C at 10°C/min, and held for 1 min. The ECD temperature was 330°C.

Capillary GC/ECD data were collected, archived in digital form, and processed using a PerkinElmer chromatography data system, which included the model 970- interface and version 6.1 of Turbochrom Workstation™ chromatography software, on a Pentium III microcomputer (11). Six levels of OC pesticide standards were used for calibration, with each pesticide at concentrations ranging from 0.5 to 80 ng/mL. Organochlorine pesticide results are presented in tables and are designated by their CERC database number and are cross-referenced to their field identification number. Concentrations are expressed as nanograms of analyte per gram of sample (wet weight). Detection limits were calculated as discussed above for PCB congeners.

4. Summary of GC/HRMS method for non-*ortho*-PCBs

The non-*ortho*-PCB fraction (PGC-2) contained 5 ng of instrumental internal standard (^{13}C-labeled 2,2',4,5,5'-PeCB (PCB #101). At a final volume of 50 µL, the non-*ortho*-PCBs were determined by GC/HRMS, monitoring two sequential mass windows during the chromatographic separation (13,14). GC/HRMS analysis was performed with a HP 5890A capillary gas chromatograph interfaced to a VG 70-250AS high resolution mass spectrometer. An HP 7673 autosampler was used to introduce 2 µL of the extract onto a 2.5 m x 320 µm deactivated fused silica retention gap via heated (285 °C) direct on-column injection with a Restek spiral Uniliner. The analytical column was a 50 m x 200 µm x 0.11 µm Ultra-1 capillary column. The GC oven was held at 120 °C for 1 min, programmed to 240 °C at 2.2 °C/min, then ramped to 310 °C at 5 °C/min, and a final hold of 5 min. Helium carrier gas was maintained at 45 psig with an initial linear velocity of 27 cm/s.

The VG GC/HRMS system was tuned to 10,000 resolution and calibrated using perfluorodecalin. Mass windows were established for two groups of non-*ortho*-PCBs. Group 1 from 23-47:00 min included ions for Cl_4-biphenyls #77 and 81 and Cl_5-biphenyl #126; Group 2 from 47:00-64 min included ions for Cl_6-biphenyl #169. Within each mass window, two most abundant ions were measured for positive identification and quantitation of each analyte. The ion responses were quantified and averaged. Within each mass window, additional ions monitored the responses of higher chlorinated, potential interfering PCB congeners, $Cl_{4\text{-}8}$ naphthalenes (PCNs), $Cl_{3\text{-}5}$ terphenyls (PCTs), Br_5- and Cl_6-diphenyl ethers (residual carryover from PGC-1), and Cl_4-PCDF (to ensure no breakthrough of PCDFs).

A calibration curve describing the response of each native congener (0.25 to 2,500 pg/µL) to that of its ^{13}C-labeled surrogate was used. Quantification is inherently corrected by the ^{13}C-isotopically labeled surrogates, which account for analytical losses during isolation procedures and variations in the instrumental analysis.

Molecular ion responses of certain PCB congeners are measured to ensure that their fragment ion responses do not contribute an interference >10% to the responses of the respective non-*ortho*-PCB. Column performance is verified by analyzing standards of

individual congeners, labeled congeners, and congeners from Aroclor spiked mixtures. Because non-*ortho*-Cl_5-PCB 126 is only minimally resolved from Cl_6-PCB 129, PCB 129's molecular ion response is monitored to assure that its fragment ion response (3.5% abundance) does not contribute an interference of >10% to the response of PCB 126. PCB 129's molecular ion response must not exceed three times that of PCB 126. Adequate mass resolution is verified while monitoring ions Cl_{4-8} PCNs.

Criteria for Confirmation: For the positive identification and quantitation of each congener, the following criteria were established and met in this study:

1. Peak areas for the selected ion responses must be greater than three times background noise.
2. Native ion peaks must occur at retention times from -1 to +3 sec that for the corresponding ^{13}C-labeled ion peaks, that elute about 1 sec earlier.
3. The ion ratio for the two principal ion responses must be within the acceptable range (generally ±15%).

5. Summary of GC/HRMS method for 2,3,7,8-Cl substituted PCDD/PCDFs

The PCDD/PCDF fractions from PGC (PGC-3) were eluted through basic alumina to remove potential co-contaminants such as chlorinated diphenyl ethers (PCDEs) and residual PCNs and PCBs (6). A total of 1 ng of the internal standard, ^{13}C-labeled 1,2,3,4-TCDD, was added and the volume reduced to ~25 µL. The GC/HRMS analysis was performed using a HP 5890A capillary gas chromatograph interfaced to a VG 70-AS high-resolution mass spectrometer. Five sequential selected ion windows were monitored. (15). An HP 7673 autosampler injected 2µL of the extract into the GC/HRMS. A spiral uniliner, 2.5m x 320 µm deactivated fused silica retention gap, and heated (285 °C) direct inlet were employed. The analysis was conducted with a 50 m x 200 µm x 0.11 µm Ultra-2 (Hewlett Packard) capillary column, with an initial hold of 1 min at 120 °C followed by a ramp to 200 °C at 20 °C/min, another ramp to 300 °C at 2.3 °C/min, and a final hold of 5 min. The helium carrier gas was maintained at 44 psig with an initial linear velocity of 25 cm/s.

The VG GC/HRMS system was tuned to 10,000 resolution and calibrated using perfluorokerosene. Mass windows were established for five ion groups to measure Cl_{4-8} PCDFs and PCDDs. Within each mass window, two most abundant ions were measured for positive identification and quantitation of each analyte. The ion responses were quantified and averaged. Additional ions monitored any responses from potentially interfering Cl_{5-9}-PCDEs and Cl_{5-7}-polychlorinated terphenyls (PCTs), and dioxin-like Cl_{6-7}-PCNs, Cl_{3-8} dibenzothiophenes (PCDTs), and Cl_{3-8} phenanthrene and anthracenes. A calibration curve describing the response of each native congener to that of a ^{13}C-labeled surrogates congener was used for quantification.

Window switching times were established using a window-defining PCDF/PCDD standard mixture; relative retention times were then established for PCDTs. The

chromatographic column resolved 2,3,7,8-TCDD from 1,2,3,7/1,2,3,8-TCDD (and from 1,2,3,4-TCDD) by a resolution factor of at least 0.5. Column performance was verified by analyzing standards of individual components, and observing the chromatographic resolution of the TCDDs, HxCDDs, and HxCDFs. Similarly, relative retention times for all other congeners of interest were evaluated with respect to labeled analogs. Adequate mass resolution was verified while monitoring ions Cl_{6-7} PCNs vs. ion responses of ^{13}C-TCDDs and of native TCDD versus ^{13}C-TCDF. Lock-mass and lock-mass-check ions were used to maintain and verify the accuracy of mass measurement.

For the positive identification and quantitation of a particular congener, the following criteria were met:

1. The peak areas for the selected ion responses must be greater than three times the background noise (S/N > 3)
2. For congeners with isotopically-labeled analogs, the ion peaks for the native must occur at retention times from -1 to +3 sec that for the corresponding ^{13}C-labeled ion peaks, which elute about 1 sec earlier than the native ion peaks;
3. For OCDF (without an isotopically-labeled analog), ion responses in sample analyses must occur at RRTs from -0.2 to 0.5% of ^{13}C-labeled OCDD, analogous to the window above;
4. For the two principal ion responses, the ion ratio must be within the acceptable range (generally ±15%).

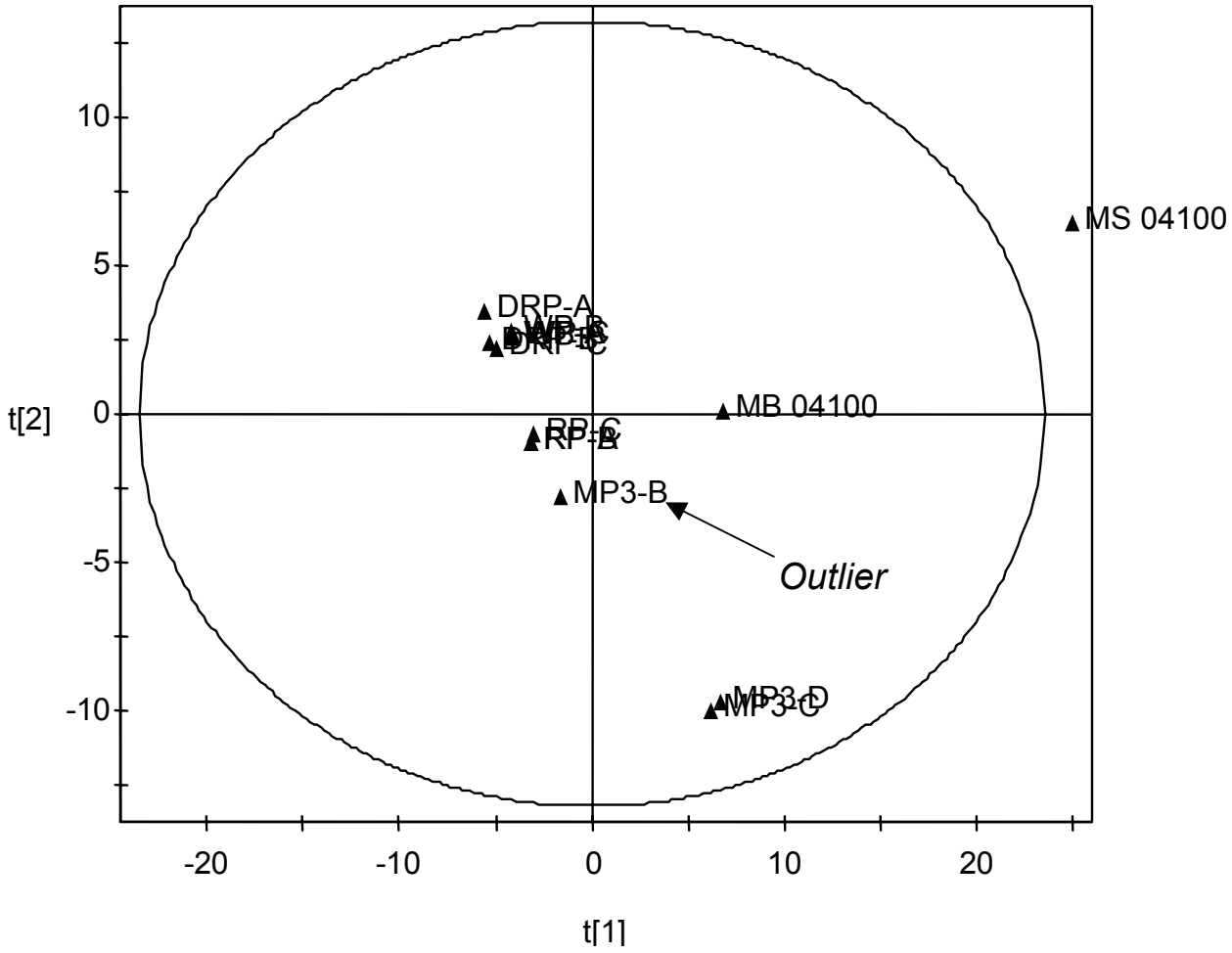
III. Results and Discussion

1. Congener-specific PCBs in Fish and Ovaries

Fish:
The PCB congener data for largemouth bass tissues are presented in Tables 1 and 2. Results of 139 PCB congeners (ng/g) are presented in Table 1. Average PCB totals were 44,000 ng/g for Rising Pond largemouth bass (LMB); 110,000 ng/g for Woods Pond LMB; 150,000 ng/g for Deep Reach Pond LMB and 380 ng/g for Three Mile Pond LMB. Recoveries are presented in Table 2. The QC consisted of a procedure blank (injected in triplicate), a matrix blank, a matrix spike and method triplicates of fish from each site. Matrix replicates averaged between 7 and 16% RSD for three of the sites, e.g. Rising Pond, Deep Reach Pond, and Woods Pond. There was greater variability (average 114% RSD) between one of the Three Mile Pond replicates (B) and the other two. Total PCBs for this sample replicate were 8.5 times higher than that of the other replicates. Careful check of cleanup methods shows there should be no cross contamination, especially since blanks were run between every sample. However, a PCA analysis (Figure 3) shows that the pattern of this sample resembles the Rising Pond samples and we suspect it was contaminated at some point with a Rising Pond extract and should not be used. The matrix blank's low background of PCBs was

insignificant when compared with samples. Matrix spike recoveries were in the acceptable QC range. Detection limits for total PCBs were 11 ng/g.

Figure 3. Score plot (t1 v t2) of Housatonic LM Bass Tissue Replicates. DRP= Deep Reach Pond, RP= Rising Pond, MP3= 3 Mile Pond, MS= PCB matrix spike



Ovaries:

PCB congeners in largemouth bass ovaries from the four sites are presented in Tables 3 and 4. Three individual ovaries and one composite of ovaries from each site were analyzed. Ovary composites were created from equal portions of ten ovaries from Woods Pond, seventeen ovaries from Deep Reach Pond, nine ovaries from Three Mile Pond, and ten ovaries from Rising Pond. Concentrations (ng/g) have been corrected for analytical recovery, as monitored by the procedural recovery standards (PRS). Quality control was within our guidelines (matrix blanks, procedure blanks and detection limits). The instrumental detection limit was 0.01 ng. Matrix spike total PCBs were recovered

at 77% and the majority of the individual congeners had recoveries over 50%. Analytical variability from the triplicate analysis (DRP COMP A-C) averaged 11%. Coefficients of variation were calculated for the individual ovaries to show the biological variability in the concentrations of individual samples. Concentrations of total PCBs in these ovary samples ranged from less than 1,000 ng/g in Three Mile Pond samples to over 400,000 ng/g in Deep Reach and Woods Pond samples.

2. Organochlorine Pesticides in Fish and Ovaries

Fish:
The results for triplicate analysis of the four fish tissue composites for organochlorine pesticides (OCPs) are presented in Tables 5 and 6. Concentrations (ng/g) have been corrected for analytical recovery, as monitored by the procedural recovery standards (PRS). Matrix spike recoveries of several OC compounds were split between the SODS1 and SODS2 fractions. These were: PCA (32% SG1, 51% SG2), *trans*-chlordane (16%, 69%), *trans*-nonachlor (74%, 23%), o,p'-DDE (80%, 14%), o,p'-DDT (76%, 19%), p,p'-DDT (51%, 51%). These are starred in Table 5, as some will not be quantifiable in SODS1 due to PCB interferences. The recoveries of the PRS compounds for two of the three Deep Reach Pond samples were low (<10%), and the associated data has low precision.

Note: Upon initial evaluation of the OC pesticides, concentrations of p,p'-DDE were higher than expected, suggesting interference from a PCB. Using a DB17 GC column, it was confirmed that p,p'-DDE (on a DB-1 column) had a PCB interference, and thus it was necessary to analyze p,p'-DDE with the 60m DB-17 column for the fish and the ovaries.

Ovaries:
The organochlorine pesticides results for LMB ovaries from the four sites are presented in Tables 7 and 8. Three individual ovaries and one composite of ovaries from each site were analyzed. Ovary composites were created from equal portions of ten ovaries from Woods Pond, seventeen ovaries from Deep Reach Pond, nine ovaries from Three Mile Pond, and ten ovaries from Rising Pond. Procedural recovery compounds PCB 155 and PCB 204 in SODS1 fractions of these samples were interfered with by polybrominated diphenyl ethers (PBDEs). Therefore, accounting for method recovery of p,p'-DDE and mirex, typically done with PCB 204, used PCB 029 instead. Matrix spike, procedural blank and MDL calculations were within acceptable QC limits (Table 7).

Concentrations of p,p'-DDE were higher than the other pesticides targeted for analysis, ranging from 200 ng/g to 900 ng/g. Concentrations of p,p'-DDD were the next highest ranging from 15 ng/g to 200 ng/g. Most of the other pesticides were less than detection limit or under 10 ng/g. Among the OC pesticides that were detectable were dieldrin, the chlordanes, and hexachlorobenzene (HCB).

3. Non-*ortho*-PCB Congener in Fish and Ovaries

Fish:
The concentrations (pg/g) of non-*ortho*-PCBs (81, 77, 126, and 169) found in the fish tissue composites are presented in Table 9. Note that the units are picograms of analyte per gram of sample (wet weight). Also shown in Table 9 are mean concentrations for each fish triplicate and percent coefficients of variation. In many samples, PCB 126 was present at the highest concentration, followed by PCB 77 and PCB 169. Calculated dioxin TEQs (fish basis) are tabulated in Table 11. PCB 126 contributes virtually all of the non-*o*-PCB TEQ concentrations.

Quality control was within guidelines, except where noted. Precision of the fish triplicates show percent coefficients of variation as low as 3 to 16% for Rising Pond fish and as high as 36 to 43% for Deep Reach Pond fish. Much of the variation for Deep Reach Pond fish samples is attributed to the first replicate, DRP-A. It is possible that a surrogate spiking error occurred with DRP-A, thus affecting the quantitation of the native non-*o*-PCBs. Ion ratios for analytes in almost all samples were within the expected QC tolerance (±15%). Surrogate recoveries, listed in Table 10, were from 46 to 112%. Low recoveries were seen for ^{13}C-PCB 81 in the first two replicates of fish from Rising Pond (12% and 18%). Concentrations of PCBs 77 and 126 in the matrix spike and of PCBs 81 and 77 in the positive control carp were twice the historic average, but similar to results from recent analysis. Concentrations of these two PCBs were low in quality control blanks.

Concentrations of each non-*ortho*-PCB in the procedural blank were all low (less than 8 pg/g, on a 10-g sample basis) and all are less than 50 pg/g in the bluegill matrix blank. QC blanks were within the same range as the lowest concentrations in the fish samples (from control site 3 Mile Pond). In Table 9, some values for PCB 81 are designated (C-IF) to indicate that they were corrected for interference from the di-*ortho*-*P*CB, PCB 87, whenever it contributed more than 10% of the value for PCB 81. The interference ranged from 10% to 70% of the total value.

Ovaries:
Concentrations (pg/g) of non-*ortho*-PCBs (81, 77, 126, and 169) in the bass ovaries are presented in Table 12. The percent recoveries of surrogates are shown in Table 13. Calculated dioxin TEQs (fish basis) are tabulated in Table 14. Notice that PCB 126 contributed virtually all of the TEQs of the non-*ortho*-PCBs. Non-*ortho*-PCB concentrations in respective individual ovaries from the same collection sites varied within a factor of three for PCBs 126 and 169 and as much as a factor of six for the Cl_4-PCBs 77 and 81. As expected, ovary composite concentrations from the same collection sites fell approximately in the middle of the ranges.

Quality control was within our guidelines, except where noted below. Blanks showed very low background and surrogate recoveries were consistently high (55 to 85%). Concentrations in the matrix spike and positive control carp were consistent with

previous analyses, and the triplicates show percent coefficients of variation ranging from 1 to 5%.

Concentrations of each non-*ortho*-PCB in the procedural blanks are low, all less than 7 pg/g (on a 10-g basis) and all are less than 50 pg/g in the bluegill matrix blanks. These concentrations in QC blanks are several times lower than the lowest concentrations in the ovary samples (from control site 3 Mile Pond). Non-*ortho*-PCB concentrations in the spiked bluegill and in the positive control carp are consistent with ongoing historical results of these QC samples. In Table 1, some values for PCB 81 are designated (C-IF) to indicate that they were corrected for interference from the nearly co-eluting PCB 87 whenever it contributed more than 10% of the value for PCB 81.

Recoveries of the ^{13}C-labelled surrogates in the ovary samples were consistently within the range of 55 to 85%, well within the acceptable QC range of 25-125%. Ion ratios for analytes in almost all samples were also within the expected QC tolerance (±15%). Replicate samples for the Deep Reach Pond Composite show high precision for all analytes.

4. PCDD/PCDF in Fish and Ovaries

Fish:
Concentrations (pg/g) of 2,3,7,8-substituted PCDFs and PCDDs in the largemouth bass composites are presented in Table 15. Note that the units are picograms of analyte per gram of sample (wet weight). Also shown in Table 15 (in bold font) are mean concentrations for each fish triplicate and percent coefficients of variation. As expected, PCDD/PCDF concentrations were low (< 1 pg/g) in field control site (3 Mile Pond) and higher in samples from the other sites. The highest analyte for all sample sites was 2,3,4,7,8-pentachlorodibenzofuran (PeCDF), followed by 2,3,4,6,7,8-hexachloro- (HxCDF) and 2,3,7,8-tetrachlorodibenzofurans (TCDF). For octachlorodibenzofuran (OCDF), the listed concentrations were at laboratory background levels.

Dioxin toxic equivalency factors (TEFs) for fish were used to evaluate the toxic equivalents (TEQs) in the fish (18). The TEQs are tabulated for each replicate at the bottom of Table 15. A conservative approach was used in calculating TEQs: any PCDD/PCDFs reported as not detected (ND) was considered present at one-half the specified minimum detection limit (MDL). Any value listed as “LQ”, however, were used as shown in the table. The “LQ” indicates that the compound was detected, but is less than the minimum quantification limit (MQL) due to incomplete ion cluster or ion ratio outside of ±15% tolerance. The 2,3,4,7,8-PeCDF contributed most of the TEQ concentrations resulting from PCDDs and PCDFs.

Quality control was within our guidelines, except where noted. Rising Pond triplicate analysis had lower percent coefficients of variation than Woods Pond and Deep Reach Pond triplicates. The highest variation occurred for the hexa- and heptachloro-PCDFs, which were affected by low recoveries of surrogates from alumina. Variation occurs

with the 2,3,4,6,7,8-HxCDF because it is quantified by the 1,2,3,7,8,9-^{13}C-surrogate. Ion ratios for analytes in almost all samples were within the expected QC tolerance (±15%). Surrogate recoveries, listed in Table 16, were within QC guidelines, except for a few samples that had low recoveries of the hexa- and hepta-PCDFs because of earlier elution from alumina. Concentrations of PCDF and PCDD in the matrix spike match expected concentrations except for OCDD, OCDF, and 1,2,3,4,6,7,8-HpCDF which are higher than expected. Concentrations of each PCDF/PCDD in the procedural blank were all low (less than 0.2 pg/g, presuming a typical 10-g basis) and all were less than 0.6 pg/g in the bluegill matrix blank except for OCDF, the hepta-PCDF, and the expected OCDD. The quality control blank concentrations were within the same range as the lowest concentrations in the fish. As noted above for two non-*o*-PCBs, some concentrations of PCDF and PCDDs in the positive control carp were significantly higher (2 standard deviations) than previous analyses.

While interpreting the data, we noticed significant amounts of non-2,3,7,8-substituted PCDFs in many of the samples. A summation of the homologs appears in Table 17 together with the targeted analytes. Several of these non-targeted PCDFs were present at concentrations higher than the targeted 2,3,7,8-PCDFs. For each non-targeted PCDF to be included in the total, its isotope ratio had to meet the QC criteria. There were no significant polychlorinated diphenyl ethers to interfere with estimating total PCDFs. Concerning any other compounds, polychlorinated dibenzothiophenes (as $Cl_{5\text{-}6}$ PCDTs) were very low, estimated < 5 pg/g.

Ovaries:

Concentrations (pg/g) of 2,3,7,8-substituted PCDFs and PCDDs in the ovaries of largemouth bass are presented in Table 18. The PCDD/PCDF concentrations were low (< 3 pg/g) in samples from the field control site (3 Mile Pond) and higher in samples from the other sites. The three highest analytes for all sample sites were 2,3,7,8-TCDF, 2,3,4,7,8-PeCDF, and 2,3,4,6,7,8-HxCDF. Much of the listed concentrations for OCDF seem to occur from a consistent laboratory background in all samples, even the procedural blanks. Currently, the source(s) of our background is not known.

In respective individual ovaries from the same collection sites, concentrations of some PCDFs varied to a greater extent than non-*o*-PCBs, as noted above. Respective PCDFs ranged as high as 15 times higher (2,3,4,7,8-PeCDF 22 pg/g in RP-30-7 compared with 300 pg/g in RP-30-9). As expected, ovary composite concentrations from the same collection sites fell approximately in the middle of the ranges. Actual replicates (of DRP-Composite) showed good precision, as described below.

Dioxin toxic equivalency factors (TEFs) for fish were used to evaluate the toxic equivalents (TEQs) in the fish (18). The TEQs are tabulated for each replicate at the bottom of Table 18. A conservative approach was again used in calculating TEQs: values listed as ND were considered present at one-half the specified minimum detection limit (MDL), and values listed as “LQ” were used as shown in the table. The

"LQ" indicates that the compound was detected, but is less than the minimum quantification limit (MQL) due to incomplete ion cluster or ion ratio outside of ±15% tolerance. The 2,3,4,7,8-PeCDF contributed most of the TEQ concentrations resulting from PCDDs and PCDFs. Resulting variable TEQs reflect the varying concentration of 2,3,4,7,8-PeCDF.

Quality control was within our guidelines, except where noted. Ion ratios for analytes in almost all samples were within the expected QC tolerance (±15%). Surrogate recoveries, listed in Table 19, were within QC guidelines, except for a few samples that had low recoveries of a hexa- and a hepta-PCDF. Concentrations of PCDF and PCDD in the matrix spike match expected concentrations except for OCDD, OCDF, and 1,2,3,4,6,7,8-HpCDF which are higher than expected. Concentrations of each PCDF/PCDD in the procedural blank were all low (less than 0.3 pg/g, presuming a typical 10-g basis) and all were less than 0.6 pg/g in the bluegill matrix blank except for OCDF, the hepta-PCDF, and the expected OCDD. The quality control blank concentrations were within the same range as the lowest concentrations in the fish. As noted above for two non-*o*-PCBs in the positive control carp, some concentrations of PCDF/PCDDs in the positive control carp were two standard deviations higher than previous analyses.

While interpreting the data, we noticed significant amounts of non-2,3,7,8-substituted PCDFs in many of the samples. A summation of the homologs appears in Table 20 together with the targeted analytes. Several of these non-targeted PCDFs were present at concentrations higher than the targeted 2,3,7,8-PCDFs. For each non-targeted PCDF to be included in the total, its isotope ratio had to meet the QC criteria. There were no significant polychlorinated diphenyl ethers to interfere with estimating total PCDFs. Concerning any other compounds, some polychlorinated dibenzothiophenes were detected (primarily as $Cl_{4\text{-}6}$ PCDTs) in variable concentrations estimated ranging up to 50 pg/g.

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PCBs, PCDD/PCDFs and Pesticides in Tissues and Ovaries of Largemouth Bass from the Housatonic River

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Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	001	003	004	005	006	007	008	009	010	015
RP-A	Rising Pond	Largemouth Bass	9.80	2.0	< 0.01	< 0.01	0.77	< 0.01	0.05	0.02	0.09	< 0.01	0.02	0.08
RP-B	Rising Pond	Largemouth Bass	9.88	1.9	< 0.01	< 0.01	0.79	< 0.01	0.03	< 0.01	0.10	< 0.01	0.02	0.02
RP-C	Rising Pond	Largemouth Bass	9.81	1.8	< 0.01	< 0.01	0.78	0.01	0.04	0.01	0.08	0.01	0.01	< 0.01
Average			9.83	1.9			0.78		0.04	0.01	0.09		0.02	
SD(n-1)			0.04	0.10			0.01		0.01	0.00	0.01		0.00	
%RSD			0.44	5			2		18	10	9		9	
WP-A	Woods Pond	Largemouth Bass	9.78	2.3	< 0.01	< 0.01	5.5	0.02	1.2	0.06	1.3	0.27	0.30	< 0.01
WP-B	Woods Pond	Largemouth Bass	9.91	2.5	< 0.01	< 0.01	7.0	0.03	1.5	0.09	1.6	0.25	0.37	0.10
WP-C	Woods Pond	Largemouth Bass	9.81	2.0	< 0.01	< 0.01	5.0	0.02	1.1	0.06	1.2	0.22	0.27	0.10
Average			9.83	2.3			5.9	0.0	1.3	0.07	1.4	0.2	0.31	
SD(n-1)			0.07	0.25			1.03	0.00	0.19	0.02	0.21	0.03	0.05	
%RSD			0.69	11			18	7	15	26	15	10	17	
DRP-A	Deep Reach Pond	Largemouth Bass	9.81	2.5	< 0.01	< 0.01	5.6	< 0.01	1.3	0.07	1.5	0.43	0.33	< 0.01
DRP-B	Deep Reach Pond	Largemouth Bass	9.81	2.4	< 0.01	< 0.01	5.9	< 0.01	1.4	0.08	1.5	0.22	0.34	0.01
DRP-C	Deep Reach Pond	Largemouth Bass	9.78	2.5	< 0.01	< 0.01	5.6	0.02	1.4	0.07	1.6	0.22	0.33	< 0.01
Average			9.80	2.5			5.7		1.3	0.07	1.5	0.3	0.33	
SD(n-1)			0.02	0.06			0.14		0.05	0.00	0.02	0.12	0.00	
%RSD			0.18	2			2		4	5	1	41	1	
MP3-B**	Three Mile Pond	Largemouth Bass	9.86	1.8	< 0.01	< 0.01	< 0.26	< 0.01	< 0.01	0.01	0.04	< 0.01	< 0.01	0.03
MP3-C	Three Mile Pond	Largemouth Bass	9.87	1.7	< 0.01	< 0.01	< 0.26	< 0.01	< 0.01	< 0.01	0.03	< 0.01	< 0.01	0.01
MP3-D	Three Mile Pond	Largemouth Bass	9.82	1.9	< 0.01	< 0.01	< 0.26	< 0.01	< 0.01	< 0.01	0.05	< 0.01	< 0.01	0.02
Average			9.85	1.8							0.04			
SD(n-1)			0.03	0.10							0.01			
%RSD			0.27	6							25			
MS 041000 PCB	Matrix Spike	Bluegill	9.77	4.8	11	4.3	59	2.7	31	4.1	110	7.8	2.4	33
Percent Recovery					***50***	***65***	***62***	***61***	***65***	***63***	***65***	***61***	***59***	***60***
MB 041000	Matrix Blank	Bluegill	9.86	4.8	< 0.01	< 0.01	< 0.26	< 0.01	< 0.01	< 0.01	0.09	< 0.01	< 0.01	< 0.01
PB 041000 GCR1	Procedure Blank	Na_2SO_4	---	---	0.00	0.00	2.3	0.02	0.00	0.00	0.00	0.00	0.00	0.00
PB 041000 GCR2	Procedure Blank	Na_2SO_4	---	---	0.00	0.00	2.1	0.00	0.00	0.00	0.00	0.00	0.00	0.03
PB 041000 GCR3	Procedure Blank	Na_2SO_4	---	---	0.00	0.00	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Average					0.00	0.00	2.1	0.01	0.00	0.00	0.00	0.00	0.00	0.03
Standard Deviation					0.00	0.00	0.15	0.01	0.00	0.00	0.00	0.00	0.00	0.03
MDL		*Method Detection Limit = PB Average + 3 (SD)*			0.00	0.00	2.6	0.04	0.00	0.00	0.00	0.00	0.00	0.10
MDL	Mass normalized				***0.01***	***0.01***	***0.26***	***0.01***	***0.01***	***0.01***	***0.01***	***0.01***	***0.01***	***0.01***
Note: Values are rounded to 2 significant figures.														
MDL < 0.01 set to 0.01 instrument detection limit														
****Outlier do not use.**														

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	016	017	018	019	020	022	024	025	026	027	028	031	032	033
RP-A	Rising Pond	0.78	3.3	2.6	2.1	0.14	0.69	< 0.15	2.3	6.6	2.3	11	1.7	4.2	< 0.09
RP-B	Rising Pond	0.64	3.1	2.4	1.9	0.13	0.63	< 0.15	2.5	6.1	2.0	9.9	1.6	3.9	0.10
RP-C	Rising Pond	0.79	3.3	2.6	2.2	0.15	0.65	< 0.15	2.3	6.5	2.2	11	1.7	4.2	0.38
Average		0.74	3.2	2.5	2.0	0.14	0.66		2.3	6.4	2.2	11	1.7	4.1	
SD(n-1)		0.08	0.16	0.12	0.15	0.01	0.03		0.10	0.27	0.12	0.73	0.07	0.18	
%RSD		11	5	5	7	7	4		4	4	5	7	4	4	
WP-A	Woods Pond	3.4	20	17	9.1	1.5	3.8	< 0.01	17	37	12	51	12	19	0.62
WP-B	Woods Pond	3.8	22	19	10	1.6	4.1	< 0.01	21	40	13	55	15	21	1.3
WP-C	Woods Pond	3.3	18	16	8.4	1.4	3.6	< 0.01	16	34	11	48	12	18	1.2
Average		3.5	20	17	9.3	1.5	3.9		18	37	12	51	13	19	1.0
SD(n-1)		0.28	2.3	1.7	1.0	0.11	0.28		2.4	2.9	1.4	3.4	1.5	1.6	0.36
%RSD		8	11	10	11	7	7		14	8	12	7	11	8	35
DRP-A	Deep Reach Pond	4.3	26	19	14	1.5	3.6	0.21	15	38	15	44	14	25	1.9
DRP-B	Deep Reach Pond	4.0	27	19	13	1.4	3.6	0.20	15	38	16	45	13	24	< 0.09
DRP-C	Deep Reach Pond	4.3	27	19	13	1.5	3.6	0.20	16	37	16	45	14	24	< 0.09
Average		4.2	27	19	13	1.5	3.6	0.20	15	38	16	45	14	24	
SD(n-1)		0.19	0.75	0.36	0.6	0.02	0.05	0.01	0.5	0.5	0.4	0.4	0.36	0.55	
%RSD		5	3	2	4	1	1	4	3	1	3	1	2.6	2.3	
MP3-B**	Three Mile Pond	< 0.01	0.06	0.18	0.19	< 0.01	0.03	< 0.01	0.08	0.08	0.01	0.31	0.08	< 0.54	< 0.09
MP3-C	Three Mile Pond	< 0.01	< 0.03	0.12	0.18	< 0.01	< 0.01	< 0.01	0.03	< 0.02	< 0.01	0.12	0.04	< 0.54	< 0.09
MP3-D	Three Mile Pond	< 0.01	< 0.03	0.14	0.20	< 0.01	< 0.01	< 0.01	0.12	< 0.02	< 0.01	0.08	0.05	< 0.54	< 0.09
Average				0.15	0.19				0.08			0.17	0.06		
SD(n-1)				0.03	0.01				0.05			0.12	0.02		
%RSD				20	5				61			72	40		
MS 041000 PCB	Matrix Spike	75	72	220	20	9.2	77	2.3	11	35	9.1	160	150	63	44
Percent Recovery		***69***	***60***	***65***	***65***	***63***	***70***	***55***	***66***	***65***	***63***	***62***	***65***	***63***	***51***
MB 041000	Matrix Blank	< 0.01	0.10	0.20	1.0	< 0.01	< 0.01	< 0.01	0.10	< 0.02	< 0.01	0.08	< 0.01	< 0.54	< 0.09
PB 041000 GCR1	Procedure Blank	0.00	0.10	0.20	0.97	0.00	0.00	0.00	0.10	0.08	0.00	0.00	0.00	2.2	0.00
PB 041000 GCR2	Procedure Blank	0.00	0.15	0.18	0.72	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	2.2	0.44
PB 041000 GCR3	Procedure Blank	0.03	0.00	0.08	0.58	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Average		0.00	0.08	0.15	0.76	0.00	0.01	0.00	0.04	0.03	0.00	0.01	0.00	1.5	0.15
Standard Deviation		0.00	0.08	0.06	0.20	0.00	0.01	0.00	0.06	0.05	0.00	0.01	0.00	1.3	0.25
MDL		0.00	0.32	0.35	1.3	0.00	0.04	0.00	0.20	0.17	0.00	0.02	0.00	5.3	0.90
MDL	Mass normalized	***0.01***	***0.03***	***0.04***	***0.14***	***0.01***	***0.01***	***0.01***	***0.02***	***0.02***	***0.01***	***0.01***	***0.01***	***0.54***	***0.09***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	034	035	037,059	040	041	042	043	044	045	046	047	048	049	051
RP-A	Rising Pond	< 0.48	8.2	1.4	1.3	0.13	62	1.1	30	1.1	1.3	320	1.8	290	22
RP-B	Rising Pond	< 0.48	6.0	1.2	2.8	0.11	59	1.4	28	1.0	1.2	330	2.2	310	23
RP-C	Rising Pond	< 0.48	5.8	1.3	3.0	0.12	62	1.3	30	1.1	1.3	290	1.9	280	21
Average			6.7	1.3	2.4	0.12	61	1.3	29	1.1	1.2	310	2.0	290	22
SD(n-1)			1.3	0.07	0.97	0.01	1.5	0.16	1.1	0.03	0.06	21	0.18	15	1.1
%RSD			20	5	41	10	3	13	4	2	5	7	9	5	5
WP-A	Woods Pond	< 0.48	13	3.7	7.5	0.66	140	4.2	91	3.4	5.5	630	6.0	650	70
WP-B	Woods Pond	< 0.48	14	4.2	8.7	0.77	160	8.8	100	3.8	5.8	750	7.2	790	85
WP-C	Woods Pond	< 0.48	12	3.6	6.7	0.63	140	3.3	86	3.1	5.1	650	5.9	680	71
Average			13	3.8	7.7	0.69	150	5.5	92	3.4	5.4	680	6.4	710	75
SD(n-1)			1.3	0.30	1.0	0.07	12	3.0	7.2	0.31	0.35	64	0.74	74	8.2
%RSD			10	8	13	11	8	55	8	9	7	9	12	10	11
DRP-A	Deep Reach Pond	< 0.48	23	5.7	7.9	0.97	130	4.1	100	4.1	6.2	710	7.7	710	89
DRP-B	Deep Reach Pond	< 0.48	29	4.7	7.6	0.98	120	3.8	100	4.2	6.0	750	7.4	770	99
DRP-C	Deep Reach Pond	< 0.48	30	4.5	7.4	1.0	120	4.3	100	4.1	5.9	710	7.8	730	94
Average			28	4.9	7.6	0.99	120	4.1	100	4.1	6.0	720	7.7	740	94
SD(n-1)			3.8	0.64	0.25	0.03	5.8	0.27	0.0	0.06	0.11	23	0.23	31	4.7
%RSD			14	13	3	3	5	7	0	1	2	3	3	4	5
MP3-B**	Three Mile Pond	< 0.48	0.82	0.03	0.07	0.01	1.6	0.07	0.63	< 0.01	< 0.01	7.2	< 0.01	4.3	0.30
MP3-C	Three Mile Pond	< 0.48	0.92	< 0.01	0.01	0.01	0.07	0.01	0.12	< 0.01	< 0.01	0.42	< 0.01	0.29	< 0.01
MP3-D	Three Mile Pond	< 0.48	0.02	0.02	0.01	0.01	0.11	< 0.01	0.13	< 0.01	< 0.01	0.59	< 0.01	0.37	0.03
Average			0.58	0.02	0.03	0.01	0.60	0.04	0.29			2.7		1.7	0.17
SD(n-1)			0.50	0.01	0.03	0.00	0.88	0.04	0.29			3.9		2.3	0.19
%RSD			85	41	97	5	150	94	100			140		140	120
MS 041000 PCB	Matrix Spike	0.74	25	15	40	24	61	4.9	190	43	18	53	< 0.01	140	8.2
Percent Recovery		***67***	***58***	***60***	***64***	***64***	***64***	***59***	***66***	***68***	***65***	***68***		***64***	***66***
MB 041000	Matrix Blank	2.0	< 0.01	< 0.01	0.01	< 0.01	0.09	0.04	0.04	< 0.01	< 0.01	0.65	< 0.01	0.52	0.06
PB 041000 GCR1	Procedure Blank	2.0	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.73	0.00	0.52	0.00
PB 041000 GCR2	Procedure Blank	1.9	0.00	0.00	0.00	0.00	0.00	0.03	0.07	0.01	0.00	0.75	0.00	0.42	0.00
PB 041000 GCR3	Procedure Blank	0.00	0.00	0.00	0.00	0.00	0.09	0.05	0.05	0.00	0.00	1.08	0.00	0.62	0.00
Average		1.3	0.00	0.00	0.00	0.00	0.03	0.04	0.05	0.00	0.00	0.85	0.00	0.52	0.00
Standard Deviation		1.1	0.00	0.00	0.00	0.00	0.05	0.01	0.02	0.01	0.00	0.20	0.00	0.10	0.00
MDL		4.7	0.00	0.00	0.00	0.00	0.19	0.07	0.10	0.02	0.00	1.4	0.00	0.82	0.00
MDL	Mass normalized	***0.48***	***0.01***	***0.01***	***0.01***	***0.01***	***0.02***	***0.01***	***0.01***	***0.01***	***0.01***	***0.15***	***0.01***	***0.08***	***0.01***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	052	053	*054*	055	*056,060*	*057*	*058*	063	064	066	067	*069*	070	071
RP-A	Rising Pond	170	23	0.24	< 0.01	6.6	0.57	2.9	3.6	9.8	74	1.3	1.3	21	100
RP-B	Rising Pond	160	21	0.20	< 0.01	6.1	0.63	3.3	3.5	9.4	68	1.2	1.3	20	110
RP-C	Rising Pond	170	23	< 0.04	< 0.01	6.0	0.62	2.7	3.6	9.9	73	1.3	1.2	22	96
Average		170	22	0.22		6.2	0.61	2.9	3.6	9.7	71	1.2	1.3	21	100
SD(n-1)		5.8	0.86	0.02		0.32	0.03	0.30	0.07	0.29	3.4	0.07	0.09	0.72	7.4
%RSD		3	4	10		5	5	10	2	3	5	6	7	3	7
WP-A	Woods Pond	590	100	1.8	0.06	25	0.99	5.6	11	35	190	3.9	3.3	88	180
WP-B	Woods Pond	750	120	2.1	0.02	30	1.3	5.7	13	40	230	4.1	4.8	100	220
WP-C	Woods Pond	610	100	1.7	0.04	24	1.1	5.9	11	32	200	3.6	2.8	83	190
Average		650	110	1.9	0.04	27	1.1	5.7	12	36	210	3.8	3.7	90	200
SD(n-1)		87	12	0.22	0.02	3.2	0.18	0.13	1.4	3.7	21	0.25	1.0	8.7	21
%RSD		13	10	12	44	12	16	2	12	10	10	6	28	10	10
DRP-A	Deep Reach Pond	700	120	2.1	0.09	37	0.56	4.8	10	36	180	3.8	3.6	100	210
DRP-B	Deep Reach Pond	740	130	1.4	0.08	32	0.55	5.2	12	39	190	3.7	4.6	100	220
DRP-C	Deep Reach Pond	710	130	1.8	0.09	32	0.68	5.4	11	39	180	3.7	4.3	100	210
Average		720	130	1.7	0.09	34	0.6	5.2	11	38	180	3.7	4.1	100	210
SD(n-1)		21	5.8	0.37	0.00	2.5	0.07	0.31	0.89	1.6	5.8	0.01	0.51	0.00	5.8
%RSD		3	4	21	4	7	12	6	8	4	3	0.3	12	0	3
MP3-B**	Three Mile Pond	3.1	0.28	0.09	< 0.01	0.33	0.04	0.15	0.10	0.24	1.5	0.04	0.03	0.80	2.5
MP3-C	Three Mile Pond	0.34	< 0.01	0.08	< 0.01	0.18	0.04	< 0.02	0.03	0.05	0.26	0.01	< 0.01	0.34	0.08
MP3-D	Three Mile Pond	0.40	< 0.01	0.06	< 0.01	< 0.01	0.01	< 0.02	0.03	0.04	0.27	0.01	< 0.01	0.34	0.10
Average		1.3		0.08		0.26	0.03		0.05	0.11	0.69	0.02		0.49	0.89
SD(n-1)		1.6		0.02		0.10	0.01		0.04	0.11	0.74	0.01		0.26	1.4
%RSD		120		23		40	47		84	98	110	66		53	160
MS 041000 PCB	Matrix Spike	260	42	95	2.4	130	2.6	0.34	6.2	69	120	4.1	0.26	220	59
Percent Recovery		***65***	***71***	***64***	***63***	***65***		***45***	***70***	***63***	***60***	***65***	***120***	***65***	***66***
MB 041000	Matrix Blank	0.23	< 0.01	0.06	< 0.01	< 0.01	0.01	< 0.02	0.02	0.04	0.22	< 0.01	< 0.01	0.20	0.11
PB 041000 GCR1	Procedure Blank	0.23	0.00	0.30	0.00	0.00	0.01	0.00	0.00	0.06	0.30	0.09	0.00	0.20	0.18
PB 041000 GCR2	Procedure Blank	0.06	0.00	0.29	0.00	0.00	0.02	0.06	0.00	0.00	0.22	0.06	0.00	0.06	0.27
PB 041000 GCR3	Procedure Blank	0.44	0.00	0.35	0.00	0.00	0.00	0.10	0.00	0.00	0.27	0.08	0.00	0.06	0.36
Average		0.24	0.00	0.31	0.00	0.00	0.01	0.05	0.00	0.02	0.26	0.08	0.00	0.11	0.27
Standard Deviation		0.19	0.00	0.03	0.00	0.00	0.01	0.05	0.00	0.03	0.04	0.02	0.00	0.08	0.09
MDL		0.81	0.00	0.41	0.00	0.00	0.04	0.20	0.00	0.12	0.38	0.12	0.00	0.35	0.54
MDL	Mass normalized	***0.08***	***0.01***	***0.04***	***0.01***	***0.01***	***0.01***	***0.02***	***0.01***	***0.01***	***0.04***	***0.01***	***0.01***	***0.04***	***0.05***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	*072*	074	075	082	083	084	085	*086*	087	090	091	092	095	096
RP-A	Rising Pond	10	21	3.6	22	6.9	37	79	6.0	180	190	180	360	460	2.2
RP-B	Rising Pond	11	20	4.0	21	7.2	35	72	4.2	190	190	190	380	490	1.8
RP-C	Rising Pond	9.5	21	3.9	23	6.4	34	92	3.2	170	160	170	350	440	2.3
Average		10	20	3.8	22	6.8	35	81	4.5	180	180	180	360	460	2.1
SD(n-1)		0.56	0.61	0.22	0.70	0.43	1.1	9.7	1.4	10	17	10	15	25	0.25
%RSD		6	3	6	3	6	3	12	31	6	10	6	4	5	12
WP-A	Woods Pond	21	60	16	40	13	120	310	8.0	370	310	340	660	1,100	7.1
WP-B	Woods Pond	25	70	17	53	16	160	340	9.2	500	370	410	820	1,500	8.7
WP-C	Woods Pond	20	58	12	43	13	130	300	11	400	310	350	700	1,200	7.3
Average		22	62	15	45	14	140	320	9.4	420	330	370	730	1,300	7.7
SD(n-1)		2.4	6.4	2.8	6.8	1.7	21	21	1.4	68	35	38	83	208	0.86
%RSD		11	10	18	15	12	15	7	15	16	10	10	11	16	11
DRP-A	Deep Reach Pond	19	74	12	54	15	140	330	5.6	510	330	380	720	1,500	8.4
DRP-B	Deep Reach Pond	21	70	19	60	16	170	340	6.4	550	370	410	770	1,500	8.3
DRP-C	Deep Reach Pond	21	71	18	58	16	160	330	6.4	530	330	390	740	1,500	8.4
Average		21	71	16	57	16	160	330	6.1	530	340	390	740	1,500	8.4
SD(n-1)		0.92	1.9	3.7	3.4	0.68	15	5.8	0.49	20	23	15	25	0	0.02
%RSD		4	3	23	6	4	10	2	8	4	7	4	3	0	0.3
MP3-B**	Three Mile Pond	0.13	0.67	0.16	0.56	0.20	0.86	47	0.18	4.5	4.5	3.2	6.6	7.5	< 0.01
MP3-C	Three Mile Pond	< 0.01	0.21	0.01	0.08	0.03	0.16	44	< 0.01	0.51	0.13	0.21	0.35	0.58	< 0.01
MP3-D	Three Mile Pond	< 0.01	0.21	< 0.01	0.06	0.03	0.14	44	< 0.01	0.57	0.16	0.26	0.27	0.60	< 0.01
Average			0.36	0.09	0.23	0.08	0.39	45		1.9	1.6	1.2	2.4	2.9	
SD(n-1)			0.26	0.10	0.29	0.10	0.41	2.0		2.3	2.5	1.7	3.6	4.0	
%RSD			72	120	120	120	110	4		120	160	140	150	140	
MS 041000 PCB	Matrix Spike	0.35	92	2.5	31	3.7	70	59	1.1	120	6.3	33	45	200	1.6
Percent Recovery			***66***	***55***	***68***	***64***	***64***	***97***	***34***	***67***	***120***	***67***	***66***	***67***	***65***
MB 041000	Matrix Blank	< 0.01	0.19	< 0.01	0.02	< 0.01	0.20	0.12	0.01	0.65	0.16	0.12	< 0.25	0.65	< 0.01
PB 041000 GCR1	Procedure Blank	0.00	0.30	0.00	0.02	0.00	0.20	0.12	0.01	0.70	0.20	0.12	0.20	0.71	0.00
PB 041000 GCR2	Procedure Blank	0.00	0.17	0.00	0.01	0.00	0.10	0.07	0.01	0.66	0.00	0.29	1.2	0.39	0.00
PB 041000 GCR3	Procedure Blank	0.00	0.21	0.00	0.01	0.00	0.05	0.08	0.00	0.84	0.29	0.06	1.1	0.66	0.00
Average		0.00	0.23	0.00	0.01	0.00	0.12	0.09	0.01	0.73	0.16	0.16	0.81	0.58	0.00
Standard Deviation		0.00	0.07	0.00	0.01	0.00	0.08	0.03	0.01	0.09	0.15	0.12	0.53	0.17	0.00
MDL		0.00	0.43	0.00	0.03	0.00	0.35	0.17	0.03	1.0	0.61	0.51	2.4	1.1	0.00
MDL	Mass normalized	***0.01***	***0.04***	***0.01***	***0.01***	***0.01***	***0.04***	***0.02***	***0.01***	***0.10***	***0.06***	***0.05***	***0.25***	***0.11***	***0.01***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	097	099	101	102	105	109	110	*112*	*113*	114	115	117	118	119
RP-A	Rising Pond	170	730	1,200	5.8	110	290	610	0.80	7.7	12	6.5	53	510	130
RP-B	Rising Pond	180	770	1,200	3.9	120	300	650	2.4	18	11	6.2	58	620	110
RP-C	Rising Pond	160	680	1,100	6.2	110	260	590	2.2	17	9.2	6.7	52	530	120
Average		170	730	1,200	5.3	110	280	620	1.8	15	11	6.5	54	550	120
SD(n-1)		10	45	58	1.2	5.8	21	31	0.85	5.9	1.4	0.30	3.3	59	10
%RSD		6	6	5	23	5	7	5	48	41	13	5	6	11	8
WP-A	Woods Pond	300	1,100	2,100	7.7	330	570	1,200	4.6	28	33	13	83	950	230
WP-B	Woods Pond	380	1,300	2,700	25	440	710	1,500	6.4	60	43	18	100	1,300	270
WP-C	Woods Pond	310	1,100	2,200	12	340	590	1,200	5.8	41	36	14	87	920	220
Average		330	1,200	2,300	15	370	620	1,300	5.6	43	37	15	90	1,100	240
SD(n-1)		44	115	321	9.0	61	76	170	0.92	16	5.0	2.4	8.9	210	26
%RSD		13	10	14	61	16	12	13	16	38	14	16	10	19	11
DRP-A	Deep Reach Pond	370	1,100	2,800	15	500	570	1,500	0.93	33	34	17	95	1,300	230
DRP-B	Deep Reach Pond	410	1,200	2,900	30	530	660	1,700	3.9	49	34	20	110	1,300	250
DRP-C	Deep Reach Pond	390	1,200	2,800	18	490	580	1,500	3.4	44	34	23	100	1,200	220
Average		390	1,200	2,800	21	510	600	1,600	2.7	42	34	20	100	1,300	230
SD(n-1)		20	58	58	7.9	21	49	120	1.6	8.4	0.4	3.2	7.6	58	15
%RSD		5	5	2	38	4	8	8	58	20	1	16	8	4	7
MP3-B**	Three Mile Pond	3.1	12	22	0.07	3.6	5.9	13	0.06	0.35	0.29	0.16	1.3	14	2.0
MP3-C	Three Mile Pond	0.37	0.98	1.5	< 0.01	0.63	0.41	1.2	< 0.01	0.33	0.07	0.03	0.10	1.9	0.17
MP3-D	Three Mile Pond	0.39	1.1	1.7	< 0.01	0.67	0.36	1.2	< 0.01	0.33	0.04	0.03	0.11	2.2	0.21
Average		1.3	4.7	8.3		1.6	2.2	5.2		0.34	0.13	0.07	0.51	6.1	0.79
SD(n-1)		1.6	6.4	12		1.7	3.2	7.0		0.01	0.14	0.07	0.69	7.0	1.0
%RSD		120	130	140		100	140	130		2	100	110	140	110	130
MS 041000 PCB	Matrix Spike	75	77	200	4.1	85	18	210	0.89	2.8	4.3	5.7	9.8	160	4.8
Percent Recovery		***68***	***70***	***65***	***36***	***65***	***82***	***66***	***110***	***180***	***49***	***76***	***76***	***70***	***59***
MB 041000	Matrix Blank	0.42	0.91	1.5	0.01	0.61	0.37	1.3	< 0.01	0.01	0.04	0.02	0.03	1.3	< 0.01
PB 041000 GCR1	Procedure Blank	0.42	0.60	1.9	0.01	0.60	0.37	1.3	0.00	0.01	0.00	0.00	0.03	1.3	0.00
PB 041000 GCR2	Procedure Blank	0.40	0.83	1.5	0.00	0.45	0.01	1.3	0.00	0.02	0.00	0.00	0.07	1.4	0.00
PB 041000 GCR3	Procedure Blank	0.45	1.0	2.6	0.01	0.70	0.01	1.5	0.00	0.02	0.00	0.00	0.09	1.5	0.00
Average		0.42	0.81	2.0	0.01	0.58	0.13	1.3	0.00	0.02	0.00	0.00	0.06	1.4	0.00
Standard Deviation		0.03	0.20	0.57	0.01	0.13	0.21	0.10	0.00	0.01	0.00	0.00	0.03	0.07	0.00
MDL		0.50	1.4	3.7	0.02	0.96	0.75	1.6	0.00	0.04	0.00	0.00	0.15	1.6	0.00
MDL	Mass normalized	***0.05***	***0.14***	***0.38***	***0.01***	***0.10***	***0.08***	***0.17***	***0.01***	***0.01***	***0.01***	***0.01***	***0.02***	***0.16***	***0.01***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	122	123	128	129	130	131	132	133	134	136	137	138	139	141
RP-A	Rising Pond	2.4	13	280	53	180	13	610	170	91	160	72	2,400	16	820
RP-B	Rising Pond	2.5	13	300	53	190	13	620	180	96	170	75	2,500	17	870
RP-C	Rising Pond	2.6	12	270	51	170	13	560	160	85	150	68	2,300	15	780
Average		2.5	13	280	52	180	13	600	170	91	160	72	2,400	16	820
SD(n-1)		0.11	0.73	15	1.5	10	0.22	32	10	5.8	10	3.7	100	0.82	45
%RSD		4	6	5	3	6	2	5	6	6	6	5	4	5	5
WP-A	Woods Pond	4.4	18	480	97	330	26	1,900	260	190	440	110	6,800	28	2,200
WP-B	Woods Pond	6.0	24	640	130	420	35	2,300	340	260	600	140	8,800	36	2,900
WP-C	Woods Pond	4.8	20	520	100	330	27	1,900	280	210	470	110	7,000	30	2,200
Average		5.0	20	550	110	360	29	2,000	290	220	500	120	7,500	32	2,400
SD(n-1)		0.85	3.0	83	18	52	4.9	230	42	36	85	17	1,100	4.1	400
%RSD		17	15	15	17	14	17	12	14	16	17	14	15	13	17
DRP-A	Deep Reach Pond	5.9	21	660	140	420	38	3,100	320	270	630	140	10,000	35	3,200
DRP-B	Deep Reach Pond	6.0	23	730	150	450	42	2,800	360	280	660	150	11,000	39	3,600
DRP-C	Deep Reach Pond	5.8	22	700	150	410	40	2,600	320	270	630	140	9,600	37	3,200
Average		5.9	22	700	150	430	40	2,800	330	270	640	140	10,000	37	3,300
SD(n-1)		0.11	0.6	35	6	21	2.0	250	23	6	17	6	720	1.8	230
%RSD		2	3	5	4	5	5	9	7	2	3	4	7	5	7
MP3-B**	Three Mile Pond	0.03	0.29	7.0	1.2	3.6	0.29	12	3.1	2.2	2.9	1.9	64	0.35	17
MP3-C	Three Mile Pond	< 0.01	0.02	0.63	0.09	0.22	< 0.01	0.81	0.18	0.20	0.54	0.21	5.9	0.04	1.0
MP3-D	Three Mile Pond	< 0.01	< 0.01	0.62	0.09	0.23	< 0.01	0.91	0.17	0.42	0.43	0.21	6.1	0.04	1.1
Average			0.16	2.7	0.47	1.3		4.6		0.94	1.3	0.77	25		6.5
SD(n-1)			0.19	3.7	0.66	1.9		6.5		1.1	1.4	1.0	33		9.4
%RSD			120	130	140	140		140		120	110	130	130		150
MS 041000 PCB	Matrix Spike	2.1	2.8	44	13	14	4.3	110	5.4	24	46	13	260	3.8	79
Percent Recovery		***58***	***75***	***75***	***70***	***74***	***64***	***69***	***110***	***95***	***66***	***78***	***74***	***70***	***72***
MB 041000	Matrix Blank	< 0.01	< 0.01	0.49	0.13	0.14	< 0.01	0.77	0.05	0.02	0.03	0.03	3.3	0.03	1.6
PB 041000 GCR1	Procedure Blank	0.00	0.00	0.49	0.13	0.19	0.00	1.8	0.05	0.02	0.03	0.03	6.7	0.00	1.6
PB 041000 GCR2	Procedure Blank	0.00	0.00	0.38	0.08	0.00	0.00	1.7	0.03	0.02	0.06	0.02	7.0	0.00	1.6
PB 041000 GCR3	Procedure Blank	0.00	0.00	0.54	0.10	0.00	0.00	1.9	0.13	0.02	0.10	0.02	9.3	0.00	1.8
Average		0.00	0.00	0.47	0.10	0.06	0.00	1.8	0.07	0.02	0.06	0.02	7.7	0.00	1.7
Standard Deviation		0.00	0.00	0.08	0.03	0.11	0.00	0.09	0.05	0.00	0.04	0.01	1.4	0.00	0.11
MDL		0.00	0.00	0.72	0.18	0.39	0.00	2.1	0.23	0.02	0.17	0.04	12	0.00	2.0
MDL	Mass normalized	***0.01***	***0.01***	***0.07***	***0.02***	***0.04***	***0.01***	***0.21***	***0.02***	***0.01***	***0.02***	***0.01***	***1.2***	***0.01***	***0.20***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	144	146	147	149	151	153	156	157	158	163	164	166	167	170
RP-A	Rising Pond	160	1,500	17	2,600	960	7,700	280	34	330	980	380	12	120	2,500
RP-B	Rising Pond	170	1,400	20	2,700	1,000	7,600	280	36	340	1,000	360	13	130	2,600
RP-C	Rising Pond	150	1,300	21	2,400	910	6,700	260	33	310	940	310	12	110	2,400
Average		160	1400	19	2,600	960	7,300	270	34	330	970	350	12	120	2,500
SD(n-1)		10	100	2.1	153	45	551	12	1.6	15	31	36	0.55	10	100
%RSD		6	7	11	6	5	8	4	5	5	3	10	4	8	4
WP-A	Woods Pond	620	2,200	46	6,400	2,700	12,000	260	56	780	2,000	760	20	220	4,700
WP-B	Woods Pond	840	2,700	40	8,700	3,500	16,000	430	75	1,100	2,600	1,100	24	290	6,500
WP-C	Woods Pond	620	2,200	32	6,300	2,600	12,000	280	54	820	1,900	890	20	220	4,800
Average		690	2,400	39	7,100	2,900	13,000	320	62	900	2,200	920	21	240	5,300
SD(n-1)		130	290	7.0	1,400	490	2,300	93	11	170	380	170	2.7	40	1200
%RSD		19	12	18	20	17	18	29	18	19	17	18	13	17	23
DRP-A	Deep Reach Pond	840	2,800	63	9,500	3,500	17,000	340	63	1,200	2,800	1,000	24	300	7,200
DRP-B	Deep Reach Pond	990	3,100	74	11,000	4,000	19,000	560	96	1,300	3,300	1,000	28	340	8,700
DRP-C	Deep Reach Pond	910	2,800	70	10,000	3,600	17,000	510	86	1,200	3,100	770	25	310	7,900
Average		910	2,900	69	10,000	3,700	18,000	470	81	1,200	3,100	920	26	320	7,900
SD(n-1)		75	170	5.4	760	260	1150	120	17	58	250	130	2.2	21	750
%RSD		8	6	8	8	7	6	26	21	5	8	14	9	7	9
MP3-B**	Three Mile Pond	4.2	23	0.30	50	18	130	3.2	0.83	6.8	24	2.1	< 0.01	2.3	47
MP3-C	Three Mile Pond	0.22	1.5	0.01	2.4	0.98	8.0	0.13	< 0.12	0.56	1.5	0.13	0.01	0.21	2.0
MP3-D	Three Mile Pond	0.24	1.5	0.04	2.5	1.0	8.3	0.27	< 0.12	0.57	1.5	0.11	0.01	0.21	1.8
Average		1.6	8.7		18	6.8	49			2.6	8.9			0.91	17
SD(n-1)		2.3	12		27	10	70			3.6	13			1.2	26
%RSD		150	140		150	150	140			140	140			130	150
MS 041000 PCB	Matrix Spike	25	46	1.8	220	85	280	18	4.6	34	67	16	1.1	7.3	110
Percent Recovery		***71***	***86***	***88***	***69***	***77***	***78***	***68***	***78***	***70***	***79***	***70***	***97***	***72***	***73***
MB 041000	Matrix Blank	0.15	1.9	0.01	1.7	1.4	8.0	< 0.06	< 0.12	0.66	0.84	0.09	0.07	0.04	< 0.55
PB 041000 GCR1	Procedure Blank	0.30	1.9	0.01	3.5	1.4	10	0.01	0.03	0.66	1.7	0.21	0.07	0.04	2.1
PB 041000 GCR2	Procedure Blank	0.26	1.9	0.01	0.00	1.3	10	0.29	0.20	0.67	0.00	0.02	0.04	0.05	2.5
PB 041000 GCR3	Procedure Blank	0.47	2.1	0.01	0.00	1.5	12	0.06	0.61	0.79	0.00	0.08	0.05	0.03	3.8
Average		0.34	2.0	0.01	1.2	1.4	11	0.12	0.28	0.71	0.57	0.10	0.05	0.04	2.8
Standard Deviation		0.11	0.14	0.00	2.0	0.13	1.1	0.15	0.30	0.07	0.99	0.10	0.02	0.01	0.87
MDL		0.68	2.4	0.01	7.2	1.8	14	0.56	1.2	0.92	3.5	0.39	0.10	0.07	5.4
MDL	Mass normalized	***0.07***	***0.24***	***0.01***	***0.74***	***0.18***	***1.4***	***0.06***	***0.12***	***0.09***	***0.36***	***0.04***	***0.01***	***0.01***	***0.55***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	171	172	173	174	175	176	177	178	179	180	183	185	187	189
RP-A	Rising Pond	420	340	14	1,100	73	50	680	360	200	5,600	1,100	160	1,500	69
RP-B	Rising Pond	440	360	14	1,200	77	60	730	380	210	5,700	1,100	170	1,400	73
RP-C	Rising Pond	400	330	13	1,000	70	55	650	350	190	5,000	1,000	150	1,400	66
Average		420	340	14	1,100	73	55	690	360	200	5,400	1,100	160	1,400	69
SD(n-1)		20	15	0.53	100	3.7	5.0	40	15	10	379	58	10	58	3.5
%RSD		5	4	4	9	5	9	6	4	5	7	5	6	4	5
WP-A	Woods Pond	1,100	830	63	3,400	210	91	1,800	940	740	9,700	3,500	440	6,500	150
WP-B	Woods Pond	1,400	1,100	98	4,900	270	110	2,400	1,200	1,100	13,000	4,600	610	8,500	210
WP-C	Woods Pond	1,100	830	77	3,500	210	89	1,800	950	720	9,700	3,600	450	6,600	160
Average		1,200	920	79	3,900	230	100	2,000	1,000	850	11,000	3,900	500	7,200	170
SD(n-1)		230	170	18	950	35	12	400	230	230	2,100	750	95	1,127	32
%RSD		19	18	23	24	15	12	20	23	27	19	19	19	16	19
DRP-A	Deep Reach Pond	1,600	1,300	120	5,400	310	170	2,800	1,400	1,000	15,000	5,500	680	11,000	250
DRP-B	Deep Reach Pond	1,800	1,300	130	6,300	330	460	3,100	1,500	1,400	16,000	5,600	770	12,000	250
DRP-C	Deep Reach Pond	1,600	1,200	130	5,800	300	490	2,800	1,300	1,200	15,000	5,100	710	11,000	230
Average		1,700	1,300	130	5,800	310	400	2,900	1,400	1,200	15,000	5,400	720	11,300	240
SD(n-1)		120	58	6	450	15	180	170	100	200	580	260	46	580	12
%RSD		7	4	4	8	5	45	6	7	17	4	5	6	5	5
MP3-B**	Three Mile Pond	7.7	7.4	0.28	19	1.5	2.7	14	7.3	3.6	100	28	3.2	57	1.5
MP3-C	Three Mile Pond	0.4	0.45	0.04	0.90	0.08	0.17	0.76	0.45	0.24	5.2	2.0	0.12	3.7	0.09
MP3-D	Three Mile Pond	0.4	0.33	0.03	0.83	0.07	0.19	0.69	0.42	0.24	4.9	1.9	0.10	3.4	0.09
Average			2.7	0.11	7.1	0.54	1.0	5.3	2.7	1.4	37	11	1.1	21	0.55
SD(n-1)			4.0	0.1	11	0.80	1.4	7.9	4.0	1.9	55	15	1.8	31	0.80
%RSD			150	120	150	150	140	150	150	140	150	140	160	140	150
MS 041000 PCB	Matrix Spike	29	19	2.4	100	5.6	8.0	55	23	40	210	81	11	130	4.1
Percent Recovery		***77***	***81***	***73***	***67***	***77***	***39***	***77***	***80***	***70***	***81***	***81***	***69***	***93***	***77***
MB 041000	Matrix Blank	0.20	0.60	0.02	0.58	0.02	0.09	1.3	0.38	0.20	7.1	0.94	< 0.04	4.4	0.03
PB 041000 GCR1	Procedure Blank	0.51	0.60	0.02	1.7	0.02	0.30	1.3	0.38	0.20	7.1	2.6	0.20	4.4	0.03
PB 041000 GCR2	Procedure Blank	0.62	0.37	0.02	1.6	0.02	0.44	1.2	0.34	0.36	6.8	2.4	0.15	4.1	0.04
PB 041000 GCR3	Procedure Blank	0.94	0.87	0.04	2.6	0.04	0.18	1.4	0.37	0.07	8.0	3.6	0.28	4.8	0.04
Average		0.69	0.61	0.03	2.0	0.03	0.31	1.3	0.36	0.21	7.3	2.8	0.21	4.5	0.04
Standard Deviation		0.22	0.25	0.01	0.54	0.01	0.13	0.10	0.02	0.15	0.63	0.6	0.07	0.35	0.01
MDL		1.4	1.4	0.06	3.6	0.06	0.70	1.6	0.43	0.65	9.2	4.7	0.41	5.5	0.05
MDL	Mass normalized	***0.14***	***0.14***	***0.01***	***0.36***	***0.01***	***0.07***	***0.16***	***0.04***	***0.07***	***0.93***	***0.48***	***0.04***	***0.56***	***0.01***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	190	191	193	194	195	196	197	198	199	200	201	202	203	205
RP-A	Rising Pond	320	74	370	620	330	260	27	34	610	23	67	87	610	42
RP-B	Rising Pond	330	79	380	660	350	300	28	36	650	25	69	91	640	44
RP-C	Rising Pond	290	70	330	590	310	250	26	33	580	22	61	81	570	40
Average		310	74	360	620	330	270	27	34	610	23	66	87	610	42
SD(n-1)		21	4.6	26	35	20	26	1.25	1.7	35	1.7	4.4	5.0	35	2.3
%RSD		7	6	7	6	6	10	5	5	6	7	7	6	6	6
WP-A	Woods Pond	1,300	180	630	1,600	370	910	130	69	1,800	140	240	280	1,300	100
WP-B	Woods Pond	1,800	250	830	2,200	710	1,300	160	110	2,400	210	330	390	1,700	140
WP-C	Woods Pond	1,500	190	640	1,700	340	970	140	72	1,800	150	250	280	1,300	110
Average		1,500	210	700	1,800	470	1,100	140	84	2,000	170	270	320	1,400	120
SD(n-1)		270	38	130	340	230	210	15	23	400	38	49	64	231	21
%RSD		18	18	19	19	49	19	11	27	20	22	18	20	16	17
DRP-A	Deep Reach Pond	2,400	290	1,000	2,700	570	1,600	230	110	2,900	270	400	430	2,100	170
DRP-B	Deep Reach Pond	2,200	310	1,100	2,900	1,200	1,600	200	160	3,100	260	420	480	2,400	180
DRP-C	Deep Reach Pond	2,000	290	990	2,700	1,100	1,500	180	150	2,800	230	380	440	2,200	170
Average		2,200	300	1,000	2,800	960	1,600	200	140	2,900	250	400	450	2,200	170
SD(n-1)		200	12	61	120	340	58	25	26	150	21	20	26	150	6
%RSD		9	4	6	4	35	4	13	19	5	8	5	6	7	3
MP3-B**	Three Mile Pond	13	1.3	5.7	15	5.9	5.5	0.77	0.71	13	0.52	1.3	2.1	12	0.60
MP3-C	Three Mile Pond	0.80	0.08	0.38	0.81	0.29	0.51	0.09	0.05	1.0	0.04	0.12	0.16	0.67	0.13
MP3-D	Three Mile Pond	0.83	0.07	0.36	0.74	0.26	0.53	0.09	0.04	0.95	0.03	0.06	0.16	0.62	0.10
Average		4.8	0.50	2.1	5.6	2.2	2.2	0.32	0.27	5.0	0.20	0.49	0.80	4.3	0.28
SD(n-1)		6.9	0.74	3.1	8.3	3.3	2.9	0.40	0.38	6.9	0.28	0.69	1.1	6.4	0.28
%RSD		140	150	140	150	150	130	120	140	140	140	140	140	150	100
MS 041000 PCB	Matrix Spike	40	3.9	11	38	19	24	3.7	2.6	40	6.3	5.4	6.9	28	2.9
Percent Recovery		***73***	***76***	***85***	***76***	***73***	***76***	***76***	***78***	***80***	***76***	***80***	***69***	***73***	***93***
MB 041000	Matrix Blank	< 0.54	0.02	0.43	1.08	0.15	1.1	0.10	0.02	1.2	0.07	0.04	0.11	0.21	0.04
PB 041000 GCR1	Procedure Blank	1.8	0.02	0.43	1.08	0.40	1.12	0.10	0.02	1.21	0.07	0.04	0.20	0.60	0.04
PB 041000 GCR2	Procedure Blank	0.00	0.02	0.10	1.06	0.45	1.03	0.05	0.01	1.14	0.02	0.07	0.00	0.69	0.02
PB 041000 GCR3	Procedure Blank	0.00	0.10	0.59	1.30	0.75	1.26	0.08	0.01	1.40	0.05	0.16	0.21	1.04	0.01
Average		0.58	0.05	0.37	1.1	0.53	1.1	0.08	0.01	1.3	0.0	0.09	0.14	0.78	0.02
Standard Deviation		1.0	0.05	0.25	0.13	0.19	0.12	0.03	0.01	0.13	0.03	0.06	0.12	0.23	0.02
MDL		3.6	0.19	1.1	1.5	1.1	1.5	0.2	0.03	1.7	0.1	0.28	0.49	1.5	0.07
MDL	Mass normalized	***0.37***	***0.02***	***0.11***	***0.16***	***0.11***	***0.15***	***0.02***	***0.01***	***0.17***	***0.01***	***0.03***	***0.05***	***0.15***	***0.01***
Note: Values are rounded to 2 significant figures.															
MDL < 0.01 set to 0.01 instrument detection limit															
****Outlier do not use.**															

Table 1. Housatonic Largemouth Bass--Tissue--PCB Concentrations and Quality Control Data (ng/g, ng)

Sample ID	Field ID	206	208	209	Total PCBs	
RP-A	Rising Pond	110	10	4.3	44,000	ng/g
RP-B	Rising Pond	120	11	4.3	46,000	ng/g
RP-C	Rising Pond	100	9.5	4.3	41,000	ng/g
Average		110	10	4.3	44,000	ng/g
SD(n-1)		10	0.62	0.03	3,000	ng/g
%RSD		9	6	1	7	
WP-A	Woods Pond	290	35	6.6	98,000	ng/g
WP-B	Woods Pond	400	48	7.5	130,000	ng/g
WP-C	Woods Pond	300	38	6.5	99,000	ng/g
Average		330	40	6.9	110,000	ng/g
SD(n-1)		61	7.0	0.57	18,000	ng/g
%RSD		18	18	8	16	
DRP-A	Deep Reach Pond	500	68	10	140,000	ng/g
DRP-B	Deep Reach Pond	580	65	10	160,000	ng/g
DRP-C	Deep Reach Pond	530	58	10	150,000	ng/g
Average		540	60	10	150,000	ng/g
SD(n-1)		40	4.9	0.44	10,000	ng/g
%RSD		7	8	4	7	
MP3-B**	Three Mile Pond	2.6	0.35	0.58	940	ng/g
MP3-C	Three Mile Pond	0.42	0.12	0.58	110	ng/g
MP3-D	Three Mile Pond	0.44	0.13	0.63	110	ng/g
Average		1.1	0.20	0.59	380	ng/g
SD(n-1)		1.2	0.13	0.03	470	ng/g
%RSD		110	66	5	120	
MS 041000 PCB	Matrix Spike	10	2.1	4.5	6,900	ng
Percent Recovery		***73***	***67***	***110***	***69***	%
MB 041000	Matrix Blank	0.11	0.06	2.76	57	ng/g
PB 041000 GCR1	Procedure Blank	0.20	0.30	4.51	81	ng
PB 041000 GCR2	Procedure Blank	0.14	0.25	4.43	70	ng
PB 041000 GCR3	Procedure Blank	0.35	0.35	4.21	86	ng
Average		0.23	0.30	4.4	79	ng
Standard Deviation		0.11	0.05	0.16	8.2	ng
MDL		0.55	0.45	4.8	104	ng
MDL	Mass normalized	***0.06***	***0.05***	***0.49***	***11***	***ng/g***
Note: Values are rounded to 2 significant figures.						
MDL < 0.01 set to 0.01 instrument detection limit						
****Outlier do not use.**						

Table 2. Recoveries of Procedural Standards --Housatonic Largemouth Bass Tissue (ng, ng/g, %)

Sample ID	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	29 % Recovery	155 % Recovery	204 % Recovery
MS 041000 PCB	Matrix Spike	Bluegill	9.8	4.8	***63***	***62***	***69***
MB 041000	Matrix Blank	Bluegill	9.9	4.8	***60***	***61***	***64***
PB 041000 GCR1	Procedure Blank	Na_2SO_4	---	---	***78***	***83***	***85***
PB 041000 GCR2	Procedure Blank	Na_2SO_4	---	---	***78***	***83***	***82***
PB 041000 GCR3	Procedure Blank	Na_2SO_4	---	---	***78***	***81***	***82***
RP-A	Rising Pond	Largemouth Bass	9.8	2.0	***64***	***68***	***67***
RP-B	Rising Pond	Largemouth Bass	9.9	1.9	***62***	***63***	***65***
RP-C	Rising Pond	Largemouth Bass	9.8	1.8	***73***	***77***	***76***
WP-A	Woods Pond	Largemouth Bass	9.8	2.3	***90***	***99***	***91***
WP-B	Woods Pond	Largemouth Bass	9.9	2.5	***79***	***86***	***79***
WP-C	Woods Pond	Largemouth Bass	9.8	2.0	***83***	***92***	***86***
DRP-A	Deep Reach Pond	Largemouth Bass	9.8	2.5	***42***	***46***	***32***
DRP-B	Deep Reach Pond	Largemouth Bass	9.8	2.4	***76***	***83***	***59***
DRP-C	Deep Reach Pond	Largemouth Bass	9.8	2.5	***81***	***88***	***62***
MP3-B	Three Mile Pond	Largemouth Bass	9.9	1.8	***73***	***76***	***79***
MP3-C	Three Mile Pond	Largemouth Bass	9.9	1.7	***73***	***76***	***78***
MP3-D	Three Mile Pond	Largemouth Bass	9.8	1.9	***66***	***69***	***72***
Average					***72***	***76***	***72***
SD(n-1)					***11***	***13***	***14***

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	001	003	004	005	006	007	008	009	010	015	016	017
DRP-COMP*	**Deep Reach Pond Composite**	**LMB Ovaries Composite**		**8.8**	**< 0.01**	**< 0.01**	**14**	**< 0.01**	**3.6**	**0.23**	**3.5**	**0.64**	**0.75**	**< 0.01**	**15**	**98**
DRP-31-1	Deep Reach Pond-31-1	Largemouth Bass ovaries	10	6.5	< 0.01	< 0.01	43	< 0.01	6.4	0.43	8.1	2.1	2.0	0.23	33	150
DRP-31-2	Deep Reach Pond-31-2	Largemouth Bass ovaries	10.1	16	< 0.01	< 0.01	17	< 0.01	3.6	0.28	4.7	0.84	0.92	< 0.01	18	110
DRP-27-7	Deep Reach Pond-27-7	Largemouth Bass ovaries	10.1	10	< 0.01	< 0.01	14	< 0.01	2.3	0.2	2.8	0.62	0.73	< 0.01	13	66
Average				**10.8**	**< 0.01**	**< 0.01**	**25**	**< 0.01**	**4.1**	**0.30**	**5.2**	**1.19**	**1.22**		**21**	**110**
SD(n-1)							16		2.1	0.12	2.7	0.80	0.69		10	42
%RSD							65		51	38	52	67	56		49	38
WP-COMP	**Woods Pond-Composite**	**LMB Ovaries Composite**	**10.0**	**8.1**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**3.4**	**0.21**	**3.7**	**0.93**	**< 0.01**	**< 0.01**	**12**	**71**
WP-35-6	Woods Pond-35-6	Largemouth Bass ovaries	10.1	7.9	< 0.01	< 0.01	11	< 0.01	2.5	0.16	2.8	0.68	0.52	< 0.01	11	53
WP-35-8	Woods Pond-35-8	Largemouth Bass ovaries	8.6	11	< 0.01	< 0.01	11	< 0.01	5.6	0.35	3.7	0.70	0.52	< 0.01	20	120
WP-35-9	Woods Pond-35-9	Largemouth Bass ovaries	10.1	10	< 0.01	< 0.01	18	< 0.01	6.7	0.25	4.5	1.1	0.92	< 0.01	17	84
Average				**9.6**	**< 0.01**	**< 0.01**	**13**	**< 0.01**	**4.9**	**0.25**	**3.7**	**0.84**	**0.66**	**< 0.01**	**16**	**90**
SD(n-1)							4.2		2.2	0.09	0.8	0.26	0.23		5	34
%RSD							32		44	36	23	31	35		29	37
RP-COMP	**Rising Pond Composite**	**LMB Ovaries Composite**	**10.0**	**8.8**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.02**	**< 0.01**	**< 0.01**	**< 0.01**	**2.8**	**13**
RP-25-12	Rising Pond 25-12	Largemouth Bass ovaries	10.0	9.4	< 0.01	< 0.01	6.1	< 0.01	0.32	< 0.01	0.60	< 0.01	0.20	< 0.01	5.8	22
RP-30-7	Rising Pond 30-7	Largemouth Bass ovaries	10.0	8.9	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	0.88	5.5
RP-30-9	Rising Pond 30-9	Largemouth Bass ovaries	10.0	13	< 0.01	< 0.01	7.2	< 0.01	0.49	< 0.01	0.80	< 0.01	0.35	< 0.01	7.4	32
Average				**10**	**< 0.01**	**< 0.01**		**< 0.01**		**< 0.01**		**< 0.01**		**< 0.01**	**4.7**	**20**
SD(n-1)															3.4	13
%RSD															72	66
3MP-COMP	**Three Mile Pond Composite**	**LMB Ovaries Composite**	**10.0**	**9.0**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**0.03**	**< 0.01**	**< 0.01**	**0.25**	**0.03**	**< 0.01**
3MP-26-12	Three Mile Pond-26-12	Largemouth Bass ovaries	10.1	11	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.22	< 0.01	< 0.01	0.10	0.26	0.24
3MP-28-5	Three Mile Pond-28-5	Largemouth Bass ovaries	10.0	13	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	0.16	0.01	< 0.01	0.17	0.16	0.16
3MP-28-13	Three Mile Pond-28-13	Largemouth Bass ovaries	10.1	6.9	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.76	< 0.02	0.01	< 0.01	< 0.01	< 0.01	0.39
Average				**10**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**					**< 0.01**			**0.26**
SD(n-1)																0.1
%RSD																45
DRP-COMP-A	Deep Reach Pond Composite-A	**LMB Ovaries Composite**	10.0	8.8	< 0.01	< 0.01	14	< 0.01	3.7	0.28	3.4	0.59	0.78	< 0.01	15	98
DRP-COMP-B	Deep Reach Pond Composite-B	**LMB Ovaries Composite**	10.0	8.8	< 0.01	< 0.01	13	< 0.01	4.0	0.18	3.3	0.58	0.70	< 0.01	14	86
DRP-COMP-C	Deep Reach Pond Composite-C	**LMB Ovaries Composite**	10.0	8.7	< 0.01	< 0.01	15	< 0.01	3.0	0.23	3.9	0.74	0.78	< 0.01	16	110
Average*	**Deep Reach Pond Composite**	**LMB Ovaries Composite**		**8.8**	**< 0.01**	**< 0.01**	**14**	**< 0.01**	**3.6**	**0.23**	**3.5**	**0.64**	**0.75**	**< 0.01**	**15**	**98**
SD(n-1)							0.9		0.5	0.05	0.3	0.09	0.04		1.1	12
%RSD							6		15	23	9	15	6		7	12
MS 021500 #2 PCB	Matrix Spike	Bluegill	10.0	4.0	11	4.1	63	2.6	31	4.4	110	7.9	2.4	31	79	79
% Recovery					**51**	**61**	**68**	**60**	**63**	**68**	**61**	**59**	**65**	**57**	**66**	**56**
MB 021500 #1	Matrix Blank	Bluegill	10.1	4.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	< 0.01	< 0.01	< 0.01	< 0.01	0.03
MB 021500 #2	Matrix Blank	Bluegill	10.0	3.9	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.04	< 0.01	< 0.01	< 0.01	< 0.01	0.02
PB 021500 #1 GCR1	Procedural Blank	Na_2SO_4	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.14
PB 021500 #1 GCR2	Procedural Blank	Na_2SO_4	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.14
PB 021500 #2 GCR1	Procedural Blank	Na_2SO_4	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.13
PB 021500 #2 GCR2	Procedural Blank	Na_2SO_4	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.14
Average					0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.14
Standard Deviation					0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
MDL	Method Detection Limit	= PB Average + 3 (SD)			0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.15
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**Average mass =**	**9.96**		**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**

Note: Values are rounded to two significant figures.

**Average of method triplicate*

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	018	019	020	022	024	025	026	027	028	031	032	033	034	035	037,059	040	041
~~**DRP-COMP***~~	~~**Deep Reach Pond Composite**~~	**58**	**46**	**4.1**	**11**	**0.05**	**54**	**140**	**55**	**160**	**40**	**84**	**6.1**	**2.0**	**0.91**	**21**	**32**	**3.2**
DRP-31-1	Deep Reach Pond-31-1	110	92	7.7	21	0.06	80	170	86	340	72	140	11	3.3	1.8	20	62	4.8
DRP-31-2	Deep Reach Pond-31-2	74	54	5.2	13	0.15	63	150	66	170	61	95	7.9	1.7	0.98	16	24	3.3
DRP-27-7	Deep Reach Pond-27-7	42	44	2.6	6.5	0.08	29	71	37	89	19	70	4.4	0.9	0.63	6.8	12	1.1
Average		**75**	**63**	**5.2**	**14**	**0.10**	**57**	**130**	**63**	**200**	**51**	**100**	**7.8**	**2.0**	**1.1**	**14**	**33**	**3.1**
SD(n-1)		34	25	2.6	7.3	0.05	26	52	25	130	28	35	3.3	1.2	0.60	6.8	26	1.9
%RSD		45	40	49	54	49	45	40	39	65	55	35	43	62	53	47	80	61
WP-COMP	**Woods Pond-Composite**	**53**	**33**	**4.9**	**13**	**< 0.01**	**63**	**130**	**39**	**190**	**43**	**71**	**8.9**	**1.9**	**0.67**	**17**	**17**	**2.4**
WP-35-6	Woods Pond-35-6	46	30	3.8	9.7	< 0.01	38	86	29	130	27	53	5.5	1.3	0.56	8.4	19	1.7
WP-35-8	Woods Pond-35-8	79	40	7.8	21	< 0.01	100	210	61	290	71	130	12	2.8	1.2	22	26	3.4
WP-35-9	Woods Pond-35-9	71	47	5.9	15	0.03	77	140	48	210	51	85	7.5	2.1	1.3	11	25	2.4
Average		**65**	**39**	**5.8**	**15**	**0.03**	**72**	**150**	**46**	**210**	**50**	**90**	**8.4**	**2.1**	**1.0**	**14**	**23**	**2.5**
SD(n-1)		17	9	2.0	5.7		31	62	16	80	22	39	3.3	0.77	0.38	7.3	3.7	0.82
%RSD		27	22	34	38		43	41	34	38	44	43	40	38	38	52	16	33
RP-COMP	**Rising Pond Composite**	**9.8**	**7.4**	**0.31**	**2.5**	**< 0.01**	**9.9**	**27**	**8.5**	**46**	**6.9**	**16**	**1.1**	**0.39**	**0.37**	**5.3**	**6.0**	**0.49**
RP-25-12	Rising Pond 25-12	16	14	0.79	4.4	< 0.01	14	37	14	67	9.2	25	1.6	0.54	0.58	6.4	7.8	0.73
RP-30-7	Rising Pond 30-7	4.0	2.9	< 0.01	1.1	< 0.01	4.6	13	3.5	21	3.9	6.1	0.47	0.19	< 0.01	3.3	4.0	0.25
RP-30-9	Rising Pond 30-9	26	20	1.6	5.9	< 0.01	21	58	23	110	13	38	2.4	0.75	1.0	12	15	0.92
Average		**15**	**12**		**3.8**	**< 0.01**	**13**	**40**	**14**	**70**	**8.6**	**20**	**1.5**	**0.49**		**7.1**	**9.0**	**0.63**
SD(n-1)		11	8.8		2.5		8.2	22	10	40	4.5	16	1.0	0.29		4.2	5.7	0.35
%RSD		71	71		65		62	56	73	57	52	80	67	58		59	63	55
3MP-COMP	**Three Mile Pond Composite**	**0.09**	**< 0.05**	**< 0.01**	**0.10**	**< 0.01**	**< 0.01**	**0.04**	**< 0.01**	**0.38**	**0.16**	**< 0.15**	**0.22**	**< 0.01**	**0.08**	**0.07**	**0.09**	**< 0.02**
3MP-26-12	Three Mile Pond-26-12	0.55	0.12	< 0.01	0.27	< 0.01	0.10	0.09	0.02	0.72	0.47	0.18	0.39	< 0.01	0.05	0.13	0.15	0.02
3MP-28-5	Three Mile Pond-28-5	0.44	0.09	< 0.01	0.20	< 0.01	0.09	0.10	0.02	0.66	0.39	< 0.15	0.30	< 0.01	0.09	0.10	0.20	0.04
3MP-28-13	Three Mile Pond-28-13	0.14	< 0.05	< 0.01	0.07	< 0.01	0.21	< 0.02	< 0.01	0.42	0.14	0.26	0.06	0.04	< 0.01	0.04	< 0.09	< 0.02
Average		**0.37**		**< 0.01**	**0.18**	**< 0.01**	**0.13**			**0.60**	**0.33**		**0.25**			**0.09**		
SD(n-1)		0.2			0.10		0.07			0.16	0.17		0.17			0.04		
%RSD		56			56		52			26	51		70			46		
DRP-COMP-A	Deep Reach Pond Composite-A	58	46	4.4	11	0.08	53	140	55	160	40	84	6.2	2.0	0.93	21	37	3.3
DRP-COMP-B	Deep Reach Pond Composite-B	51	41	3.5	9.8	< 0.01	48	120	49	140	36	74	6.1	1.8	0.81	19	25	2.8
DRP-COMP-C	Deep Reach Pond Composite-C	65	51	4.3	12	0.02	62	150	62	170	44	93	6.0	2.2	0.98	22	33	3.6
Average*	**Deep Reach Pond Composite**	**58**	**46**	**4.1**	**11**	**0.05**	**54**	**140**	**55**	**160**	**40**	**84**	**6.1**	**2.0**	**0.91**	**21**	**32**	**3.2**
SD(n-1)		7.1	5.1	0.51	1.1	0.04	6.9	15	6.5	15	4.3	9.4	0.08	0.21	0.09	1.8	6.0	0.42
%RSD		12	11	13	10		13	11	12	10	11	11	1.4	10	10	8.5	19	13
MS 021500 #2 PCB	Matrix Spike	230	20	10	76	2.4	12	38	10	180	160	68	110	0.88	0.69	18	41	26
% Recovery		**72**	**71**	**71**	**69**	**58**	**65**	**70**	**68**	**67**	**70**	**68**	**69**	**85**	**96**	**61**	**69**	**72**
MB 021500 #1	Matrix Blank	0.04	< 0.05	< 0.01	0.02	< 0.01	0.02	0.02	< 0.01	0.08	0.05	< 0.15	< 0.03	< 0.01	< 0.01	< 0.01	< 0.09	< 0.02
MB 021500 #2	Matrix Blank	0.04	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	0.07	0.04	< 0.15	< 0.03	< 0.01	< 0.01	< 0.01	< 0.09	< 0.02
PB 021500 #1 GCR1	Procedural Blank	0.21	0.24	0.00	0.08	0.00	0.00	0.11	0.02	0.36	0.19	0.66	0.24	0.00	0.00	0.00	0.08	0.03
PB 021500 #1 GCR2	Procedural Blank	0.21	0.22	0.00	0.03	0.00	0.00	0.11	0.03	0.36	0.19	0.94	0.14	0.00	0.00	0.00	0.09	0.04
PB 021500 #2 GCR1	Procedural Blank	0.19	0.00	0.00	0.05	0.00	0.00	0.03	0.04	0.17	0.18	0.90	0.22	0.00	0.00	0.00	0.55	0.04
PB 021500 #2 GCR2	Procedural Blank	0.19	0.00	0.00	0.05	0.00	0.00	0.08	0.05	0.11	0.09	1.2	0.19	0.00	0.00	0.00	0.14	0.12
Average		0.20	0.11	0.00	0.05	0.00	0.00	0.08	0.03	0.25	0.16	0.92	0.20	0.00	0.00	0.00	0.21	0.06
Standard Deviation		0.01	0.13	0.00	0.02	0.00	0.00	0.04	0.01	0.13	0.05	0.20	0.04	0.00	0.00	0.00	0.23	0.04
MDL	Method Detection Limit	0.23	0.51	0.00	0.12	0.00	0.00	0.19	0.07	0.64	0.31	1.5	0.33	0.00	0.00	0.00	0.89	0.19
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**0.02**	**0.05**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.01**	**0.06**	**0.03**	**0.15**	**0.03**	**0.01**	**0.01**	**0.01**	**0.09**	**0.02**

Note: Values are rounded to two significant figures.

**Average of method triplicate*

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	042	043	044	045	046	047	048	049	051	052	053	*054*	055	*056,060*	*057*	*058*	063
~~DRP-COMP*~~	~~Deep Reach Pond Composite~~	**1,000**	**44**	**470**	**21**	**35**	**5,300**	**26**	**3,900**	**630**	**3,100**	**600**	**7.3**	**0.28**	**120**	**5.0**	**19**	**61**
DRP-31-1	Deep Reach Pond-31-1	1,900	120	1,000	43	81	9,400	51	7,600	1,100	6,000	1,200	19	0.47	170	7.7	68	130
DRP-31-2	Deep Reach Pond-31-2	650	44	360	15	24	3,800	22	2,700	400	2,700	450	5.7	0.40	130	3.3	13	39
DRP-27-7	Deep Reach Pond-27-7	270	19	170	8.9	20	2,100	20	1,300	320	930	310	5.4	< 0.01	25	7.1	13	15
Average		**900**	**61**	**510**	**22**	**42**	**5,100**	**31**	**3,900**	**610**	**3,200**	**650**	**10**		**110**	**6.0**	**31**	**61**
SD(n-1)		850	53	430	18	34	3,800	17	3,310	430	2,570	480	7.8		75	2.4	32	61
%RSD		94	86	84	82	82	75	56	85	70	80	74	77		68	40	100	99
WP-COMP	**Woods Pond-Composite**	**860**	**38**	**360**	**13**	**19**	**3,700**	**23**	**2,900**	**320**	**2,500**	**340**	**1.6**	**0.09**	**100**	**4.6**	**30**	**51**
WP-35-6	Woods Pond-35-6	530	41	290	13	26	3,000	14	2,000	340	1,500	360	4.1	0.12	57	4.2	12	33
WP-35-8	Woods Pond-35-8	1,300	84	530	23	28	6,400	30	4,700	620	3,800	590	2.6	0.25	110	9.1	47	82
WP-35-9	Woods Pond-35-9	740	47	380	19	43	4,200	34	3,200	550	2,600	570	8.2	0.19	76	9.9	22	52
Average		**860**	**57**	**400**	**18**	**32**	**4,500**	**26**	**3,300**	**500**	**2,600**	**510**	**5**	**0.19**	**80**	**7.7**	**27**	**55**
SD(n-1)		400	23	120	4.9	10	1,700	11	1,400	150	1,150	130	2.9	0.06	27	3.1	18	25
%RSD		47	41	30	27	29	38	41	42	30	44	25	58	34	34	40	70	45
RP-COMP	**Rising Pond Composite**	**270**	**13**	**130**	**4.4**	**5.0**	**1,500**	**11**	**960**	**74**	**750**	**99**	**1.6**	**< 0.01**	**26**	**11**	**15**	**19**
RP-25-12	Rising Pond 25-12	300	37	140	6.0	7.4	1,800	11	1,200	110	840	140	2.7	< 0.01	34	10	12	22
RP-30-7	Rising Pond 30-7	240	12	99	2.9	2.8	1,300	4.3	750	52	590	60	0.93	< 0.01	19	38	14	15
RP-30-9	Rising Pond 30-9	600	22	260	10	11	2,700	14	2,000	160	1,400	210	1.7	0.02	53	19	29	40
Average		**380**	**24**	**170**	**6.4**	**7.0**	**1,900**	**10**	**1,300**	**110**	**940**	**140**	**1.8**		**36**	**22**	**18**	**26**
SD(n-1)		190	13	84	3.7	4.0	710	5.1	630	54	410	75	0.90		17	14	9.4	13
%RSD		50	53	49	57	58	37	52	48	49	44	54	51		48	64	50	52
3MP-COMP	**Three Mile Pond Composite**	**0.40**	**0.06**	**0.52**	**0.03**	**< 0.01**	**1.7**	**< 2.3**	**1.1**	**< 0.07**	**1.4**	**< 0.10**	**< 0.01**	**< 0.01**	**0.51**	**< 2.0**	**0.09**	**0.25**
3MP-26-12	Three Mile Pond-26-12	0.45	0.04	0.83	0.11	0.03	1.6	< 2.3	1.3	< 0.07	1.7	0.14	0.03	< 0.01	0.74	2.2	0.11	0.22
3MP-28-5	Three Mile Pond-28-5	0.51	0.03	0.72	0.20	0.03	< 1.6	< 2.3	1.4	< 0.07	1.7	0.17	0.03	< 0.01	0.70	4.0	0.18	0.30
3MP-28-13	Three Mile Pond-28-13	0.62	0.11	0.94	0.05	< 0.01	3.4	< 2.3	2.1	0.12	2.4	0.36	< 0.01	< 0.01	0.62	9.8	< 0.01	0.04
Average		**0.53**	**0.06**	**0.83**	**0.12**			**< 2.3**	**1.6**		**2.0**	**0.23**		**< 0.01**	**0.69**	**5.3**		**0.19**
SD(n-1)		0.09	0.04	0.11	0.08				0.4		0.40	0.12			0.07	4.0		0.14
%RSD		16	70	14	63				28		20	51			9	75		72
DRP-COMP-A	Deep Reach Pond Composite-A	1,000	46	460	20	34	5,300	26	3,800	620	2,700	580	7.3	0.27	120	4.5	18	58
DRP-COMP-B	Deep Reach Pond Composite-B	940	38	420	18	30	4,800	25	3,500	570	3,000	540	6.7	0.30	110	4.1	21	54
DRP-COMP-C	Deep Reach Pond Composite-C	1,200	49	540	24	40	5,900	27	4,300	700	3,700	680	7.8	0.28	140	6.3	20	70
Average*	**Deep Reach Pond Composite**	**1,000**	**44**	**470**	**21**	**35**	**5,300**	**26**	**3,900**	**630**	**3,100**	**600**	**7.3**	**0.28**	**120**	**5.0**	**19**	**61**
SD(n-1)		140	5.9	61	3.0	4.8	550	1.4	400	66	510	72	0.50	0.01	15	1.1	1.4	8.4
%RSD		14	13	13	14	14	10	5	10	10	16	12	7	5	13	23	7	14
MS 021500 #2 PCB	Matrix Spike	70	11	210	45	19	61	56	150	9.0	290	41	0.06	2.6	150	*	0.78	6.8
% Recovery		**76**	**100**	**72**	**72**	**73**	**79**	**38**	**71**	**72**	**73**	**67**	**91**	**89**	**75**	*	**82**	**77**
MB 021500 #1	Matrix Blank	< 0.26	< 0.03	< 0.16	< 0.01	< 0.01	< 1.6	< 2.3	< 0.82	< 0.07	< 0.68	< 0.10	< 0.01	< 0.01	< 0.26	< 2.0	< 0.01	0.04
MB 021500 #2	Matrix Blank	< 0.26	< 0.03	< 0.16	0.01	< 0.01	< 1.6	< 2.3	< 0.82	< 0.07	< 0.68	< 0.10	< 0.01	< 0.01	< 0.26	5.1	< 0.01	0.02
PB 021500 #1 GCR1	Procedural Blank	1.7	0.10	0.72	0.07	0.02	10	11.75	5.07	0.40	4.22	0.59	0.00	0.00	0.93	1.37	0.03	0.02
PB 021500 #1 GCR2	Procedural Blank	1.6	0.09	0.84	0.07	0.02	10	12.56	5.25	0.45	4.26	0.56	0.00	0.00	1.14	1.14	0.04	0.06
PB 021500 #2 GCR1	Procedural Blank	1.0	0.20	0.00	0.06	0.05	5.4	3.49	2.69	0.23	2.14	0.20	0.00	0.06	1.88	10.91	0.00	0.02
PB 021500 #2 GCR2	Procedural Blank	0.9	0.13	0.48	0.05	0.00	5.6	3.39	2.71	0.21	2.17	0.27	0.00	0.02	0.87	8.17	0.00	0.05
Average		1.3	0.13	0.51	0.06	0.02	7.9	7.80	3.93	0.32	3.20	0.40	0.00	0.02	1.21	5.40	0.02	0.04
Standard Deviation		0.43	0.05	0.37	0.01	0.02	2.8	5.04	1.42	0.12	1.21	0.20	0.00	0.03	0.46	4.92	0.02	0.02
MDL	Method Detection Limit	2.6	0.28	1.6	0.09	0.08	16	22.92	8.20	0.68	6.81	1.00	0.00	0.10	2.59	20.15	0.08	0.11
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**0.26**	**0.03**	**0.16**	**0.01**	**0.01**	**1.6**	**2.3**	**0.82**	**0.07**	**0.68**	**0.10**	**0.01**	**0.01**	**0.26**	**2.0**	**0.01**	**0.01**

Note: Values are rounded to two significant figures.

**Average of method triplicate*

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	064	066	067	*069*	070	071	*072*	074	075	082	083	084	085	*086*	087	090	091
~~DRP-COMP*~~	~~Deep Reach Pond Composite~~	**150**	**820**	**19**	**36**	**380**	**1,700**	**110**	**280**	**86**	**210**	**96**	**530**	**1,500**	**81**	**2,500**	**2,100**	**2,000**
DRP-31-1	Deep Reach Pond-31-1	370	2,000	23	54	570	2,500	190	500	180	510	170	1,200	2,800	140	3,700	3,500	4,800
DRP-31-2	Deep Reach Pond-31-2	140	670	13	21	470	1,000	70	250	56	200	66	490	1,000	55	2,300	900	1,500
DRP-27-7	Deep Reach Pond-27-7	44	250	4.9	7.6	89	550	28	74	31	62	22	160	560	25	570	660	660
Average		**180**	**970**	**14**	**28**	**380**	**1,400**	**100**	**270**	**89**	**260**	**86**	**620**	**1,500**	**73**	**2,200**	**1,700**	**2,300**
SD(n-1)		170	910	9.1	24	250	1,000	84	210	80	230	76	530	1,200	60	1,600	1,600	2,200
%RSD		94	94	67	87	66	71	84	78	90	88	88	85	80	81	73	94	96
WP-COMP	**Woods Pond-Composite**	**130**	**830**	**16**	**16**	**360**	**1,300**	**100**	**260**	**80**	**190**	**79**	**450**	**1,500**	**74**	**2,300**	**1,400**	**1,700**
WP-35-6	Woods Pond-35-6	83	550	11	10	220	660	62	140	46	89	47	250	790	38	1,100	920	910
WP-35-8	Woods Pond-35-8	220	1,200	26	36	480	2,000	130	300	130	290	96	680	1,900	87	2,500	2,400	3,000
WP-35-9	Woods Pond-35-9	120	850	18	16	320	1,000	110	220	69	120	66	330	1,200	60	1,500	1,600	1,300
Average		**140**	**870**	**18**	**21**	**340**	**1,200**	**100**	**220**	**82**	**170**	**70**	**420**	**1,300**	**62**	**1,700**	**1,600**	**1,700**
SD(n-1)		70	330	7.6	14	130	700	35	80	43	110	25	230	600	24	700	700	1,100
%RSD		50	38	41	66	38	58	35	36	53	65	36	55	46	39	41	44	65
RP-COMP	**Rising Pond Composite**	**41**	**310**	**5.2**	**6.7**	**87**	**370**	**39**	**85**	**23**	**94**	**26**	**160**	**820**	**28**	**680**	**820**	**650**
RP-25-12	Rising Pond 25-12	52	380	7.2	8.1	97	560	42	99	35	96	25	170	890	39	690	810	670
RP-30-7	Rising Pond 30-7	32	250	3.7	5.8	75	350	30	68	23	87	24	140	820	18	630	540	600
RP-30-9	Rising Pond 30-9	84	640	11	15	150	820	77	160	47	190	63	310	1,400	38	1,500	1,500	1,100
Average		**56**	**420**	**7.3**	**9.7**	**110**	**580**	**50**	**110**	**35**	**120**	**38**	**210**	**1,000**	**32**	**940**	**1,000**	**790**
SD(n-1)		26	200	3.6	4.9	38	240	24	47	12	57	22	91	320	12	490	500	270
%RSD		46	48	49	50	35	41	49	43	35	48	59	43	32	37	52	50	34
3MP-COMP	**Three Mile Pond Composite**	**0.27**	**1.1**	**0.03**	**0.02**	**1.4**	**< 0.37**	**0.02**	**0.83**	**< 0.01**	**0.24**	**0.05**	**0.61**	**290**	**< 0.03**	**2.4**	**0.98**	**0.87**
3MP-26-12	Three Mile Pond-26-12	0.30	1.3	0.07	< 0.01	1.8	0.39	0.02	0.94	< 0.01	0.25	0.05	0.64	270	0.03	2.2	0.78	0.77
3MP-28-5	Three Mile Pond-28-5	0.32	1.4	0.03	0.01	1.8	0.41	0.03	1.0	< 0.01	0.29	0.04	0.77	270	< 0.03	2.3	0.57	0.82
3MP-28-13	Three Mile Pond-28-13	0.31	1.6	0.01	< 0.01	2.3	0.47	< 0.01	1.1	< 0.01	0.32	0.08	0.79	530	0.05	3.5	1.6	1.4
Average		**0.31**	**1.4**	**0.04**		**2.0**	**0.42**		**1.0**	**< 0.01**	**0.29**	**0.06**	**0.73**	**360**		**2.7**	**1.0**	**1.0**
SD(n-1)		0.01	0.13	0.03		0.29	0.04		0.10		0.04	0.02	0.08	150		0.7	0.6	0.4
%RSD		3	9	88		15	10		10		12	29	11	42		26	56	36
DRP-COMP-A	Deep Reach Pond Composite-A	140	780	19	35	370	1,600	100	270	86	200	91	520	1,500	73	2,400	2,100	1,900
DRP-COMP-B	Deep Reach Pond Composite-B	130	730	17	33	340	1,500	99	250	82	180	85	460	1,400	73	2,300	1,900	1,800
DRP-COMP-C	Deep Reach Pond Composite-C	180	950	22	41	430	1,900	120	310	90	240	110	610	1,700	97	2,800	2,400	2,200
Average*	**Deep Reach Pond Composite**	**150**	**820**	**19**	**36**	**380**	**1,700**	**110**	**280**	**86**	**210**	**96**	**530**	**1,500**	**81**	**2,500**	**2,100**	**2,000**
SD(n-1)		26	115	2.6	4.1	46	210	12	31	4.1	31	13	75	150	14	260	250	210
%RSD		18	14	13	11	12	12	11	11	5	15	13	14	10	17	10	12	11
MS 021500 #2 PCB	Matrix Spike	77	140	4.5	0.15	250	66	0.38	100	3.1	34	4.2	77	69	1.8	140	7.1	38
% Recovery		**70**	**70**	**71**	**65**	**76**	**75**	**33**	**71**	**87**	**77**	**76**	**77**	**120**	**85**	**82**	**95**	**81**
MB 021500 #1	Matrix Blank	0.05	0.29	< 0.01	< 0.01	0.45	< 0.37	< 0.01	0.22	0.02	< 0.06	< 0.03	0.17	2.8	< 0.03	1.1	< 0.41	< 0.54
MB 021500 #2	Matrix Blank	0.04	0.38	< 0.01	< 0.01	0.44	< 0.37	< 0.01	0.22	< 0.01	0.07	< 0.03	0.16	2.8	< 0.03	1.1	< 0.41	< 0.54
PB 021500 #1 GCR1	Procedural Blank	0.24	1.40	0.05	0.00	0.94	2.62	0.01	0.67	0.08	0.47	0.22	1.17	3.53	0.10	6.34	2.79	3.88
PB 021500 #1 GCR2	Procedural Blank	0.26	1.45	0.07	0.00	0.94	2.75	0.06	0.65	0.09	0.46	0.21	1.08	3.46	0.08	6.39	2.87	3.93
PB 021500 #2 GCR1	Procedural Blank	0.17	1.51	0.05	0.00	1.11	1.91	0.02	0.57	0.09	0.31	0.25	0.96	4.57	0.19	5.00	1.99	3.49
PB 021500 #2 GCR2	Procedural Blank	0.21	1.01	0.05	0.00	0.85	1.87	0.03	0.53	0.04	0.43	0.17	0.77	2.71	0.11	5.18	1.74	2.52
Average		0.22	1.34	0.06	0.00	0.96	2.29	0.03	0.61	0.08	0.42	0.21	0.99	3.57	0.12	5.73	2.35	3.45
Standard Deviation		0.04	0.22	0.01	0.00	0.11	0.46	0.02	0.07	0.02	0.07	0.03	0.17	0.76	0.05	0.74	0.57	0.65
MDL	Method Detection Limit	0.33	2.02	0.09	0.00	1.28	3.68	0.09	0.81	0.15	0.63	0.31	1.50	5.86	0.26	7.95	4.05	5.41
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**0.03**	**0.20**	**0.01**	**0.01**	**0.13**	**0.37**	**0.01**	**0.08**	**0.01**	**0.06**	**0.03**	**0.15**	**0.59**	**0.03**	**0.80**	**0.41**	**0.54**

Note: Values are rounded to two significant figures.

**Average of method triplicate*

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	092	095	096	097	099	101	102	105	109	110	*112*	*113*	114	115	117	118	119
~~DRP-COMP*~~	~~Deep Reach Pond Composite~~	**3,600**	**5,700**	**32**	**1,300**	**5,500**	**14,000**	**39**	**1,400**	**510**	**6,500**	**42**	**210**	**88**	**71**	**480**	**4,900**	**960**
DRP-31-1	Deep Reach Pond-31-1	7,300	10,000	74	2,400	12,000	27,000	180	2,100	870	11,000	78	300	300	130	850	8,200	1,900
DRP-31-2	Deep Reach Pond-31-2	3,100	5,600	21	1,000	4,200	15,000	70	1,300	340	5,300	34	130	100	66	320	3,900	680
DRP-27-7	Deep Reach Pond-27-7	1,100	1,800	14	350	1,900	4,100	28	340	190	1,900	1.2	56	20	21	160	1,600	280
Average		**3,800**	**5,800**	**36**	**1,300**	**6,000**	**15,000**	**93**	**1,200**	**470**	**6,100**	**38**	**160**	**140**	**72**	**440**	**4,600**	**950**
SD(n-1)		3,200	4,100	33	1,000	5,300	11,000	78	880	360	4,600	39	130	140	55	360	3,400	840
%RSD		84	71	90	77	88	73	80	73	77	75	100	81	100	76	82	74	88
WP-COMP	**Woods Pond-Composite**	**4,000**	**5,200**	**21**	**1,300**	**6,600**	**14,000**	**31**	**1,400**	**450**	**5,700**	**30**	**150**	**110**	**72**	**440**	**12,000**	**1,100**
WP-35-6	Woods Pond-35-6	1,700	2,700	16	580	2,700	6,000	33	480	210	2,800	16	86	32	31	220	2,200	470
WP-35-8	Woods Pond-35-8	5,200	6,500	41	1,600	8,200	18,000	99	1,400	540	6,800	52	200	48	86	560	5,400	1,500
WP-35-9	Woods Pond-35-9	2,700	3,600	26	850	4,700	8,900	69	890	290	3,900	21	140	58	47	350	4,000	780
Average		**3,200**	**4,300**	**28**	**1,000**	**5,200**	**11,000**	**67**	**900**	**350**	**4,500**	**29**	**140**	**46**	**55**	**380**	**3,900**	**920**
SD(n-1)		1,800	2,000	13	500	2,800	6,000	33	460	170	2,100	20	60	10	28	170	1,600	530
%RSD		56	47	46	50	54	55	49	51	49	47	70	43	22	51	45	41	58
RP-COMP	**Rising Pond Composite**	**1,300**	**1,500**	**5.9**	**540**	**2,400**	**5,100**	**22**	**480**	**220**	**2,400**	**14**	**74**	**18**	**28**	**200**	**2,400**	**400**
RP-25-12	Rising Pond 25-12	1,400	1,600	7.7	570	2,500	5,200	33	500	200	2,500	15	76	30	30	210	2,400	460
RP-30-7	Rising Pond 30-7	1,200	1,400	4.3	510	2,300	4,800	18	450	190	2,700	8.7	57	29	26	200	2,300	360
RP-30-9	Rising Pond 30-9	2,600	3,000	11	990	4,300	9,100	31	1,000	390	4,700	25	140	67	35	380	4,200	740
Average		**1,700**	**2,000**	**7.7**	**690**	**3,000**	**6,400**	**27**	**650**	**260**	**3,300**	**16**	**91**	**42**	**31**	**260**	**3,000**	**520**
SD(n-1)		760	870	3.3	260	1,100	2,400	8.0	300	110	1,200	8.4	43	20	4.7	100	1,100	200
%RSD		45	44	44	38	37	38	30	46	42	36	50	47	48	15	38	37	38
3MP-COMP	**Three Mile Pond Composite**	**1.5**	**2.0**	**< 0.01**	**1.5**	**4.8**	**7.6**	**< 0.01**	**2.4**	**< 0.55**	**4.4**	**< 0.01**	**1.5**	**0.18**	**0.22**	**0.54**	**9.3**	**0.71**
3MP-26-12	Three Mile Pond-26-12	1.6	2.0	< 0.01	1.5	4.4	6.7	0.04	2.7	1.3	4.6	0.02	1.8	0.19	0.18	0.41	9.0	0.62
3MP-28-5	Three Mile Pond-28-5	1.5	2.1	< 0.01	1.4	4.7	7.4	< 0.01	2.7	1.6	5.0	0.02	0.93	0.22	0.18	0.47	9.2	0.77
3MP-28-13	Three Mile Pond-28-13	2.5	2.6	0.02	2.1	7.0	12	0.02	3.9	2.8	8.6	< 0.01	< 0.02	0.36	0.16	0.74	13	1.2
Average		**1.9**	**2.2**		**1.7**	**5.4**	**8.8**		**3.1**	**1.9**	**6.1**			**0.26**	**0.17**	**0.54**	**10**	**0.87**
SD(n-1)		0.5	0.4		0.36	1.4	3.1		0.67	0.80	2.2			0.09	0.01	0.17	2.1	0.31
%RSD		28	16		21	27	35		22	42	36			35	6	32	20	36
DRP-COMP-A	Deep Reach Pond Composite-A	3,500	5,600	31	1,300	5,300	14,000	40	1,400	470	6,100	38	200	92	71	470	5,100	920
DRP-COMP-B	Deep Reach Pond Composite-B	3,300	5,200	29	1,200	5,000	13,000	34	1,300	500	6,500	37	180	80	64	430	4,100	870
DRP-COMP-C	Deep Reach Pond Composite-C	4,100	6,400	36	1,500	6,100	15,000	44	1,600	560	6,900	50	240	93	79	530	5,600	1,100
Average*	**Deep Reach Pond Composite**	**3,600**	**5,700**	**32**	**1,300**	**5,500**	**14,000**	**39**	**1,400**	**510**	**6,500**	**42**	**210**	**88**	**71**	**480**	**4,900**	**960**
SD(n-1)		420	610	3.6	150	570	1,000	5.1	150	46	400	7.4	31	7.1	7.5	50	760	120
%RSD		12	11	11	12	10	7	13	11	9	6	18	15	8	10	10	16	13
MS 021500 #2 PCB	Matrix Spike	51	230	1.2	85	87	270	5.8	92	21	250	0.52	0.52	6.8	5.6	10	180	5.1
% Recovery		**80**	**77**	**70**	**77**	**87**	**79**	**71**	**77**	**93**	**78**	**50**	**51**	**79**	**69**	**82**	**78**	**100**
MB 021500 #1	Matrix Blank	< 0.92	< 1.4	< 0.01	0.53	1.4	< 3.5	< 0.01	0.92	< 0.55	1.8	< 0.01	0.24	< 0.13	< 0.08	0.17	2.6	< 0.30
MB 021500 #2	Matrix Blank	< 0.92	< 1.4	< 0.01	0.58	1.5	< 3.5	< 0.01	0.99	< 0.55	2.0	< 0.01	0.24	< 0.13	< 0.08	0.18	2.8	< 0.30
PB 021500 #1 GCR1	Procedural Blank	6.07	9.80	0.04	3.02	10.07	25.55	0.09	3.7	4.6	13	0.00	0.16	0.08	0.18	0.97	12	2.2
PB 021500 #1 GCR2	Procedural Blank	6.01	9.87	0.04	3.05	10.19	25.79	0.08	3.7	4.5	13	0.00	0.11	0.12	0.25	1.0	11	2.3
PB 021500 #2 GCR1	Procedural Blank	7.10	7.75	0.00	4.01	7.02	18.12	0.05	4.2	3.9	11	0.00	0.12	0.63	0.51	1.0	13	1.8
PB 021500 #2 GCR2	Procedural Blank	4.45	5.72	0.01	2.64	6.97	18.10	0.06	4.1	3.8	12	0.00	0.07	0.62	0.12	0.68	13	1.5
Average		5.91	8.29	0.02	3.18	8.56	21.89	0.07	3.9	4.2	12	0.00	0.12	0.36	0.27	0.93	12	2.0
Standard Deviation		1.09	1.97	0.02	0.59	1.81	4.37	0.02	0.27	0.41	1.0	0.00	0.04	0.30	0.17	0.17	1.3	0.34
MDL	Method Detection Limit	9.18	14.21	0.09	4.94	13.99	34.99	0.12	4.7	5.4	15	0.01	0.22	1.3	0.78	1.4	16	3.0
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**0.92**	**1.4**	**0.01**	**0.50**	**1.4**	**3.5**	**0.01**	**0.47**	**0.55**	**1.5**	**0.01**	**0.02**	**0.13**	**0.08**	**0.14**	**1.6**	**0.30**

Note: Values are rounded to two significant figures.

**Average of method triplicate*

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	122	123	128	129	130	131	132	133	134	136	137	138	139	141	144	146	147
~~DRP-COMP*~~	~~Deep Reach Pond Composite~~	**26**	**130**	**2,600**	**520**	**1,400**	**140**	**7,900**	**1,100**	**1,100**	**2,000**	**640**	**25,000**	**160**	**8,500**	**2,200**	**9,600**	**1,500**
DRP-31-1	Deep Reach Pond-31-1	43	160	3,400	770	2,400	250	7,800	1,700	1,700	3,200	910	34,000	250	11,000	2,900	13,000	2,300
DRP-31-2	Deep Reach Pond-31-2	27	85	2,200	500	1,200	120	4,500	820	1,200	2,800	430	21,000	110	8,600	2,300	6,700	860
DRP-27-7	Deep Reach Pond-27-7	7.6	43	870	160	440	33	2,000	370	270	475	230	8,600	57	2,400	640	3,600	430
Average		**26**	**100**	**2,200**	**480**	**1,300**	**130**	**4,800**	**1,000**	**1,100**	**2,200**	**520**	**21,000**	**140**	**7,300**	**1,900**	**7,770**	**1,200**
SD(n-1)		18	59	1,300	310	990	110	2,900	680	730	1,500	350	12,700	100	4,400	1,200	4,800	980
%RSD		69	59	59	65	76	85	60	68	66	68	67	60	71	60	63	62	82
WP-COMP	**Woods Pond-Composite**	**27**	**110**	**2,500**	**560**	**1,700**	**160**	**4,900**	**990**	**960**	**2,000**	**620**	**27,000**	**170**	**5,600**	**2,500**	**5,800**	**1,400**
WP-35-6	Woods Pond-35-6	12	62	1,000	180	610	49	1,700	460	410	810	240	9,000	62	2,700	780	3,700	560
WP-35-8	Woods Pond-35-8	26	130	2,300	490	1,600	170	4,100	1,300	1,200	2,300	610	24,000	170	7,200	2,100	9,800	1,700
WP-35-9	Woods Pond-35-9	17	96	1,600	260	1,000	68	2,000	790	570	1,100	410	15,000	99	4,500	1,200	6,400	980
Average		**19**	**100**	**1,600**	**310**	**1,100**	**100**	**2,600**	**900**	**700**	**1,400**	**420**	**16,000**	**110**	**4,800**	**1,400**	**6,630**	**1,100**
SD(n-1)		7	34	700	160	500	70	1,300	420	420	800	190	7,500	50	2,300	700	3,100	580
%RSD		38	34	44	52	45	70	50	47	60	57	45	47	45	48	50	47	53
RP-COMP	**Rising Pond Composite**	**10**	**61**	**1,100**	**210**	**670**	**54**	**1,700**	**520**	**360**	**520**	**290**	**9,900**	**62**	**3,100**	**730**	**4,500**	**570**
RP-25-12	Rising Pond 25-12	13	59	1,000	190	610	47	1,700	470	350	590	270	9,300	60	2,700	660	4,000	550
RP-30-7	Rising Pond 30-7	9.6	57	1,100	210	650	55	1,800	500	320	540	290	11,000	69	3,000	730	4,500	570
RP-30-9	Rising Pond 30-9	23	110	1,900	360	1,300	100	2,500	960	650	920	490	17,000	85	5,200	1,200	7,700	960
Average		**15**	**75**	**1,300**	**250**	**850**	**67**	**2,000**	**640**	**440**	**680**	**350**	**12,000**	**71**	**3,600**	**860**	**5,400**	**690**
SD(n-1)		7.0	30	490	93	390	29	440	270	180	210	120	4,000	13	1,400	290	2,000	230
%RSD		46	40	38	37	46	43	22	42	41	31	34	33	18	39	34	37	33
3MP-COMP	**Three Mile Pond Composite**	**0.03**	**0.18**	**2.8**	**0.40**	**1.2**	**< 0.11**	**3.3**	**0.55**	**1.4**	**1.6**	**1.0**	**24**	**0.22**	**3.8**	**0.87**	**6.8**	**0.91**
3MP-26-12	Three Mile Pond-26-12	0.02	0.15	2.6	0.34	1.0	< 0.11	2.4	0.57	1.2	1.1	0.90	20	0.20	2.9	< 0.75	5.3	< 0.21
3MP-28-5	Three Mile Pond-28-5	0.02	0.16	2.7	0.38	1.1	< 0.11	3.0	0.67	0.35	1.0	0.84	22	0.19	3.7	1.3	5.9	< 0.21
3MP-28-13	Three Mile Pond-28-13	0.04	0.42	4.6	0.72	1.9	0.12	6.2	1.1	3.2	2.3	1.6	38	0.37	7.6	1.7	11	0.41
Average		**0.03**	**0.24**	**3.3**	**0.48**	**1.3**		**3.9**	**0.79**	**1.6**	**1.5**	**1.1**	**27**	**0.25**	**4.7**		**7.3**	
SD(n-1)		0.01	0.15	1.1	0.21	0.52		2.0	0.29	1.5	0.67	0.41	9.6	0.10	2.5		2.9	
%RSD		44	64	35	43	39		53	37	94	46	37	36	39	54		40	
DRP-COMP-A	Deep Reach Pond Composite-A	25	130	2,500	510	1,400	140	7,800	1,100	1,000	2,000	630	25,000	160	8,300	2,200	9,200	1,500
DRP-COMP-B	Deep Reach Pond Composite-B	24	120	2,300	470	1,300	130	7,200	1,000	970	1,800	580	23,000	140	7,700	2,000	8,600	1,300
DRP-COMP-C	Deep Reach Pond Composite-C	29	150	2,900	580	1,600	160	8,800	1,300	1,200	2,200	710	28,000	170	9,400	2,500	11,000	1,700
Average*	**Deep Reach Pond Composite**	**26**	**130**	**2,600**	**520**	**1,400**	**140**	**7,900**	**1,100**	**1,100**	**2,000**	**640**	**25,000**	**160**	**8,500**	**2,200**	**9,600**	**1,500**
SD(n-1)		2.9	15	310	56	150	15	810	150	120	200	66	2,500	15	860	250	1,200	200
%RSD		11	12	12	11	11	11	10	14	11	10	10	10	10	10	11	13	13
MS 021500 #2 PCB	Matrix Spike	2.4	3.3	48	14	15	4.9	120	4.9	25	51	14	290	4.7	86	28	51	1.3
% Recovery		**72**	**79**	**85**	**79**	**85**	**81**	**80**	**90**	**100**	**77**	**91**	**88**	**83**	**86**	**81**	**98**	**93**
MB 021500 #1	Matrix Blank	< 0.01	0.03	< 0.89	< 0.21	< 0.38	< 0.11	< 2.4	< 0.28	0.62	< 0.57	0.28	< 9.4	0.07	< 2.4	< 0.75	< 2.7	< 0.21
MB 021500 #2	Matrix Blank	< 0.01	0.03	1.0	< 0.21	0.44	< 0.11	< 2.4	0.32	0.73	< 0.57	0.31	11	0.08	2.7	< 0.75	< 2.7	< 0.21
PB 021500 #1 GCR1	Procedural Blank	0.00	0.10	6.8	1.6	3.5	0.27	21	2.4	2.3	3.9	1.6	86	0.44	23	6.0	23	1.3
PB 021500 #1 GCR2	Procedural Blank	0.00	0.09	6.9	1.5	3.5	0.37	17	2.4	2.4	3.9	1.6	87	0.47	23	6.1	22	1.3
PB 021500 #2 GCR1	Procedural Blank	0.02	0.09	7.8	1.6	3.4	0.73	17	2.0	1.8	2.3	1.5	90	0.36	23	4.8	19	0.59
PB 021500 #2 GCR2	Procedural Blank	0.03	0.10	7.8	1.9	3.3	0.21	18	2.0	1.8	2.7	1.4	89	0.38	23	4.9	19	0.87
Average		0.01	0.10	7.3	1.6	3.4	0.40	18	2.2	2.1	3.2	1.5	88	0.41	23	5.4	21	1.0
Standard Deviation		0.01	0.00	0.52	0.17	0.11	0.23	1.9	0.21	0.30	0.81	0.08	1.9	0.05	0.37	0.68	1.9	0.36
MDL	Method Detection Limit	0.05	0.11	8.9	2.1	3.7	1.1	24	2.8	3.0	5.7	1.8	94	0.56	24	7.5	26	2.1
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**0.01**	**0.01**	**0.89**	**0.21**	**0.38**	**0.11**	**2.4**	**0.28**	**0.30**	**0.57**	**0.18**	**9.4**	**0.06**	**2.4**	**0.75**	**2.7**	**0.21**

Note: Values are rounded to two significant figures.

**Average of method triplicate*

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	149	151	153	156	157	158	163	164	166	167	170	171	172	173	174	175	176
~~DRP-COMP*~~	~~Deep Reach Pond Composite~~	**36,000**	**12,000**	**53,000**	**2,100**	**270**	**3,300**	**10,000**	**3,500**	**< 0.01**	**890**	**22,000**	**4,300**	**3,000**	**190**	**16,000**	**600**	**860**
DRP-31-1	Deep Reach Pond-31-1	47,000	17,000	72,000	2,800	300	4,200	13,000	4,700	< 0.01	1,300	27,000	5,700	3,400	240	18,000	850	1,300
DRP-31-2	Deep Reach Pond-31-2	32,000	12,000	41,000	2,400	200	3,100	8,200	3,900	< 0.01	760	19,000	4,100	2,500	140	18,000	700	900
DRP-27-7	Deep Reach Pond-27-7	8,600	3,000	18,000	450	110	940	2,800	1,400	< 0.01	300	7,300	1,200	1,100	55	3,800	160	150
Average		**29,000**	**11,000**	**44,000**	**1,900**	**200**	**2,700**	**8,000**	**3,300**	**< 0.01**	**790**	**18,000**	**3,700**	**2,300**	**150**	**13,000**	**570**	**780**
SD(n-1)		19,400	7,100	27,100	1,300	95	1,700	5,100	1,700		500	9,900	2,300	1,200	93	8,200	360	580
%RSD		67	65	62	68	48	63	64	52		63	55	62	52	62	63	63	74
WP-COMP	**Woods Pond-Composite**	**33,000**	**13,000**	**31,000**	**2,900**	**270**	**3,700**	**3,500**	**4,700**	**< 0.01**	**1,100**	**26,000**	**5,500**	**3,500**	**190**	**18,000**	**870**	**870**
WP-35-6	Woods Pond-35-6	10,000	3,900	20,000	470	110	1,100	3,100	1,400	< 0.01	300	6,100	1,300	890	58	4,100	160	200
WP-35-8	Woods Pond-35-8	31,000	14,000	51,000	1,900	240	2,900	8,400	4,300	< 0.01	860	19,000	4,200	2,500	180	12,000	740	500
WP-35-9	Woods Pond-35-9	16,000	6,700	34,000	1,200	200	1,700	4,900	3,000	< 0.01	560	11,000	2,000	1,600	86	6,800	270	240
Average		**19,000**	**8,000**	**35,000**	**1,200**	**180**	**1,900**	**5,000**	**2,900**	**< 0.01**	**570**	**12,000**	**2,500**	**1,700**	**110**	**8,000**	**390**	**310**
SD(n-1)		10,800	5,200	15,500	700	67	900	2,700	1,500		280	6,500	1,500	810	64	4,000	310	160
%RSD		57	65	44	58	37	47	54	52		49	54	60	48	58	50	79	52
RP-COMP	**Rising Pond Composite**	**9,500**	**3,200**	**26,000**	**710**	**140**	**1,200**	**4,300**	**1,300**	**< 0.01**	**370**	**7,600**	**1,400**	**1,300**	**86**	**3,800**	**190**	**230**
RP-25-12	Rising Pond 25-12	8,900	3,300	23,000	570	120	1,100	3,600	1,500	< 0.01	370	7,100	1,100	1,000	75	3,200	150	220
RP-30-7	Rising Pond 30-7	10,000	3,200	27,000	640	150	1,200	3,900	1,400	< 0.01	420	9,500	1,600	1,300	86	4,300	210	350
RP-30-9	Rising Pond 30-9	18,000	6,400	43,000	1,600	250	2,200	6,000	3,900	< 0.01	780	16,000	1,900	2,100	120	6,100	360	300
Average		**12,000**	**4,300**	**31,000**	**940**	**170**	**1,500**	**4,500**	**2,300**	**< 0.01**	**520**	**11,000**	**1,500**	**1,500**	**90**	**4,500**	**240**	**290**
SD(n-1)		5,000	1,800	11,000	580	68	610	1,300	1,400		220	4,600	400	570	24	1,500	110	66
%RSD		42	42	35	62	40	41	29	61		42	42	27	38	26	33	46	23
3MP-COMP	**Three Mile Pond Composite**	**9.2**	**3.6**	**37**	**0.82**	**0.54**	**1.9**	**5.1**	**1.8**	**< 0.01**	**0.87**	**10**	**1.9**	**2.2**	**0.21**	**< 4.3**	**0.38**	**< 0.58**
3MP-26-12	Three Mile Pond-26-12	< 7.0	< 3.4	29	0.85	0.41	1.6	4.0	1.5	< 0.01	0.70	8.1	1.4	1.4	0.15	< 4.3	0.28	< 0.58
3MP-28-5	Three Mile Pond-28-5	8.9	3.6	33	1.2	0.46	1.9	4.6	1.9	< 0.01	0.77	9.0	1.7	1.7	0.13	< 4.3	0.37	< 0.58
3MP-28-13	Three Mile Pond-28-13	20	7.4	59	1.2	0.56	3.4	9.0	3.4	< 0.01	1.3	19	3.6	4.0	0.28	8.8	1.1	0.82
Average				**40**	**1.1**	**0.48**	**2.3**	**5.8**	**2.3**	**< 0.01**	**0.94**	**12**	**2.3**	**2.4**	**0.18**		**0.57**	
SD(n-1)				16	0.22	0.08	1.0	2.7	1.0		0.35	6.3	1.2	1.4	0.08		0.43	
%RSD				41	20	16	42	47	45		38	51	54	60	43		75	
DRP-COMP-A	Deep Reach Pond Composite-A	35,000	12,000	52,000	2,000	290	3,200	10,000	3,100	< 0.01	870	22,000	4,100	3,000	190	16,000	580	980
DRP-COMP-B	Deep Reach Pond Composite-B	33,000	11,000	48,000	1,900	250	2,900	9,300	3,300	< 0.01	800	20,000	3,900	2,700	170	15,000	540	770
DRP-COMP-C	Deep Reach Pond Composite-C	39,000	14,000	59,000	2,300	260	3,700	11,000	4,200	< 0.01	1,000	25,000	4,800	3,400	200	18,000	670	840
Average*	**Deep Reach Pond Composite**	**36,000**	**12,000**	**53,000**	**2,100**	**270**	**3,300**	**10,000**	**3,500**	**< 0.01**	**890**	**22,000**	**4,300**	**3,000**	**190**	**16,000**	**600**	**860**
SD(n-1)		3,100	1,500	5,600	210	21	400	850	590		100	2,500	470	350	15	1,500	67	110
%RSD		9	13	11	10	8	12	9	17		11	11	11	12	8	9	11	13
MS 021500 #2 PCB	Matrix Spike	260	95	310	19	5.0	37	61	30	1.1	8.0	120	32	20	2.5	120	6.2	13
% Recovery		**84**	**86**	**91**	**75**	**79**	**83**	**86**	**89**	**98**	**87**	**86**	**83**	**90**	**87**	**80**	**88**	**84**
MB 021500 #1	Matrix Blank	< 7.0	< 3.4	< 14	< 0.44	0.10	< 1.1	< 2.6	< 1.2	< 0.01	< 0.33	< 7.8	< 1.3	< 1.3	< 0.13	< 4.3	< 0.23	< 0.58
MB 021500 #2	Matrix Blank	< 7.0	< 3.4	15	< 0.44	0.11	< 1.1	2.7	< 1.2	< 0.01	< 0.33	< 7.8	< 1.3	< 1.3	< 0.13	< 4.3	< 0.23	< 0.58
PB 021500 #1 GCR1	Procedural Blank	61	25	128	2.0	0.64	8.0	24	5.4	0.00	2.2	36	11	8.2	1.0	32	2.0	4.5
PB 021500 #1 GCR2	Procedural Blank	61	26	127	2.0	0.68	8.4	21	8.5	0.00	2.2	38	11	8.2	0.9	32	2.1	2.7
PB 021500 #2 GCR1	Procedural Blank	54	19	119	3.0	0.65	8.8	23	8.0	0.00	2.7	55	12	11	1.1	37	1.9	3.4
PB 021500 #2 GCR2	Procedural Blank	54	19	120	3.1	0.59	9.7	23	7.4	0.00	2.7	56	12	10	1.0	37	1.9	3.1
Average		57	22	123	2.5	0.64	8.7	23	7.3	0.00	2.5	46	11	9.3	1.0	34	2.0	3.4
Standard Deviation		4.1	3.7	4.8	0.60	0.04	0.72	1.2	1.4	0.00	0.28	11	0.61	1.3	0.09	2.9	0.12	0.77
MDL	Method Detection Limit	70	33	138	4.3	0.75	11	26	11	0.00	3.3	78	13	13	1.3	43	2.3	5.7
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**7.0**	**3.3**	**14**	**0.44**	**0.08**	**1.1**	**2.6**	**1.1**	**0.01**	**0.33**	**7.8**	**1.3**	**1.3**	**0.13**	**4.3**	**0.23**	**0.58**

Note: Values are rounded to two significant figures.

**Average of method triplicate*

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	177	178	179	180	183	185	187	189	190	191	193	194	195	196	197	198	199
~~DRP-COMP*~~	~~Deep Reach Pond Composite~~	**7,800**	**4,200**	**2,800**	**40,000**	**12,000**	**2,000**	**34,000**	**490**	**4,000**	**650**	**2,600**	**5,600**	**3,400**	**3,100**	**300**	**340**	**6,600**
DRP-31-1	Deep Reach Pond-31-1	9,300	4,800	4,300	44,000	15,000	2,400	32,000	530	4,300	730	2,600	5,100	3,400	2,900	290	360	5,900
DRP-31-2	Deep Reach Pond-31-2	7,300	3,900	4,400	33,000	10,000	1,800	26,000	440	3,200	640	2,100	4,100	2,900	2,600	260	280	5,300
DRP-27-7	Deep Reach Pond-27-7	1,900	1,000	560	14,000	3,900	480	13,000	210	1,800	210	1,000	2,300	1,100	970	100	110	2,200
Average		**6,200**	**3,200**	**3,100**	**30,000**	**10,000**	**1,600**	**24,000**	**390**	**3,100**	**530**	**1,900**	**3,800**	**2,500**	**2,200**	**220**	**250**	**4,500**
SD(n-1)		3,800	2,000	2,200	15,200	5,600	980	9,700	170	1,300	280	820	1,400	1,200	1,000	100	130	2,000
%RSD		61	63	71	51	56	61	40	44	42	53	43	37	48	45	45	52	44
WP-COMP	**Woods Pond-Composite**	**8,500**	**4,700**	**2,500**	**16,000**	**14,000**	**2,300**	**32,000**	**640**	**4,100**	**820**	**2,700**	**6,500**	**4,200**	**3,800**	**370**	**400**	**7,500**
WP-35-6	Woods Pond-35-6	2,100	1,200	920	11,000	3,500	540	8,500	140	1,300	180	710	1,500	730	720	80	96	1,500
WP-35-8	Woods Pond-35-8	6,900	3,900	3,300	32,000	11,000	1,800	26,000	400	3,200	530	2,000	4,000	2,700	2,400	230	270	4,800
WP-35-9	Woods Pond-35-9	4,000	2,300	1,300	21,000	6,100	890	17,000	270	2,300	320	1,400	2,700	1,500	1,300	140	160	3,100
Average		**4,300**	**2,500**	**1,800**	**21,000**	**7,000**	**1,100**	**17,000**	**270**	**2,300**	**340**	**1,400**	**2,700**	**1,600**	**1,500**	**150**	**180**	**3,100**
SD(n-1)		2,400	1,400	1,300	11,000	3,800	650	8,800	130	1,000	180	650	1,300	1,000	850	75	88	1,700
%RSD		56	56	72	52	54	59	52	48	43	53	46	48	63	57	50	49	55
RP-COMP	**Rising Pond Composite**	**2,600**	**1,500**	**720**	**17,000**	**4,800**	**640**	**12,000**	**250**	**1,800**	**220**	**1,000**	**2,400**	**1,100**	**950**	**94**	**130**	**2,100**
RP-25-12	Rising Pond 25-12	2,300	1,300	780	13,000	3,600	510	10,000	200	1,600	200	830	1,800	730	630	70	100	1,500
RP-30-7	Rising Pond 30-7	2,700	1,400	830	18,000	5,000	670	11,000	250	1,900	260	1,000	2,700	1,200	1,000	110	150	2,300
RP-30-9	Rising Pond 30-9	4,900	2,700	1,100	28,000	7,000	1,100	18,000	400	2,900	380	1,600	3,200	1,600	1,400	110	190	3,100
Average		**3,300**	**1,800**	**900**	**20,000**	**5,200**	**760**	**13,000**	**280**	**2,100**	**280**	**1,100**	**2,600**	**1,200**	**1,000**	**100**	**150**	**2,300**
SD(n-1)		1,400	780	170	7,600	1,700	310	4,400	100	680	92	400	710	440	380	23	45	800
%RSD		42	43	19	38	33	41	34	36	32	33	36	27	37	38	23	30	35
3MP-COMP	**Three Mile Pond Composite**	**3.1**	**2.1**	**< 0.87**	**24**	**8.1**	**0.65**	**16**	**0.63**	**4.2**	**0.36**	**1.5**	**4.2**	**< 1.6**	**2.5**	**0.42**	**0.24**	**5.2**
3MP-26-12	Three Mile Pond-26-12	< 2.4	1.5	< 0.87	17	5.8	< 0.51	12	< 0.38	< 3.8	< 0.32	< 1.1	< 3.7	< 1.6	< 1.8	0.29	< 0.16	< 3.1
3MP-28-5	Three Mile Pond-28-5	3.1	1.9	0.94	20	7.1	0.56	14	0.46	< 3.8	0.32	1.2	< 3.7	< 1.6	2.0	0.29	0.22	4.2
3MP-28-13	Three Mile Pond-28-13	6.8	3.8	2.1	43	14	1.2	28	0.92	7.7	0.79	2.9	7.7	3.2	4.4	0.94	0.50	9.6
Average			**2.4**		**27**	**9.1**		**18**								**0.50**		
SD(n-1)			1.2		14	4.6		9.1								0.38		
%RSD			52		54	51		50								75		
DRP-COMP-A	Deep Reach Pond Composite-A	7,600	4,100	2,800	39,000	12,000	1,900	34,000	480	3,900	630	2,600	5,500	3,300	3,000	290	330	6,400
DRP-COMP-B	Deep Reach Pond Composite-B	7,000	3,800	2,600	36,000	11,000	1,800	31,000	440	3,700	600	2,400	5,100	3,100	2,900	270	310	6,000
DRP-COMP-C	Deep Reach Pond Composite-C	8,700	4,700	3,100	45,000	14,000	2,200	38,000	550	4,400	730	2,900	6,200	3,800	3,500	340	380	7,400
Average*	**Deep Reach Pond Composite**	**7,800**	**4,200**	**2,800**	**40,000**	**12,000**	**2,000**	**34,000**	**490**	**4,000**	**650**	**2,600**	**5,600**	**3,400**	**3,100**	**300**	**340**	**6,600**
SD(n-1)		860	460	250	4,600	1,500	210	3,500	56	360	68	250	560	360	320	36	36	720
%RSD		11	11	9	12	13	11	10	11	9	10	10	10	11	10	12	11	11
MS 021500 #2 PCB	Matrix Spike	60	25	46	220	89	12	140	4.9	45	4.5	13	42	21	26	3.9	2.6	44
% Recovery		**86**	**92**	**80**	**88**	**89**	**80**	**100**	**98**	**85**	**87**	**96**	**85**	**84**	**83**	**85**	**87**	**90**
MB 021500 #1	Matrix Blank	< 2.4	< 1.1	< 0.87	< 16	< 4.6	< 0.51	< 7.8	< 0.38	< 3.8	< 0.32	< 1.1	< 3.7	< 1.6	< 1.8	< 0.26	< 0.16	< 3.1
MB 021500 #2	Matrix Blank	< 2.4	1.1	< 0.87	< 16	4.6	< 0.51	9.0	< 0.38	< 3.8	< 0.32	< 1.1	< 3.7	< 1.6	< 1.8	< 0.26	< 0.16	< 3.1
PB 021500 #1 GCR1	Procedural Blank	21	10	7.5	95	40	4.4	71	1.4	19	1.9	6.4	11	7	10	1.9	0.61	15
PB 021500 #1 GCR2	Procedural Blank	21	10	7.7	95	41	4.6	72	1.4	19	2.0	6.7	11	7	10	1.8	0.62	15
PB 021500 #2 GCR1	Procedural Blank	22	9.5	6.7	125	43	4.7	74	2.4	28	2.5	8.4	23	11	13	2.2	1.0	22
PB 021500 #2 GCR2	Procedural Blank	23	9.7	6.9	124	43	4.8	74	2.5	27	2.5	8.3	23	11	14	2.2	1.1	22
Average		22	9.9	7.2	110	42	4.6	73	1.9	23	2.2	7.4	17	9	12	2.0	0.83	19
Standard Deviation		0.79	0.37	0.48	17	1.2	0.15	1.4	0.62	4.9	0.32	1.0	6.6	2.4	2.0	0.18	0.25	4.1
MDL	Method Detection Limit	24	11	8.7	161	45	5.1	77	3.8	38	3.1	11	37	16	18	2.6	1.6	31
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**2.4**	**1.1**	**0.87**	**16**	**4.6**	**0.51**	**7.7**	**0.38**	**3.8**	**0.32**	**1.1**	**3.7**	**1.6**	**1.8**	**0.26**	**0.16**	**3.1**

Note: Values are rounded to two significant figures.

**Average of method triplicate*

Table 3. Housatonic Largemouth Bass--Ovaries--Concentrations of PCBs (ng/g) and Quality Control Data

Sample ID	Field ID	200	201	202	203	205	206	208	209	Total PCBs
~~**DRP-COMP***~~	~~**Deep Reach Pond Composite**~~	**590**	**790**	**1,000**	**5,500**	**150**	**950**	**160**	**50**	**450,000**
DRP-31-1	Deep Reach Pond-31-1	590	820	1,100	5,800	140	860	130	36	590,000
DRP-31-2	Deep Reach Pond-31-2	670	680	1,100	4,100	110	660	110	19	380,000
DRP-27-7	Deep Reach Pond-27-7	110	220	270	1,900	67	340	57	36	140,000
Average		**460**	**570**	**800**	**3,900**	**110**	**620**	**100**	**30**	**370,000**
SD(n-1)		300	310	480	2,000	37	260	38	9.8	230,000
%RSD		65	54	60	51	33	42	38	32	62
WP-COMP	**Woods Pond-Composite**	**650**	**950**	**1,300**	**6,600**	**180**	**1,200**	**140**	**30**	**440,000**
WP-35-6	Woods Pond-35-6	150	200	270	1,200	46	200	48	32	150,000
WP-35-8	Woods Pond-35-8	370	660	890	4,500	121	730	100	32	420,000
WP-35-9	Woods Pond-35-9	250	370	510	2,500	81	380	87	36	250,000
Average		**260**	**410**	**600**	**2,700**	**80**	**440**	**80**	**34**	**270,000**
SD(n-1)		110	230	310	1,700	37	270	27	2.6	140,000
%RSD		42	56	52	63	47	61	34	8	52
RP-COMP	**Rising Pond Composite**	**120**	**260**	**330**	**2,300**	**72**	**330**	**66**	**36**	**160,000**
RP-25-12	Rising Pond 25-12	110	180	280	1,400	55	210	42	34	150,000
RP-30-7	Rising Pond 30-7	190	300	380	2,300	83	410	93	43	170,000
RP-30-9	Rising Pond 30-9	210	350	460	3,400	86	360	71	30	280,000
Average		**170**	**280**	**370**	**2,400**	**70**	**330**	**70**	**36**	**200,000**
SD(n-1)		50	87	90	1,000	17	100	25	6.3	70,000
%RSD		29	31	24	42	24	30	36	18	35
3MP-COMP	**Three Mile Pond Composite**	**< 0.27**	**0.52**	**1.1**	**3.9**	**0.37**	**2.5**	**1.0**	**1.1**	**560**
3MP-26-12	Three Mile Pond-26-12	< 0.27	0.32	0.50	< 2.5	0.29	1.5	0.53	0.64	490
3MP-28-5	Three Mile Pond-28-5	< 0.27	0.38	0.73	3.1	0.38	1.6	0.61	0.58	520
3MP-28-13	Three Mile Pond-28-13	0.45	0.88	1.5	7.6	0.63	4.8	1.7	2.9	1,000
Average			**0.53**	**0.90**		**0.43**	**2.6**	**0.94**	**1.4**	**670**
SD(n-1)			0.31	0.51		0.17	1.9	0.63	1.3	290
%RSD			58	56		40	71	67	96	43
DRP-COMP-A	Deep Reach Pond Composite-A	580	780	1,000	5,300	150	970	160	51	440,000
DRP-COMP-B	Deep Reach Pond Composite-B	530	710	970	5,000	140	880	150	45	410,000
DRP-COMP-C	Deep Reach Pond Composite-C	660	890	1,100	6,100	160	1,000	180	53	500,000
Average*	**Deep Reach Pond Composite**	**590**	**790**	**1,000**	**5,500**	**150**	**950**	**160**	**50**	**450,000**
SD(n-1)		66	91	68	570	10	62	15	4.4	46,000
%RSD		11	11	7	10	7	7	10	9	10
MS 021500 #2 PCB	Matrix Spike	6.8	6.0	8.4	31	2.9	11	2.4	4.5	7,600
% Recovery		**78**	**88**	**87**	**85**	**95**	**84**	**82**	**100**	**77**
MB 021500 #1	Matrix Blank	< 0.27	< 0.28	0.35	< 2.5	< 0.26	< 0.74	< 0.16	< 0.46	< 130
MB 021500 #2	Matrix Blank	< 0.27	< 0.28	0.43	< 2.5	< 0.26	< 0.74	< 0.16	0.47	140
PB 021500 #1 GCR1	Procedural Blank	1.4	2.2	2.6	9.8	1.1	1.4	0.62	4.5	1,000
PB 021500 #1 GCR2	Procedural Blank	1.4	2.1	2.6	10	1.1	1.6	0.85	4.4	1,000
PB 021500 #2 GCR1	Procedural Blank	2.0	2.5	3.0	17	1.7	4.0	1.1	4.5	1,100
PB 021500 #2 GCR2	Procedural Blank	2.0	2.3	2.7	17	1.8	4.2	1.1	4.4	1,100
Average		1.7	2.3	2.7	13	1.4	2.8	0.92	4.5	1,100
Standard Deviation		0.33	0.19	0.22	3.9	0.39	1.5	0.23	0.04	58
MDL	Method Detection Limit	2.7	2.8	3.4	25	2.6	7.3	1.6	4.6	1,300
MDL (mass normalized)	***(MDL set to 0.01 if < 0.01)***	**0.27**	**0.28**	**0.34**	**2.5**	**0.26**	**0.74**	**0.16**	**0.46**	**130**
Note: Values are rounded to two significant figures.										
**Average of method triplicate*										

Table 4. Recoveries of Procedural Standards--Housatonic Largemouth Bass Ovaries (%)

Sample ID	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	029 % Recovery	155* % Recovery	204 % Recovery
PB 021500 #1 GCR1	Procedural Blank	Na_2SO_4	---	---	**62**	**75**	**83**
PB 021500 #1 GCR2	Procedural Blank	Na_2SO_4	---	---	**62**	**75**	**83**
PB 021500 #2 GCR1	Procedural Blank	Na_2SO_4	---	---	**60**	**75**	**80**
PB 021500 #2 GCR2	Procedural Blank	Na_2SO_4	---	---	**62**	**72**	**80**
MB 021500 #1	Matrix Blank	Bluegill	10.1	4.0	**62**	**71**	**75**
MB 021500 #2	Matrix Blank	Bluegill	10.0	3.9	**64**	**75**	**76**
MS 021500 #2 PCB	Matrix Spike--PCB	Bluegill	10.0	4.0	**69**	**74**	**79**
RP-COMP	Rising Pond Composite	Largemouth Bass ovaries	10.0	8.8	**76**	**95**	**80**
RP-25-12	Rising Pond 25-12	Largemouth Bass ovaries	10.0	9.4	**68**	**85**	**72**
RP-30-7	Rising Pond 30-7	Largemouth Bass ovaries	10.0	8.9	**71**	**87**	**75**
RP-30-9	Rising Pond 30-9	Largemouth Bass ovaries	10.0	12.7	**76**	**110**	**60**
3MP-COMP	Three Mile Pond Composite	Largemouth Bass ovaries	10.0	9.0	**76**	**81**	**83**
3MP-26-12	Three Mile Pond-26-12	Largemouth Bass ovaries	10.1	10.9	**73**	**77**	**79**
3MP-28-5	Three Mile Pond-28-5	Largemouth Bass ovaries	10.0	12.8	**71**	**75**	**77**
3MP-28-13	Three Mile Pond-28-13	Largemouth Bass ovaries	10.1	6.9	**77**	**82**	**83**
WP-COMP	Woods Pond-Composite	Largemouth Bass ovaries	10.0	8.1	**74**	**120**	**50**
WP-35-6	Woods Pond-35-6	Largemouth Bass ovaries	10.1	7.9	**67**	**85**	**72**
WP-35-8	Woods Pond-35-8	Largemouth Bass ovaries	8.6	10.7	**77**	**130**	**53**
WP-35-9	Woods Pond-35-9	Largemouth Bass ovaries	10.1	10.0	**77**	**100**	**80**
DRP-COMP-A	Deep Reach Pond Composite-A	Largemouth Bass ovaries	10.0	8.8	**65**	**110**	**46**
DRP-COMP-B	Deep Reach Pond Composite-B	Largemouth Bass ovaries	10.0	8.8	**67**	**110**	**49**
DRP-COMP-C	Deep Reach Pond Composite-C	Largemouth Bass ovaries	10.0	8.7	**77**	**120**	**55**
DRP-31-1	Deep Reach Pond-31-1	Largemouth Bass ovaries	10.0	6.5	**69**	**120**	**47**
DRP-31-2	Deep Reach Pond-31-2	Largemouth Bass ovaries	10.1	16.2	**74**	**110**	**49**
DRP-27-7	Deep Reach Pond-27-7	Largemouth Bass ovaries	10.1	10.1	**74**	**93**	**80**
Average Recovery					**70**	**92**	**70**
SD					**6**	**19**	**14**
**Concentrations were recovery corrected using 029 and 204.*							

Table 5. Organochlorine Pesticides in Largemouth Bass Tissue (ng/g)--Concentrations and Quality Control Data

Sample ID	Site ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	HCB	PCA*	alpha-BHC	beta-BHC	Lindane	delta-BHC	Heptachlor
MP3-A-OC	Three Mile Pond	Largemouth Bass tissue	2.0	1.6	0.12	< 0.32	0.05	< 0.01	< 0.18	0.23	< 0.20
MP3-B-OC	Three Mile Pond	Largemouth Bass tissue	2.0	1.7	0.34	< 0.32	0.08	< 0.01	< 0.18	0.08	< 0.20
MP3-C-OC	Three Mile Pond	Largemouth Bass tissue	2.0	1.3	0.12	< 0.32	0.10	0.10	0.28	< 0.06	< 0.20
Average				1.5	0.19	< 0.32	0.08				
SD (n-1)					0.13		0.02				
%RSD					64		30				
WP-A-OC	Woods Pond	Largemouth Bass tissue	2.0	2.2	2.5	< 0.32	0.23	< 0.01	< 0.18	0.17	< 0.20
WP-B-OC	Woods Pond	Largemouth Bass tissue	2.0	2.1	2.4	< 0.32	0.11	0.08	< 0.18	< 0.06	< 0.20
WP-C-OC	Woods Pond	Largemouth Bass tissue	2.0	2.0	2.1	< 0.32	0.11	0.10	< 0.18	< 0.06	< 0.20
Average				2.1	2.3	< 0.32	0.15	0.09			
SD (n-1)					0.20		0.07	0.01			
%RSD					9		46	15			
DRP-A-OC	Deep Reach Pond	Largemouth Bass tissue	2.0	2.4	3.8	< 0.32	0.09	< 0.01	< 0.18	0.31	< 0.20
DRP-B-OC	Deep Reach Pond	Largemouth Bass tissue	2.0	2.1	2.9	0.45	< 0.01	< 0.01	< 0.18	< 0.06	< 0.20
DRP-C-OC	Deep Reach Pond	Largemouth Bass tissue	2.0	2.3	3.2	0.33	< 0.01	< 0.01	< 0.18	< 0.06	< 0.20
Average				2.3	3.3	0.39					
SD (n-1)					0.48	0.09					
%RSD					15	23					
RP-A-OC	Rising Pond	Largemouth Bass tissue	2.0	1.9	0.62	< 0.32	< 0.01	< 0.01	< 0.18	0.12	< 0.20
RP-B-OC	Rising Pond	Largemouth Bass tissue	2.0	1.8	0.60	< 0.32	0.07	< 0.01	< 0.18	< 0.06	< 0.20
RP-C-OC	Rising Pond	Largemouth Bass tissue	2.0	1.7	1.4	< 0.32	0.10	< 0.01	0.23	< 0.06	< 0.20
Average				1.8	0.9	< 0.32					
SD (n-1)					0.43						
%RSD					50						
MS 042400	Matrix Spike-- OCPs	Bluegill	2.0	4.2	130	120	130	130	130	140	130
% Recovery					**76**	**75**	**76**	**76**	**81**	**78**	**72**
MB 042400		Bluegill	2.0	4.4	0.23	< 0.32	2.0	< 0.01	< 0.18	< 0.06	< 0.20
PB 042400 GCR1	Procedure Blank	Na_2SO_4	---	---	0.05	0.35	0.00	0.00	0.18	0.05	0.02
PB 042400 GCR2	Procedure Blank	Na_2SO_4	---	---	0.05	0.06	0.00	0.00	0.01	0.08	0.20
PB 042400 GCR3	Procedure Blank	Na_2SO_4	---	---	0.03	0.10	0.00	0.00	0.03	0.04	0.02
Average					0.04	0.17	0.00	0.00	0.07	0.06	0.08
Standard Deviation					0.01	0.16	0.00	0.00	0.09	0.02	0.10
MDL	Method Detection Limit	= PB Average + 3 (SD)			0.08	0.64	0.00	0.00	0.35	0.12	0.39
mass adjusted MDL	***(average mass = 2 grams)***				**0.04**	**0.32**	**0.01**	**0.01**	**0.18**	**0.06**	**0.20**
Note: Values are rounded to two significant figures.											
**Compound was split into both fractions to varying degree.*											
***DDE values determined from PGC1.*											

Table 5. Organochlorine Pesticides in Largemouth Bass Tissue (ng/g)--Concentrations and Quality Control Data

Sample ID	Site ID	Heptachlor Epoxide	Dacthal	Dieldrin	Endrin	Oxychlordane	cis-Chlordane	trans-Chlordane*	cis-Nonachlor	trans-Nonachlor*
MP3-A-OC	Three Mile Pond	< 0.16	0.51	0.60	< 0.01	0.22	0.24	0.10	< 0.42	1.4
MP3-B-OC	Three Mile Pond	< 0.16	< 0.41	0.69	< 0.01	0.33	0.45	0.44	< 0.42	1.9
MP3-C-OC	Three Mile Pond	5.4	< 0.41	0.63	< 0.01	0.77	0.16	0.43	< 0.42	1.3
Average				0.64		0.44	0.28	0.33		1.5
SD (n-1)				0.04		0.29	0.15	0.19		0.34
%RSD				7		66	54	59		22
WP-A-OC	Woods Pond	0.37	0.55	2.4	< 0.01	1.9	3.3	0.46	3.7	14
WP-B-OC	Woods Pond	0.61	< 0.41	2.2	< 0.01	1.7	1.6	0.24	2.7	1.3
WP-C-OC	Woods Pond	0.88	< 0.41	2.3	< 0.01	1.7	1.7	0.35	2.2	53
Average		0.62		2.3		1.8	2.2	0.35	2.9	23
SD (n-1)		0.25		0.10		0.09	0.94	0.11	0.78	27
%RSD		41		4		5	43	31	27	119
DRP-A-OC	Deep Reach Pond	1.5	0.89	2.1	< 0.01	1.9	2.7	0.49	3.2	25
DRP-B-OC	Deep Reach Pond	1.2	2.6	1.8	< 0.01	0.75	1.5	< 0.05	2.1	0.60
DRP-C-OC	Deep Reach Pond	0.65	< 0.41	0.90	< 0.01	0.16	0.73	0.33	1.9	1.0
Average		1.1		1.6		0.9	1.6	0.41	2.4	8.9
SD (n-1)		0.42		0.63		0.89	0.98	0.12	0.71	14
%RSD		38		39		95	60	28	30	158
RP-A-OC	Rising Pond	0.75	< 0.41	1.7	< 0.01	2.1	1.1	0.36	3.3	10
RP-B-OC	Rising Pond	< 0.16	< 0.41	2.2	< 0.01	< 0.01	2.2	0.39	3.4	12
RP-C-OC	Rising Pond	2.2	< 0.41	1.8	< 0.01	2.0	1.0	0.15	3.2	7.9
Average		1.5		1.9		2.0	1.4	0.30	3.3	10
SD (n-1)		0.99		0.26		0.03	0.68	0.13	0.10	2
%RSD		68		14		2	48	42	3	22
MS 042400	Matrix Spike-- OCPs	130	140	140	120	130	120	100	140	150
% Recovery		**76**	**93**	**82**	**71**	**87**	**75**	**59**	**88**	**88**
MB 042400		0.39	0.88	2.4	< 0.01	0.87	0.16	< 0.05	1.3	3.8
PB 042400 GCR1	Procedure Blank	0.23	0.46	0.04	0.00	0.00	0.10	0.00	0.41	0.15
PB 042400 GCR2	Procedure Blank	0.23	0.13	0.04	0.00	0.00	0.04	0.00	0.33	0.36
PB 042400 GCR3	Procedure Blank	0.27	0.13	0.05	0.00	0.00	0.04	0.05	0.04	0.27
Average		0.24	0.24	0.04	0.00	0.00	0.06	0.02	0.26	0.26
Standard Deviation		0.02	0.19	0.01	0.00	0.00	0.03	0.03	0.19	0.11
MDL	Method Detection Limit	0.31	0.8	0.06	0.00	0.00	0.16	0.10	0.84	0.58
mass adjusted MDL	***(average mass = 2 grams)***	**0.16**	**0.41**	**0.03**	**0.01**	**0.01**	**0.08**	**0.05**	**0.42**	**0.29**
Note: Values are rounded to two significant figures.										
**Compound was split into both fractions to varying degree.*										
***DDE values determined from PGC1.*										

Table 5. Organochlorine Pesticides in Largemouth Bass Tissue (ng/g)--Concentrations and Quality Control Data

Sample ID	Site ID	o,p'-DDE*	o,p'-DDD	o,p'-DDT*	p,p'-DDE**	p,p'-DDD	p,p'-DDT*	Endosulfan 1	Endosulfan II	Endosulfate	Methoxychlor	Mirex	
MP3-A-OC	Three Mile Pond	< 0.01	< 0.37	< 0.01	44	3.8	< 0.51	< 0.01	< 0.01	< 0.01	< 0.01	0.05	ng/g
MP3-B-OC	Three Mile Pond	< 0.01	< 0.37	< 0.01	44	3.7	< 0.51	< 0.01	< 0.01	< 0.01	< 0.01	0.04	ng/g
MP3-C-OC	Three Mile Pond	< 0.01	< 0.37	< 0.01	45	2.7	< 0.51	< 0.01	< 0.01	< 0.01	< 0.01	0.04	ng/g
Average					44	3.4						0.04	ng/g
SD (n-1)					0.8	0.59						0.01	
%RSD					2	17						13	
WP-A-OC	Woods Pond	0.27	6.0	0.33	91	26	3.4	< 0.01	< 0.01	< 0.01	< 0.01	0.49	ng/g
WP-B-OC	Woods Pond	0.09	5.3	< 0.01	100	24	1.2	< 0.01	< 0.01	< 0.01	< 0.01	0.37	ng/g
WP-C-OC	Woods Pond	< 0.01	3.4	< 0.01	88	22	1.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	ng/g
Average			4.9		90	24	2.0					0.43	ng/g
SD (n-1)			1.4		7	2.1	1.2					0.08	
%RSD			28		7	9	57					19	
DRP-A-OC	Deep Reach Pond	0.13	5.8	0.45	130	35	4.4	< 0.01	< 0.01	< 0.01	< 0.01	0.67	ng/g
DRP-B-OC	Deep Reach Pond	< 0.01	4.5	< 0.01	130	22	4.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	ng/g
DRP-C-OC	Deep Reach Pond	< 0.01	1.0	< 0.01	130	10	5.4	< 0.01	< 0.01	73	< 0.01	< 0.02	ng/g
Average			3.8		130	22	4.6						
SD (n-1)			2		0.0	13	0.7						
%RSD			66		0.0	56	15						
RP-A-OC	Rising Pond	< 0.01	3.0	< 0.01	83	15	2.5	< 0.01	< 0.01	< 0.01	< 0.01	0.25	ng/g
RP-B-OC	Rising Pond	< 0.01	< 0.18	< 0.01	78	14	4.1	< 0.01	< 0.01	< 0.01	< 0.01	0.36	ng/g
RP-C-OC	Rising Pond	< 0.01	2.4	< 0.01	86	14	1.4	< 0.01	< 0.01	< 0.01	< 0.01	0.29	ng/g
Average			2.7		80	14	2.7					0.30	ng/g
SD (n-1)			0.4		4	0.36	1.4					0.05	
%RSD			16		5	3	50					18	
MS 042400	Matrix Spike-- OCPs	21	140	29	160	130	76	130	130	140	140	140	ng
% Recovery		**12**	**82**	**17**	**94**	**72**	**40**	**76**	**76**	**78**	**70**	**78**	%
MB 042400		< 0.01	< 0.18	< 0.01	8.1	< 1.2	< 0.51	< 0.01	< 0.01	< 0.01	< 0.01	0.04	ng/g
PB 042400 GCR1	Procedure Blank	0.00	0.22	0.00	4.22	0.05	0.43	0.00	0.00	0.00	0.00	0.02	ng
PB 042400 GCR2	Procedure Blank	0.00	0.13	0.00	4.23	0.15	0.35	0.00	0.00	0.00	0.00	0.00	ng
PB 042400 GCR3	Procedure Blank	0.00	0.07	0.00	4.20	1.19	0.69	0.00	0.00	0.00	0.00	0.01	ng
Average		0.00	0.14	0.00	4.22	0.46	0.49	0.00	0.00	0.00	0.00	0.01	ng
Standard Deviation		0.00	0.08	0.00	0.02	0.63	0.18	0.00	0.00	0.00	0.00	0.01	ng
MDL	Method Detection Limit	0.00	0.37	0.00	4.3	2.36	1.0	0.00	0.00	0.00	0.00	0.04	ng
mass adjusted MDL	***(average mass = 2 grams)***	**0.01**	**0.18**	**0.01**	**2.1**	**1.2**	**0.51**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	ng/g
Note: Values are rounded to two significant figures.													
**Compound was split into both fractions to varying degree.*													
***DDE values determined from PGC1.*													

Table 6. Procedural Standard Recoveries--Organochlorine Pesticides in LMB Tissue

Sample ID	Field ID	Sample Type	TCMX % Recovery	029 % Recovery	155 % Recovery	204 % Recovery	DBC % Recovery
PB 042400*	Procedural Blank	Na_2SO_4	76	84	74	90	95
MB 042400	Matrix Blank	Bluegill	85	88	80	92	86
MS 042400	Matrix Spike OCPs	Bluegill	85	89	87	90	73
MP3-A-OC	Three Mile Pond	Largemouth Bass	89	89	77	88	78
MP3-B-OC	Three Mile Pond	Largemouth Bass	76	80	70	80	73
MP3-C-OC	Three Mile Pond	Largemouth Bass	79	83	73	85	83
WP-A-OC	Woods Pond	Largemouth Bass	74	77	97	62	70
WP-B-OC	Woods Pond	Largemouth Bass	76	76	96	71	75
WP-C-OC	Woods Pond	Largemouth Bass	74	77	85	77	81
DRP-A-OC*	Deep Reach Pond	Largemouth Bass	22	25	37	30	22
DRP-B-OC*	Deep Reach Pond	Largemouth Bass	4	4	6	3	7
DRP-C-OC*	Deep Reach Pond	Largemouth Bass	2	3	5	3	12
RP-A-OC	Rising Pond	Largemouth Bass	85	88	72	120	90
RP-B-OC	Rising Pond	Largemouth Bass	73	78	65	75	75
RP-C-OC	Rising Pond	Largemouth Bass	76	78	65	97	78
Average			65	68	66	71	67
Standard Deviation			30	30	28	34	28
* These values are below acceptable recovery.							

Table 7. Organochlorine Pesticides in Largemouth Bass Ovaries (ng/g) Plus Quality Control Data

Sample ID	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	HCB	PCA	alpha-BHC	beta-BHC	Lindane	delta-BHC	Heptachlor	Heptachlor Epoxide	Dacthal	Dieldrin
DRP-COMP*	**Deep Reach Pond Composite**	**LMB Ovaries Composite**	**2.0**	**9.5**	**8.1**	**0.51**	**< 0.03**	**< 0.01**	**0.39**	**< 0.01**	**< 0.06**	**1.6**	**< 0.89**	**8.9**
DRP-27-7	Deep Reach Pond-27-7	Largemouth Bass Ovaries	2.0	7.0	5.9	0.36	< 0.03	< 0.01	0.28	< 0.01	< 0.06	< 0.01	< 0.89	8.0
DRP-31-1	Deep Reach Pond-31-1	Largemouth Bass Ovaries	2.0	16	14	< 0.05	< 0.03	< 0.01	0.60	< 0.01	< 0.06	< 0.01	< 0.89	15
DRP-31-2	Deep Reach Pond-31-2	Largemouth Bass Ovaries	2.0	9.4	11	0.11	< 0.03	< 0.01	0.38	< 0.01	< 0.06	2.9	< 0.89	8.7
Average				11	10				0.42					11
SD(n-1)				4.5	3.9				0.16					3.9
%RSD				42	39				39					37
WP-COMP	**Woods Pond Composite**	**LMB Ovaries Composite**	**2.0**	**8.1**	**7.0**	**0.59**	**< 0.03**	**< 0.01**	**0.41**	**< 0.01**	**< 0.06**	**0.83**	**< 0.89**	**6.8**
WP-35-6	Woods Pond-35-6	Largemouth Bass Ovaries	2.0	7.7	5.7	0.59	< 0.03	< 0.01	0.52	< 0.01	< 0.06	1.1	< 0.89	9.6
WP-35-8	Woods Pond-35-8	Largemouth Bass Ovaries	2.0	11	11	0.69	< 0.03	< 0.01	0.45	< 0.01	< 0.06	2.5	< 0.89	15
WP-35-9	Woods Pond-35-9	Largemouth Bass Ovaries	2.0	6.8	4.2	0.47	< 0.03	< 0.01	0.34	< 0.01	< 0.06	< 0.01	< 0.89	6.4
Average				8.6	7.0	0.58			0.44					10
SD(n-1)				2.3	3.6	0.11			0.09					4.1
%RSD				27	51	19			21					40
RP-COMP	**Rising Pond Composite**	**LMB Ovaries Composite**	**2.0**	**8.8**	**1.9**	**< 0.05**	**< 0.03**	**< 0.01**	**0.34**	**< 0.01**	**< 0.06**	**< 0.01**	**< 0.89**	**8.4**
RP-25-12	Rising Pond-25-12	Largemouth Bass Ovaries	2.0	9.0	3.2	0.05	< 0.03	< 0.01	0.40	< 0.01	< 0.06	2.2	< 0.89	8.6
RP-30-7	Rising Pond-30-7	Largemouth Bass Ovaries	2.0	9.5	1.1	0.20	< 0.03	< 0.01	0.39	< 0.01	< 0.06	1.0	< 0.89	6.4
RP-30-9	Rising Pond-30-9	Largemouth Bass Ovaries	2.0	13	5.4	0.12	< 0.03	< 0.01	0.55	< 0.01	< 0.06	1.8	< 0.89	15
Average				10	3.2	0.13			0.45					10
SD(n-1)				1.9	2.2	0.08			0.09					4.7
%RSD				19	67	60			19					47
3MP-COMP	**Three Mile Pond Composite**	**LMB Ovaries Composite**	**2.0**	**9.1**	**0.65**	**< 0.05**	**< 0.03**	**< 0.01**	**0.31**	**< 0.01**	**< 0.06**	**1.2**	**< 0.89**	**4.0**
3MP-26-12	Three Mile Pond-26-12	Largemouth Bass Ovaries	2.0	11	0.52	0.79	< 0.03	< 0.01	0.42	< 0.01	< 0.06	< 0.01	< 0.89	3.6
3MP-28-5	Three Mile Pond-28-5	Largemouth Bass Ovaries	2.0	12	0.63	0.43	< 0.03	< 0.01	0.58	< 0.01	< 0.06	0.56	< 0.89	2.7
3MP-28-13	Three Mile Pond-28-13	Largemouth Bass Ovaries	2.0	6.8	0.39	< 0.05	< 0.03	< 0.01	0.22	< 0.01	< 0.06	< 0.01	< 0.89	3.1
Average				10	0.51	0.61			0.41					3.1
SD(n-1)				2.8	0.12	0.25			0.18					0.43
%RSD				28	24	41			45					14
DRP-COMP-A	Deep Reach Pond Composite	Largemouth Bass Ovaries	2.0	9.3	7.9	0.48	< 0.03	< 0.01	0.33	< 0.01	< 0.06	< 0.01	< 0.89	7.2
DRP-COMP-B	Deep Reach Pond Composite	Largemouth Bass Ovaries	2.0	9.7	8.5	0.45	< 0.03	< 0.01	< 0.19	< 0.01	< 0.06	1.4	< 0.89	9.7
DRP-COMP-C	Deep Reach Pond Composite	Largemouth Bass Ovaries	2.0	9.7	8.0	0.60	< 0.03	< 0.01	0.44	< 0.01	< 0.06	1.9	< 0.89	9.8
Average				9.5	8.1	0.51			0.4			1.6		8.9
SD (n-1)				0.23	0.32	0.08			0.08			0.31		1.5
%RSD				2	4	16			20			19		16
MS 021500 #1 OC	Matrix Spike-- OCPs	Bluegill	2.0	4.3	130	130	140	140	140	150	140	140	120	150
% Recovery					**76**	**81**	**82**	**82**	**88**	**83**	**78**	**82**	**80**	**88**
MB 021500 #1	Matrix Blank	Bluegill	2.0	4.0	0.16	0.06	< 0.03	< 0.01	< 0.20	< 0.01	< 0.06	< 0.01	< 0.89	3.5
MB 021500 #2	Matrix Blank	Bluegill	2.0	4.2	0.16	0.07	< 0.03	< 0.01	< 0.20	< 0.01	< 0.06	< 0.01	< 0.89	3.6
PB 021500 #1 GCR1	Procedure Blank	Na_2SO_4	---	---	0.14	0.08	0.00	0.00	0.22	0.00	0.05	0.00	0.83	0.00
PB 021500 #1 GCR2	Procedure Blank	Na_2SO_4	---	---	0.14	0.08	0.00	0.00	0.27	0.00	0.05	0.00	0.86	0.00
PB 021500 #1 GCR3	Procedure Blank	Na_2SO_4	---	---	0.14	0.08	0.00	0.00	0.28	0.00	0.05	0.00	0.82	0.00
PB 021500 #2 GCR1	Procedure Blank	Na_2SO_4	---	---	0.06	0.06	0.03	0.00	0.17	0.00	0.08	0.00	0.00	0.00
PB 021500 #2 GCR2	Procedure Blank	Na_2SO_4	---	---	0.07	0.08	0.02	0.00	0.15	0.00	0.08	0.00	0.00	0.00
PB 021500 #2 GCR3	Procedure Blank	Na_2SO_4	---	---	0.06	0.07	0.03	0.00	0.16	0.00	0.09	0.00	0.00	0.00
Average					0.10	0.08	0.01	0.00	0.21	0.00	0.07	0.00	0.42	0.00
Standard Deviation					0.04	0.01	0.01	0.00	0.06	0.00	0.02	0.00	0.46	0.00
MDL	Method Detection Limit = PB Average + 3 (SD)				0.22	0.10	0.05	0.00	0.38	0.00	0.12	0.00	1.8	0.00
mass adjusted MDL	***(average mass = 2 grams)***				**0.11**	**0.05**	**0.03**	**0.01**	**0.19**	**0.01**	**0.06**	**0.01**	**0.89**	**0.01**
***p,p-DDE from DB-17 PCB analysis.*														

Table 7. Organochlorine Pesticides in Largemouth Bass Ovaries (ng/g) Plus Quality Control Data

Sample ID	Field ID	Endrin	Oxychlordane	cis-Chlordane	trans-Chlordane	cis-Nonachlor	trans-Nonachlor	o,p'-DDE	o,p'-DDD	o,p'-DDT	p,p'-DDE**	p,p'-DDD	p,p'-DDT	Endosulfan 1
DRP-COMP*	**Deep Reach Pond Composite**	**< 0.01**	**7.3**	**7.1**	**2.3**	**< 0.01**	**4.3**	**< 0.01**	**14**	**< 0.08**	**410**	**110**	**< 3.2**	**< 0.01**
DRP-27-7	Deep Reach Pond-27-7	< 0.01	4.9	6.0	< 0.01	< 0.01	2.3	< 0.01	< 0.01	< 0.08	110	50	< 3.2	< 0.01
DRP-31-1	Deep Reach Pond-31-1	< 0.01	13	17	7.7	< 0.01	7.0	< 0.01	< 0.01	< 0.08	900	170	< 3.2	< 0.01
DRP-31-2	Deep Reach Pond-31-2	< 0.01	7.4	6.3	< 0.01	< 0.01	2.6	< 0.01	12	< 0.08	340	90	< 3.2	< 0.01
Average			9	10			4.0				450	100		
SD(n-1)			4.3	6.5			2.7				410	61		
%RSD			51	65			67				91	61		
WP-COMP	**Woods Pond Composite**	**< 0.01**	**8.4**	**5.6**	**2.0**	**< 0.01**	**5.1**	**< 0.01**	**11**	**< 0.08**	**650**	**91**	**< 3.2**	**< 0.01**
WP-35-6	Woods Pond-35-6	< 0.01	4.9	4.2	1.7	< 0.01	2.6	< 0.01	8.1	< 0.08	160	50	< 3.2	< 0.01
WP-35-8	Woods Pond-35-8	< 0.01	15	16	4.5	< 0.01	12	< 0.01	20	< 0.08	860	190	< 3.2	< 0.01
WP-35-9	Woods Pond-35-9	< 0.01	8.5	3.8	< 0.01	< 0.01	5.5	< 0.01	< 0.01	< 0.08	200	36	< 3.2	< 0.01
Average			10	7.8			6.8				410	92		
SD(n-1)			5.2	6.7			5.0				390	85		
%RSD			55	85			73				95	93		
RP-COMP	**Rising Pond Composite**	**< 0.01**	**7.4**	**5.2**	**< 0.01**	**< 0.01**	**5.6**	**< 0.01**	**< 0.01**	**< 0.08**	**320**	**57**	**< 3.2**	**< 0.01**
RP-25-12	Rising Pond-25-12	< 0.01	17	5.9	1.6	< 0.01	6.7	< 0.01	9.2	< 0.08	410	62	< 3.2	< 0.01
RP-30-7	Rising Pond-30-7	< 0.01	4.2	2.8	< 0.01	< 0.01	3.6	< 0.01	5.7	< 0.08	280	50	< 3.2	< 0.01
RP-30-9	Rising Pond-30-9	< 0.01	15	12	3.1	< 0.01	9.6	< 0.01	17	< 0.08	800	100	< 3.2	< 0.01
Average			12	6.9			6.6		11		500	71		
SD(n-1)			6.9	4.7			3.0		5.7		270	26		
%RSD			57	68			45		54		54	37		
3MP-COMP	**Three Mile Pond Composite**	**< 0.01**	**2.3**	**0.25**	**< 0.01**	**< 0.01**	**1.6**	**< 0.01**	**0.60**	**< 0.08**	**210**	**15**	**< 3.2**	**< 0.01**
3MP-26-12	Three Mile Pond-26-12	< 0.01	1.1	0.82	< 0.01	< 0.01	0.80	0.33	1.0	< 0.08	200	22	< 3.2	< 0.01
3MP-28-5	Three Mile Pond-28-5	< 0.01	1.4	0.68	< 0.01	< 0.01	0.75	0.55	1.2	< 0.08	220	20	< 3.2	< 0.01
3MP-28-13	Three Mile Pond-28-13	< 0.01	0.52	0.57	< 0.01	< 0.01	0.59	0.45	< 0.01	< 0.08	240	15	< 3.2	< 0.01
Average			1.0	0.69			0.71	0.44	1.1		220	19		
SD(n-1)			0.47	0.13			0.11	0.11	0.15		20	3.6		
%RSD			46	18			15	25	13		9	19		
DRP-COMP-A	Deep Reach Pond Composite	< 0.01	8.2	6.5	2.5	< 0.01	4.0	< 0.01	13	< 0.08	430	100	< 3.2	< 0.01
DRP-COMP-B	Deep Reach Pond Composite	< 0.01	6.8	7.8	1.3	< 0.01	5.3	< 0.01	15	< 0.08	410	110	< 3.2	< 0.01
DRP-COMP-C	Deep Reach Pond Composite	< 0.01	7.0	7.0	3.1	< 0.01	3.6	< 0.01	14	< 0.08	400	110	< 3.2	< 0.01
Average			7.3	7.1	2.3		4.3		14		410	110		
SD (n-1)			0.76	0.65	0.90		0.91		1.1		15	5.8		
%RSD			10	9	40		21		8		4	5		
MS 021500 #1 OC	Matrix Spike-- OCPs	70	140	120	110	140	160	150	150	160	160	160	170	140
% Recovery		**41**	**93**	**75**	**65**	**88**	**94**	**88**	**88**	**94**	**94**	**89**	**89**	**82**
MB 021500 #1	Matrix Blank	< 0.01	0.90	1.1	< 0.01	< 0.01	3.9	< 0.01	< 0.01	0.32	3.9	< 0.25	< 3.2	< 0.01
MB 021500 #2	Matrix Blank	< 0.01	1.1	1.0	< 0.01	< 0.01	4.2	< 0.01	< 0.01	0.26	3.8	< 0.25	< 3.2	< 0.01
PB 021500 #1 GCR1	Procedure Blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	1.3	0.26	4.3	0.00
PB 021500 #1 GCR2	Procedure Blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	1.3	0.31	4.5	0.00
PB 021500 #1 GCR3	Procedure Blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	1.3	0.29	4.6	0.00
PB 021500 #2 GCR1	Procedure Blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	1.2	0.38	5.4	0.00
PB 021500 #2 GCR2	Procedure Blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	1.2	0.34	5.4	0.00
PB 021500 #2 GCR3	Procedure Blank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	1.2	0.41	5.3	0.00
Average		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	1.3	0.33	4.9	0.00
Standard Deviation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.06	0.52	0.00
MDL	Method Detection Limit = PB Average + 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	1.4	0.50	6.5	0.00
mass adjusted MDL	***(average mass = 2 grams)***	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.08**	**0.70**	**0.25**	**3.2**	**0.01**

***p,p-DDE from DB-17 PCB analysis.*

Table 7. Organochlorine Pesticides in Largemouth Bass Ovaries (ng/g) Plus Quality Control Data

Sample ID	Field ID	Endosulfan II	Endosulfate	Methoxychlor	Mirex	
DRP-COMP*	**Deep Reach Pond Composite**	**< 0.01**	**< 0.01**	**< 0.01**	**1.3**	**ng/g**
DRP-27-7	Deep Reach Pond-27-7	< 0.01	< 0.01	< 0.01	1.6	ng/g
DRP-31-1	Deep Reach Pond-31-1	< 0.01	< 0.01	< 0.01	1.3	ng/g
DRP-31-2	Deep Reach Pond-31-2	< 0.01	< 0.01	< 0.01	1.1	ng/g
Average					1.3	
SD(n-1)					0.27	
%RSD					20	
WP-COMP	**Woods Pond Composite**	**< 0.01**	**< 0.01**	**< 0.01**	**3.8**	**ng/g**
WP-35-6	Woods Pond-35-6	< 0.01	< 0.01	< 0.01	1.1	ng/g
WP-35-8	Woods Pond-35-8	< 0.01	< 0.01	< 0.01	2.7	ng/g
WP-35-9	Woods Pond-35-9	< 0.01	< 0.01	< 0.01	1.0	ng/g
Average					1.6	
SD(n-1)					1.0	
%RSD					63	
RP-COMP	**Rising Pond Composite**	**< 0.01**	**< 0.01**	**< 0.01**	**1.1**	**ng/g**
RP-25-12	Rising Pond-25-12	< 0.01	< 0.01	< 0.01	1.2	ng/g
RP-30-7	Rising Pond-30-7	< 0.01	< 0.01	< 0.01	1.3	ng/g
RP-30-9	Rising Pond-30-9	< 0.01	< 0.01	< 0.01	2.4	ng/g
Average					1.6	
SD(n-1)					0.66	
%RSD					41	
3MP-COMP	**Three Mile Pond Composite**	**< 0.01**	**< 0.01**	**< 0.01**	**0.31**	**ng/g**
3MP-26-12	Three Mile Pond-26-12	< 0.01	< 0.01	< 0.01	0.20	ng/g
3MP-28-5	Three Mile Pond-28-5	< 0.01	< 0.01	< 0.01	0.23	ng/g
3MP-28-13	Three Mile Pond-28-13	< 0.01	< 0.01	< 0.01	0.34	ng/g
Average					0.26	
SD(n-1)					0.07	
%RSD					28	
DRP-COMP-A	Deep Reach Pond Composite	< 0.01	< 0.01	< 0.01	1.3	ng/g
DRP-COMP-B	Deep Reach Pond Composite	< 0.01	< 0.01	< 0.01	1.4	ng/g
DRP-COMP-C	Deep Reach Pond Composite	< 0.01	< 0.01	< 0.01	1.1	ng/g
Average					1.3	ng/g
SD (n-1)					0.13	
%RSD					11	
MS 021500 #1 OC	Matrix Spike-- OCPs	130	150	180	150	ng
% Recovery		**76**	**83**	**90**	**83**	%
MB 021500 #1	Matrix Blank	< 0.01	< 0.01	< 0.01	< 0.03	ng/g
MB 021500 #2	Matrix Blank	< 0.01	< 0.01	< 0.01	< 0.03	ng/g
PB 021500 #1 GCR1	Procedure Blank	0.00	0.00	0.00	0.01	ng
PB 021500 #1 GCR2	Procedure Blank	0.00	0.00	0.00	0.01	ng
PB 021500 #1 GCR3	Procedure Blank	0.00	0.00	0.00	0.01	ng
PB 021500 #2 GCR1	Procedure Blank	0.00	0.00	0.00	0.03	ng
PB 021500 #2 GCR2	Procedure Blank	0.00	0.00	0.00	0.04	ng
PB 021500 #2 GCR3	Procedure Blank	0.00	0.00	0.00	0.03	ng
Average		0.00	0.00	0.00	0.02	ng
Standard Deviation		0.00	0.00	0.00	0.01	ng
MDL	Method Detection Limit = PB Average + 3	0.00	0.00	0.00	0.05	ng
mass adjusted MDL	***(average mass = 2 grams)***	**0.01**	**0.01**	**0.01**	**0.03**	ng/g
***p,p-DDE from DB-17 PCB analysis.*						

Table 8. Procedural Standard Recoveries in Ovaries--Organochlorine Pesticides

Sample ID	Field ID	Sample Type	TCMX % Recovery	029 % Recovery	DBC % Recovery
PB 021500 #1 GCR1	Procedure Blank	Na_2SO_4	67	73	92
PB 021500 #1 GCR2	Procedure Blank	Na_2SO_4	67	73	96
PB 021500 #1 GCR3	Procedure Blank	Na_2SO_4	62	73	96
PB 021500 #2 GCR1	Procedure Blank	Na_2SO_4	62	74	92
PB 021500 #2 GCR2	Procedure Blank	Na_2SO_4	62	74	92
PB 021500 #2 GCR3	Procedure Blank	Na_2SO_4	62	74	92
MB 021500 #1	Matrix Blank	Bluegill	73	80	96
MB 021500 #2	Matrix Blank	Bluegill	75	85	96
MS 021500 #1 OC	Matrix Spike OCPs	Bluegill	76	86	100
RP-COMP	Rising Pond Composite	Largemouth Bass Ovaries	81	88	110
RP-25-12	Rising Pond-25-12	Largemouth Bass Ovaries	76	83	100
RP-30-7	Rising Pond-30-7	Largemouth Bass Ovaries	80	85	100
RP-30-9	Rising Pond-30-9	Largemouth Bass Ovaries	86	91	100
DRP-COMP-A	Deep Reach Pond Composite	Largemouth Bass Ovaries	81	95	96
DRP-COMP-B	Deep Reach Pond Composite	Largemouth Bass Ovaries	81	103	110
DRP-COMP-C	Deep Reach Pond Composite	Largemouth Bass Ovaries	80	99	110
DRP-27-7	Deep Reach Pond-27-7	Largemouth Bass Ovaries	76	86	100
DRP-31-1	Deep Reach Pond-31-1	Largemouth Bass Ovaries	81	87	110
DRP-31-2	Deep Reach Pond-31-2	Largemouth Bass Ovaries	85	103	100
WP-COMP	Woods Pond Composite	Largemouth Bass Ovaries	83	90	100
WP-35-6	Woods Pond-35-6	Largemouth Bass Ovaries	81	86	100
WP-35-8	Woods Pond-35-8	Largemouth Bass Ovaries	84	90	110
WP-35-9	Woods Pond-35-9	Largemouth Bass Ovaries	79	84	100
3MP-COMP	Three Mile Pond Composite	Largemouth Bass Ovaries	74	81	100
3MP-26-12	Three Mile Pond-26-12	Largemouth Bass Ovaries	77	88	100
3MP-28-5	Three Mile Pond-28-5	Largemouth Bass Ovaries	77	85	100
3MP-28-13	Three Mile Pond-28-13	Largemouth Bass Ovaries	85	91	100
Average			76	85	100
Standard Deviation			8	9	6
Note: Because of high recoveries of 155 and 204 due to noted interferences 029 was used to correct pp-DDE concentrations.					

Table 9. Non-*o*-Chloro-Substituted PCBs (pg/g) in Largemouth Bass Tissue Composites from the Housatonic River

1/24/2001, Revised 3/27/2001
N45-housatonic-fish.xls

GC/MS Set: N45PCB
Dates: Dec. 14-16, 2000

NFCR Number:	Field Number:	Sample Description:	GC/MS Run No.	Non-o-Polychlorinated Biphenyls							
				Tetra:		Penta:		Hexa:			
				3,4,4',5-TCB (81)		3,3',4,4'-TCB (77)		3,3',4,4',5-PeCB (126)		3,3',4,4',5,5'-HxCB (169)	
	3MP-B	3 Mile Pond, 3MP-B, 10.06 g	45-10	2.2 C-IF		52		15		2.1 LQ	
	3MP-C	3 Mile Pond, 3MP-C, 10.07 g	45-11	1.9 C-IF		32		13		1.8	
	3MP-D	3 Mile Pond, 3MP-D, 10.02 g	45-12	0.6 C-IF,LQ		27		12		1.6	
			Mean/% CV:	**1.6**	**54%**	**37**	**36%**	**13**	**11%**	**1.8**	**14%**
	RP-A	Rising Pond, RP-A, 10.0 g	45-17	53 C-IF		1,800		3,100		540	
	RP-B	Rising Pond, RP-B, 10.08 g	45-19	74 C-IF		2,200		3,200		570	
	RP-C	Rising Pond, RP-30-9, 10.02 g	45-20	66		2,000		3,300		600	
			Mean/% CV:	**64**	**16%**	**2,000**	**10%**	**3,200**	**3%**	**570**	**5%**
	WP-A	Woods Pond, WP-A, 9.98 g	45-14	350		10,000		10,000		1,600	
	WP-B	Woods Pond, WP-B, 10.11g	45-15	290		7,200		8,400		1,300	
	WP-C	Woods Pond, WP-C, 10.01 g	45-16	210 C-IF		6,200		8,200		1,300	
			Mean/% CV:	**283**	**25%**	**7,800**	**25%**	**8,867**	**11%**	**1,400**	**12%**
	DRP-A	Deep Reach Pond, DRP-A, 10.01 g	45-21	480		11,000		12,000		2,000	
	DRP-B	Deep Reach Pond, DRP-B, 10.01 g	45-22	300 C-IF		6,900		8,100		1,300	
	DRP-C	Deep Reach Pond, DRP-C, 9.98 g	45-24	220		4,600		5,600		1,000	
			Mean/% CV:	**333**	**40%**	**7,500**	**43%**	**8,567**	**38%**	**1,433**	**36%**

Table 9. Non-*o*-Chloro-Substituted PCBs (pg/g) in Largemouth Bass Tissue Composites from the Housatonic River

1/24/2001, Revised 3/27/2001
N45-housatonic-fish.xls

GC/MS Set: N45PCB
Dates: Dec. 14-16, 2000

NFCR Number:	Field Number:	Sample Description:	GC/MS Run No.	Non-o-Polychlorinated Biphenyls: Tetra: 3,4,4',5-TCB (81)	Tetra: 3,3',4,4'-TCB (77)	Penta: 3,3',4,4',5-PeCB (126)	Hexa: 3,3',4,4',5,5'-HxCB (169)
		Quality Control Samples:					
Proc. Blk #1, 4/10/2000		Procedure Blank, 4/10/2000 **(10 g sample basis)**	45-4	**0.4 C-IF,LQ**	**7.1**	**4.1**	**0.6 LQ**
Bluegill Blk #1, 4/10/2000		Bluegill Matrix Blank #1, 4/10/2000, 10.06 g	45-5	1.0 C-IF	48	8.2	1.1 LQ
Matrix Spike 4/10/2000		Bluegill Matrix Spike, 4/10/2000, 9.97 g (Spiked with 10 µg Aroclors or 1µg/g)	45-7	99	1,700	130	7.6
Pos. Ctrl 4/10/2000		Positive Control Saginaw Carp, 4/10/2000, 10.07g	45-9	590	4,100	1,100	86

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Inaccurate Ion Ratio (Outside +/- 15% Tolerances)
ND Not Detected at Specified Detection Limit
C-IF Corrected Value for PCB 81; Interference from nearly co-eluting PCB #87 was subtracted

Table 10. Percent Recoveries of ^{13}C-Non-*o*-Chloro-Substituted PCBs in Largemouth Bass Tissue Composites from the Housatonic River

24-Jan-01 N45-housatonic-fish.xls		GC/MS Set: N45PCB Dates: Dec. 14-16, 2000		^{13}C-Non-*o*-Polychlorinated Biphenyls			
				Tetra:		Penta:	Hexa:
NFCR Number:	Submitter Number:	Sample Description:	GC/MS Run No.	3,4,4',5-TCB (^{13}C-PCB #81)	3,3',4,4'-TCB (^{13}C-PCB #77)	3,3',4,4',5-PeCB (^{13}C-PCB #126)	3,3',4,4',5,5'-HxCB (^{13}C-PCB #169)
	3MP-B	3 Mile Pond, 3MP-B, 10.06 g	45-10	77	76	78	85
	3MP-C	3 Mile Pond, 3MP-C, 10.07 g	45-11	78	77	75	78
	3MP-D	3 Mile Pond, 3MP-D, 10.02 g	45-12	71	76	85	89
	RP-A	Rising Pond, RP-A, 10.0 g	45-17	12	55	77	80
	RP-B	Rising Pond, RP-B, 10.08 g	45-19	18	69	77	79
	RP-C	Rising Pond, RP-30-9, 10.02 g	45-20	64	74	79	88
	WP-A	Woods Pond, WP-A, 9.98 g	45-14	82	93	95	93
	WP-B	Woods Pond, WP-B, 10.11g	45-15	76	86	95	91
	WP-C	Woods Pond, WP-C, 10.01 g	45-16	73	75	80	81
	DRP-A	Deep Reach Pond, DRP-A, 10.01 g	45-21	46	47	46	48
	DRP-B	Deep Reach Pond, DRP-B, 10.01 g	45-22	88	90	95	94
	DRP-C	Deep Reach Pond, DRP-C, 9.98 g	45-24	60	80	106	112
		Quality Control Samples:					
Proc. Blk #1, 4/10/2000		Procedure Blank, 4/10/2000	45-4	77	80	87	87
Bluegill Blk #1, 4/10/2000		Bluegill Matrix Blank #1, 4/10/2000, 10.06 g	45-5	60	64	73	75
Matrix Spike 4/10/2000		Bluegill Matrix Spike, 4/10/2000, 9.97 g (Spiked with 10 µg Aroclors or 1µg/g)	45-7	83	89	87	96
Pos. Ctrl 4/10/2000		Positive Control Saginaw Carp, 4/10/2000, 10.07g	45-9	92	90	93	96

Table 11. Dioxin Toxicity Equivalents (pg/g) from Non-*o*-PCBs in Largemouth Bass Tissue Composites from the Housatonic River

9-Feb-01
N45-housatonic-fish.xls

GC/MS Set: N45PCB
Dates: Dec. 14-16, 2000

NFCR Number:	Field Number:	Sample Description:	**Total of TEQs (for fish):**	Non-o-Polychlorinated Biphenyls: Tetra: 3,4,4',5-TCB (81)		Tetra: 3,3',4,4'-TCB (77)	Penta: 3,3',4,4',5-PeCB (126)	Hexa: 3,3',4,4',5,5'-HxCB (169)	
	3MP-B	3 Mile Pond, 3MP-B, 10.06 g	**0.1**	0.001	C-IF	0.005	0.07	0.0001	LQ
	3MP-C	3 Mile Pond, 3MP-C, 10.07 g	**0.1**	0.001	C-IF	0.003	0.06	0.0001	
	3MP-D	3 Mile Pond, 3MP-D, 10.02 g	**0.1**	0.000	C-IF,LQ	0.003	0.06	0.0001	
	RP-A	Rising Pond, RP-A, 10.0 g	**15.7**	0.026	C-IF	0.180	15.50	0.0270	
	RP-B	Rising Pond, RP-B, 10.08 g	**16.3**	0.037	C-IF	0.220	16.00	0.0285	
	RP-C	Rising Pond, RP-30-9, 10.02 g	**16.8**	0.033		0.200	16.50	0.0300	
	WP-A	Woods Pond, WP-A, 9.98 g	**51.3**	0.175		1.000	50.00	0.0800	
	WP-B	Woods Pond, WP-B, 10.11g	**42.9**	0.145		0.720	42.00	0.0650	
	WP-C	Woods Pond, WP-C, 10.01 g	**41.8**	0.105	C-IF	0.620	41.00	0.0650	
	DRP-A	Deep Reach Pond, DRP-A, 10.01 g	**61.4**	0.240		1.100	60.00	0.1000	
	DRP-B	Deep Reach Pond, DRP-B, 10.01 g	**41.4**	0.150	C-IF	0.690	40.50	0.0650	
	DRP-C	Deep Reach Pond, DRP-C, 9.98 g	**28.6**	0.110		0.460	28.00	0.0500	
		Quality Control Samples:							
Proc. Blk #1, 4/10/2000		Procedure Blank, 4/10/2000 **(10 g sample basis)**	**0.02**	0.000	**C-IF,LQ**	0.001	0.02	0.0000	**LQ**
Bluegill Blk #1, 4/10/2000		Bluegill Matrix Blank #1, 4/10/2000, 10.06 g	**0.05**	0.000	C-IF	0.005	0.04	0.0001	LQ
Matrix Spike 4/10/2000		Bluegill Matrix Spike, 4/10/2000, 9.97 g (Spiked with 10 µg Aroclors or 1µg/g)	**0.9**	0.049		0.170	0.65	0.0004	
Pos. Ctrl 4/10/2000		Positive Control Saginaw Carp, 4/10/2000, 10.07g	**6.2**	0.295		0.410	5.50	0.0043	

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Inaccurate Ion Ratio (Outside +/- 15% Tolerances)
ND Not Detected at Specified Detection Limit
C-IF Corrected Value for PCB 81; Interference from nearly co-eluting PCB #87, contributing from 10 to 70% of the PCB 81 peak, was subtracted

Table 12. Non-*o*-Chloro-Substituted PCBs (pg/g) in Ovaries from Largemouth Bass from the Housatonic River

5-Feb-01
N44-housatonic-ovaries.xls

GC/MS Sets: N44PCB
Dates: Nov. 8-10, 2000

NFCR Number:	Field Number:	Sample Description:	GC/MS Run No.	Non-o-Polychlorinated Biphenyls: Tetra: 3,4,4',5-TCB (81)		3,3',4,4'-TCB (77)	Penta: 3,3',4,4',5-PeCB (126)	Hexa: 3,3',4,4',5,5'-HxCB (169)
	RP-Composite	Rising Pond Composite (11 ovaries), 10.01g aliq.	44-11	200	C-IF	6,200	10,000	1,500
	RP-25-12	Rising Pond, RP-25-12, 33.6g total mass, 10.04g	44-12	280	C-IF	8,900	12,000	1,500
	RP-30-7	Rising Pond, RP-30-7, 27.1g total mass, 10.02g	44-14	140	C-IF	3,900	8,400	1,100
	RP-30-9	Rising Pond, RP-30-9, 36.3g total mass, 10.02g	44-15	520	C-IF	16,000	21,000	3,400
	3MP-Composite	3 Mile Pond-Composite (11 ovaries), 10.01g	44-16	5.5		120	51	9.2
	3MP-26-12	3 Mile Pond, 3MP-26-12, 24g total mass, 10.08g	44-17	7.2		130	42	5.1
	3MP-28-5	3 Mile Pond, 3MP-28-5, 13.3g total mass, 10.0g	44-19	9.2		160	52	7.9
	3MP-28-13	3 Mile Pond, 3MP-28-13, 26.7g total mass, 10.07g	44-20	5.3		110	42	11
	WP-Composite	Woods Pond Composite (11 ovaries), 10.01g	44-21	590	C-IF	15,000	23,000	3,800
	WP-35-6	Woods Pond, WP-35-6, 31.0g total mass, 10.06g	44-22	280	C-IF	9,800	13,000	1,400
	WP-35-8	Woods Pond, WP-35-8, 18.8g total mass, 8.62g	44-24	610	C-IF	17,000	25,000	3,100
	WP-35-9	Woods Pond, WP-35-9, 26.8g total mass, 10.09g	44-25	310	C-IF	11,000	14,000	1,700
	DRP-Compos.-Rep A	Deep Reach Pond Composite (18 ovaries)-A 10.01g	44-26	480	C-IF	10,900	14,700	1,720
	DRP-Compos.-Rep B	Deep Reach Pond Composite (18) - Rep. B 10.01g	44-27	510	C-IF	10,900	14,500	1,750
	DRP-Compos.-Rep C	Deep Reach Pond Composite (18) - Rep. C 10.01g	44-29	500	C-IF	11,500	14,500	1,900
	DRP-27-7	Deep Reach Pond, 26.4g total mass, 10.05g aliq.	44-30	170	C-IF	4,100	10,000	1,900
	DRP-31-1	Deep Reach Pond, 34.8g total mass, 10.04g aliq.	44-31	1,100	C-IF	26,000	31,000	3,300
	DRP-31-2	Deep Reach Pond, 36.6g total mass, 10.05g aliq.	44-32	730	C-IF	17,000	15,000	1,900
		Quality Control Samples:						

Table 12. Non-*o*-Chloro-Substituted PCBs (pg/g) in Ovaries from Largemouth Bass from the Housatonic River

5-Feb-01 N44-housatonic-ovaries.xls		GC/MS Sets: N44PCB Dates: Nov. 8-10, 2000		Non-o-Polychlorinated Biphenyls			
				Tetra:		Penta:	Hexa:
NFCR Number:	Field Number:	Sample Description:	GC/MS Run No.	3,4,4',5-TCB (81)	3,3',4,4'-TCB (77)	3,3',4,4',5-PeCB (126)	3,3',4,4',5,5'-HxCB (169)
Proc. Blk #1, 2/15/2000		Procedure Blank, 2/15/2000 **(10 g sample basis)**	44-4	**0.5 LQ**	**6.2**	**5.0 LQ**	**0.7 LQ**
Proc. Blk #2, 2/15/2000		Procedure Blank, 2/15/2000 **(10 g sample basis)**	44-5	**0.2 LQ**	**3.9**	**2.1 LQ**	**0.5 LQ**
Bluegill Blk #1, 2/15/2000		Bluegill Matrix Blank #1, 2/15/2000, 10.07 g	44-6	1.1 LQ	45	9.9	1.2
Bluegill Blk #2, 2/15/2000		Bluegill Matrix Blank #2, 2/15/2000, 10.02 g	44-7	1.8	47	7.6	1.2
Matrix Spike 2/15/2000		Bluegill Matrix Spike, 2/15/2000, 10.02 g (Spiked with 10 µg Aroclors or 1µg/g)	44-9	94	1,400	56	5.0
Pos. Ctrl 2/15/2000		Positive Control Saginaw Carp, 2/15/2000, 10.06g	44-10	360	2,500	880	68

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Inaccurate Ion Ratio (Outside +/- 15% Tolerances)
ND Not Detected at Specified Detection Limit
C-IF Corrected Value for PCB 81; Interference from nearly co-eluting PCB #87, contributing from 10 to 20% of the PCB 81 peak, was subtracted

Table 13. Percent Recoveries of ^{13}C-Non-*o*-Chloro-Substituted PCBs in Ovaries from Largemouth Bass from the Housatonic River

5-Feb-01
N44-housatonic-ovaries.xls

GC/MS Sets: N44PCB
Dates: Nov. 8-10, 2000

NFCR Number:	Submitter Number:	Sample Description:	GC/MS Run No.	^{13}C-Non-*o*-Polychlorinated Biphenyls: Tetra: 3,4,4',5-TCB (^{13}C-PCB #81)	Tetra: 3,3',4,4'-TCB (^{13}C-PCB #77)	Penta: 3,3',4,4',5-PeCB (^{13}C-PCB #126)	Hexa: 3,3',4,4',5,5'-HxCB (^{13}C-PCB #169)
	RP-Composite	Rising Pond Composite (11 ovaries), 10.01g aliq.	44-11	60	65	74	75
	RP-25-12	Rising Pond, RP-25-12, 33.6g total mass, 10.04g	44-12	59	69	73	71
	RP-30-7	Rising Pond, RP-30-7, 27.1g total mass, 10.02g	44-14	61	66	72	72
	RP-30-9	Rising Pond, RP-30-9, 36.3g total mass, 10.02g	44-15	60	69	80	74
	3MP-Composite	3 Mile Pond-Composite (11 ovaries), 10.01g	44-16	69	72	77	83
	3MP-26-12	3 Mile Pond, 3MP-26-12, 24g total mass, 10.08g	44-17	69	69	71	75
	3MP-28-5	3 Mile Pond, 3MP-28-5, 13.3g total mass, 10.0g	44-19	68	73	66	72
	3MP-28-13	3 Mile Pond, 3MP-28-13, 26.7g total mass, 10.07g	44-20	74	74	77	81
	WP-Composite	Woods Pond Composite (11 ovaries), 10.01g	44-21	66	72	71	71
	WP-35-6	Woods Pond, WP-35-6, 31.0g total mass, 10.06g	44-22	60	61	61	65
	WP-35-8	Woods Pond, WP-35-8, 18.8g total mass, 8.62g	44-24	69	75	74	75
	WP-35-9	Woods Pond, WP-35-9, 26.8g total mass, 10.09g	44-25	62	68	70	72
	DRP-Compos.-Rep A	Deep Reach Pond Composite (18 ovaries)-A 10.01(	44-26	55	58	60	61
	DRP-Compos.-Rep B	Deep Reach Pond Composite (18) - Rep. B 10.01g	44-27	62	67	69	71
	DRP-Compos.-Rep C	Deep Reach Pond Composite (18) - Rep. C 10.01g	44-29	68	67	68	68
	DRP-27-7	Deep Reach Pond, 26.4g total mass, 10.05g aliq.	44-30	63	67	73	75
	DRP-31-1	Deep Reach Pond, 34.8g total mass, 10.04g aliq.	44-31	61	65	66	65
	DRP-31-2	Deep Reach Pond, 36.6g total mass, 10.05g aliq.	44-32	65	71	70	72

Table 13. Percent Recoveries of ^{13}C-Non-*o*-Chloro-Substituted PCBs in Ovaries from Largemouth Bass from the Housatonic River

5-Feb-01 N44-housatonic-ovaries.xls		GC/MS Sets: N44PCB Dates: Nov. 8-10, 2000		^{13}C-Non-*o*-Polychlorinated Biphenyls			
				Tetra:		Penta:	Hexa:
NFCR Number:	Submitter Number:	Sample Description:	GC/MS Run No.	3,4,4',5-TCB (^{13}C-PCB #81)	3,3',4,4'-TCB (^{13}C-PCB #77)	3,3',4,4',5-PeCB (^{13}C-PCB #126)	3,3',4,4',5,5'-HxCB (^{13}C-PCB #169)
		Quality Control Samples:					
Proc. Blk #1, 2/15/2000		Procedure Blank, 2/15/2000 **(10 g sample basis)**	44-4	71	70	71	72
Proc. Blk #2, 2/15/2000		Procedure Blank, 2/15/2000 **(10 g sample basis)**	44-5	68	67	74	77
Bluegill Blk #1, 2/15/2000		Bluegill Matrix Blank #1, 2/15/2000, 10.07 g	44-6	67	68	72	74
Bluegill Blk #2, 2/15/2000		Bluegill Matrix Blank #2, 2/15/2000, 10.02 g	44-7	68	70	70	76
Matrix Spike 2/15/2000		Bluegill Matrix Spike, 2/15/2000, 10.02 g (Spiked with 10 µg Aroclors or 1µg/g)	44-9	60	64	74	74
Pos. Ctrl 2/15/2000		Positive Control Saginaw Carp, 2/15/2000, 10.06g	44-10	63	65	83	86

Table 14. Dioxin Toxicity Equivalents (pg/g) from Non-*o*-Chloro-Substituted PCBs in Ovaries from Largemouth Bass from the Housatonic R.

7-Feb-01 N44-housatonic-ovaries.xls		GC/MS Sets: N44PCB Dates: Nov. 8-10, 2000		Non-o-Polychlorinated Biphenyls			
				Tetra:		Penta:	Hexa:
NFCR Number:	Field Number:	Sample Description:	**Total of TEQs (for fish):**	3,4,4',5-TCB (81)	3,3',4,4'-TCB (77)	3,3',4,4',5-PeCB (126)	3,3',4,4',5,5'-HxCB (169)
	RP-Composite	Rising Pond Composite (11 ovaries), 10.01g aliq.	**50.8**	0.1 C-IF	0.62	50	0.08
	RP-25-12	Rising Pond, RP-25-12, 33.6g total mass, 10.04g	**61.1**	0.14 C-IF	0.89	60	0.08
	RP-30-7	Rising Pond, RP-30-7, 27.1g total mass, 10.02g	**42.5**	0.07 C-IF	0.39	42	0.06
	RP-30-9	Rising Pond, RP-30-9, 36.3g total mass, 10.02g	**107**	0.26 C-IF	1.60	105	0.17
	3MP-Composite	3 Mile Pond-Composite (11 ovaries), 10.01g	**0.3**	0.003	0.01	0.26	0.00
	3MP-26-12	3 Mile Pond, 3MP-26-12, 24g total mass, 10.08g	**0.2**	0.004	0.01	0.21	0.00
	3MP-28-5	3 Mile Pond, 3MP-28-5, 13.3g total mass, 10.0g	**0.3**	0.005	0.02	0.26	0.00
	3MP-28-13	3 Mile Pond, 3MP-28-13, 26.7g total mass, 10.07g	**0.2**	0.003	0.01	0.21	0.00
	WP-Composite	Woods Pond Composite (11 ovaries), 10.01g	**117**	0.30 C-IF	1.50	115	0.19
	WP-35-6	Woods Pond, WP-35-6, 31.0g total mass, 10.06g	**66.2**	0.14 C-IF	0.98	65	0.07
	WP-35-8	Woods Pond, WP-35-8, 18.8g total mass, 8.62g	**127**	0.31 C-IF	1.70	125	0.16
	WP-35-9	Woods Pond, WP-35-9, 26.8g total mass, 10.09g	**71.3**	0.16 C-IF	1.10	70	0.09
	DRP-Compos.-Rep A	Deep Reach Pond Composite (18 ovaries)-A 10.01	**74.9**	0.24 C-IF	1.09	74	0.09
	DRP-Compos.-Rep B	Deep Reach Pond Composite (18) - Rep. B 10.01g	**73.9**	0.26 C-IF	1.09	73	0.09
	DRP-Compos.-Rep C	Deep Reach Pond Composite (18) - Rep. C 10.01g	**74.0**	0.25 C-IF	1.15	73	0.10
	DRP-27-7	Deep Reach Pond, 26.4g total mass, 10.05g aliq.	**50.6**	0.09 C-IF	0.41	50	0.10
	DRP-31-1	Deep Reach Pond, 34.8g total mass, 10.04g aliq.	**158**	0.55 C-IF	2.60	155	0.17
	DRP-31-2	Deep Reach Pond, 36.6g total mass, 10.05g aliq.	**77.2**	0.37 C-IF	1.70	75	0.10
		Quality Control Samples:					

Table 14. Dioxin Toxicity Equivalents (pg/g) from Non-*o*-Chloro-Substituted PCBs in Ovaries from Largemouth Bass from the Housatonic R.

7-Feb-01 N44-housatonic-ovaries.xls		GC/MS Sets: N44PCB Dates: Nov. 8-10, 2000		Non-o-Polychlorinated Biphenyls			
				Tetra:		Penta:	Hexa:
NFCR Number:	Field Number:	Sample Description:	**Total of TEQs (for fish):**	3,4,4',5-TCB (81)	3,3',4,4'-TCB (77)	3,3',4,4',5-PeCB (126)	3,3',4,4',5,5'-HxCB (169)
Proc. Blk #1, 2/15/2000		Procedure Blank, 2/15/2000 **(10 g sample basis)**	**0.03**	**0.000 LQ**	**0.00**	**0.03 LQ**	**0.00 LQ**
Proc. Blk #2, 2/15/2000		Procedure Blank, 2/15/2000 **(10 g sample basis)**	**0.01**	**0.000 LQ**	**0.00**	**0.01 LQ**	**0.00 LQ**
Bluegill Blk #1, 2/15/2000		Bluegill Matrix Blank #1, 2/15/2000, 10.07 g	**0.05**	0.001 LQ	0.00	0.05	0.00
Bluegill Blk #2, 2/15/2000		Bluegill Matrix Blank #2, 2/15/2000, 10.02 g	**0.04**	0.001	0.00	0.04	0.00
Matrix Spike 2/15/2000		Bluegill Matrix Spike, 2/15/2000, 10.02 g (Spiked with 10 µg Aroclors or 1µg/g)	**0.47**	0.047	0.14	0.28	0.00
Pos. Ctrl 2/15/2000		Positive Control Saginaw Carp, 2/15/2000, 10.06g	**4.8**	0.180	0.25	4.40	0.00

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Inaccurate Ion Ratio (Outside +/- 15% Tolerances)
ND Not Detected at Specified Detection Limit
C-IF Corrected Value for PCB 81; Interference from nearly co-eluting PCB #87, contributing from 10 to 20% of the PCB 81 peak, was subtracted

Table 15. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish-rev.xls
Date Reported: Apr. 9, 2001-Revised Nov. 19, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

		Toxicity Equiv.Factors:			3 Mile Pond Largemouth Bass					
Sample Site/Matrix:										
CERC Number:					3MP-B	3MP-C	3MP-D	**Mean**	**% CV**	**Geometric**
GC/HRMS Sets: DF36- & DF38- Injection No.					36-12, 38-2	36-13,38-6	36-15, 38-10			**Mean**
Sample Submitter No.										
Sample Mass Extracted (grams):					10.06	10.07	10.02			
		(Birds):	(Fish):	(Humans/ Mammals):						
DIOXINS	2,3,7,8-Tetrachloro	1.0	1.0	1.0	0.2 LQ	0.2 ND	0.2 ND	**0.2**	---	**0.2**
	1,2,3,7,8-Pentachloro	1.0	1.0	1.0	0.2 ND	0.2 ND	0.2 ND	**0.2**	ND	**0.2**
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	ND	**0.2**
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1	0.5 LQ	0.2 ND	0.2 ND	**0.3**	---	**0.3**
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	ND	**0.2**
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.01	0.4 LQ	0.2 ND	0.3 LQ	**0.3**	---	**0.3**
	Octachloro	0.0001	0.0001	0.0001	1.4 LQ	1.0	1.7	**1.4**	23	**1.3**
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	0.1	0.7	0.3 LQ	0.3 LQ	**0.4**	44	**0.4**
	1,2,3,7,8-Pentachloro	0.1	0.05	0.05	0.4 LQ	0.2 ND	0.2 ND	**0.2**	---	**0.2**
	2,3,4,7,8-Pentachloro	1.0	0.5	0.5	0.2 LQ	0.2 ND	0.1 LQ	**0.2**	---	**0.1**
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1	0.4 ND,LR	0.2 ND	0.2 ND	**0.3**	ND	**0.3**
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1	0.4 ND,LR	0.2 ND	0.2 ND	**0.3**	ND	**0.3**
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.1	0.4 LR	0.2 ND	0.2 ND	**0.3**	---	**0.3**
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1	1.8	0.2 ND	0.2 ND	**0.7**	---	**0.4**
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	0.01	4.0 LQ, LR	2.3	3.1 LQ	**3.1**	28	**3.1**
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.01	0.4 ND	0.2 ND	0.2 ND	**0.3**	ND	**0.3**
	Octachloro	0.0001	0.0001	0.0001	8.4	24	19	**17**	46	**16**
	TOTAL Dioxin-Equivalents (Fish):				**0.7**	**0.3**	**0.4**	**0.5**	42	**0.5**
	Percent Lipid:				**1.80**	**1.70**	**1.90**	**1.80**	6	**1.80**

* Dioxin Toxicity Equivalent Factors (Birds, Fish and Humans/Mammals) from:
Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

TEQs = Σ (Conc * TEF) except 0.5 Conc * TEF for ND

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25%

Table 15. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish-rev.xls
Date Reported: Apr. 9, 2001-Revised Nov. 19, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

		Toxicity Equiv.Factors:			Rising Pond Largemouth Bass					
Sample Site/Matrix:										
CERC Number:					RP-A	RP-B	RP-C	**Mean**	**% CV**	**Geometric**
GC/HRMS Sets: DF36- & DF38- Injection No.					36-16,38-3	36-17	36-18			**Mean**
Sample Submitter No.										
Sample Mass Extracted (grams):					10.00	10.08	10.01			
		(Birds):	(Fish):	(Humans/ Mammals):						
DIOXINS	2,3,7,8-Tetrachloro	1.0	1.0	1.0	1.9	1.3	1.1	**1.4**	**31**	**1.4**
	1,2,3,7,8-Pentachloro	1.0	1.0	1.0	0.5	0.6	0.4 LQ	**0.5**	**20**	**0.5**
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1	0.2 ND	0.4	0.2 ND	**0.2**	**---**	**0.2**
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1	0.4 LQ	0.5	0.4	**0.4**	**15**	**0.4**
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1	0.2	0.2 ND	0.2 ND	**0.2**	**---**	**0.2**
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.01	0.3 LQ	0.3	0.4 LQ	**0.3**	**21**	**0.3**
	Octachloro	0.0001	0.0001	0.0001	1.3 LQ	2.0	1.5 LQ	**1.6**	**22**	**1.6**
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	0.1	4.5	4.2	4.4	**4.4**	**3**	**4.4**
	1,2,3,7,8-Pentachloro	0.1	0.05	0.05	2.4	1.8	2.0 LQ	**2.1**	**15**	**2.1**
	2,3,4,7,8-Pentachloro	1.0	0.5	0.5	18.9	15.2	16.6	**16.9**	**11**	**16.8**
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1	1.0 LQ	1.1	0.9	**1.0**	**12**	**1.0**
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1	0.5 LQ	0.8	0.7	**0.7**	**21**	**0.7**
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	**ND**	**0.2**
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1	2.8 LQ	5.3	3.7	**3.9**	**32**	**3.8**
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	0.01	1.2	1.5	1.5	**1.4**	**16**	**1.4**
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.01	0.2 LQ	0.5	0.2 ND	**0.3**	**---**	**0.2**
	Octachloro	0.0001	0.0001	0.0001	15.6	15.4	18.2	**16.4**	**9**	**16.3**
	TOTAL Dioxin-Equivalents (Fish):				**12.8**	**10.8**	**10.8**	**11.4**	**10**	**11.4**
	Percent Lipid:				**2.00**	**1.90**	**1.80**	**1.90**	**5**	**1.90**

* Dioxin Toxicity Equivalent Factors (Birds, Fish and Humans/Mammals) from Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

TEQs = Σ (Conc * TEF) except 0.5 Conc * TEF for ND

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 15. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish-rev.xls
Date Reported: Apr. 9, 2001-Revised Nov. 19, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

		Toxicity Equiv.Factors: (Birds):	(Fish):	(Humans/ Mammals):	Woods Pond Largemouth Bass WP-A	WP-B	WP-C	**Mean**	**% CV**	**Geometric Mean**
Sample Site/Matrix:										
CERC Number:										
GC/HRMS Sets: DF36- & DF38- Injection No.					36-20, 38-4	36-21,38-7	36-22,38-8			
Sample Submitter No.										
Sample Mass Extracted (grams):					9.98	10.11	10.01			
DIOXINS	2,3,7,8-Tetrachloro	1.0	1.0	1.0	1.6	1.9	1.6	**1.7**	**9**	**1.7**
	1,2,3,7,8-Pentachloro	1.0	1.0	1.0	0.6 LQ	1.0	0.5	**0.7**	**33**	**0.7**
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	**---**	**0.2**
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1	0.4 LQ	0.4 LQ	0.2 ND	**0.3**	**---**	**0.3**
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	**---**	**0.2**
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.01	0.3 LQ	0.3 LQ	0.4 LQ	**0.3**	**14**	**0.3**
	Octachloro	0.0001	0.0001	0.0001	1.4 LQ	0.6 LQ	1.0	**1.0**	**39**	**1.0**
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	0.1	7.6	7.8	6.0	**7.1**	**14**	**7.1**
	1,2,3,7,8-Pentachloro	0.1	0.05	0.05	3.1	3.2	2.4 LQ	**2.9**	**14**	**2.9**
	2,3,4,7,8-Pentachloro	1.0	0.5	0.5	13.9	13.8	12.1	**13.2**	**8**	**13.2**
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1	2.8 LQ	1.8 LQ	1.4	**2.0**	**36**	**1.9**
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1	3.8 LQ	1.9	1.4	**2.4**	**53**	**2.2**
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.1	0.2 ND	0.2	0.2 ND	**0.2**	**---**	**0.2**
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1	45	16	8.8 LQ	**23**	**84**	**18**
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	0.01	9.0 LQ	4.4	2.5	**5.3**	**63**	**4.6**
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.01	2.5	1.1	0.6	**1.4**	**69**	**1.2**
	Octachloro	0.0001	0.0001	0.0001	27	21	13	**20.5**	**34**	**19.7**
	TOTAL Dioxin-Equivalents (Fish):				**14.9**	**12.3**	**9.9**	**12.4**	**20**	**12.2**
	Percent Lipid:				**2.30**	**2.50**	**2.00**	**2.27**	**11**	**2.26**

* Dioxin Toxicity Equivalent Factors (Birds, Fish and Humans/Mammals) from Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

TEQs = Σ (Conc * TEF) except 0.5 Conc * TEF for ND

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 15. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish-rev.xls
Date Reported: Apr. 9, 2001-Revised Nov. 19, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

		Toxicity Equiv.Factors: (Birds):	(Fish):	(Humans/ Mammals):	Deep Reach Pond Largemouth Bass DRP-A	DRP-B	DRP-C	**Mean**	**% CV**	**Geometric Mean**
Sample Site/Matrix:										
CERC Number:										
GC/HRMS Sets: DF36- & DF38- Injection No.					36-23	36-25	36-26			
Sample Submitter No.										
Sample Mass Extracted (grams):					10.01	10.01	9.98			
DIOXINS	2,3,7,8-Tetrachloro	1.0	1.0	1.0	1.4 LQ	1.4 LQ	1.1	**1.3**	**14**	**1.3**
	1,2,3,7,8-Pentachloro	1.0	1.0	1.0	0.8	0.7	0.7 LQ	**0.7**	**14**	**0.7**
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	**---**	**0.2**
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1	0.4	0.2 LQ	0.4 LQ	**0.3**	**32**	**0.3**
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	**---**	**0.2**
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.01	0.4 LQ	0.3 LQ	0.3 LQ	**0.3**	**11**	**0.3**
	Octachloro	0.0001	0.0001	0.0001	1.1 LQ	2.2 LQ	1.1 LQ	**1.5**	**42**	**1.4**
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	0.1	11.3	9.1	7.1 LQ	**9.2**	**23**	**9.0**
	1,2,3,7,8-Pentachloro	0.1	0.05	0.05	2.3	2.9	3.0	**2.7**	**14**	**2.7**
	2,3,4,7,8-Pentachloro	1.0	0.5	0.5	15.1	14.6	13.5	**14.4**	**6**	**14.4**
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1	2.2 LQ	1.6 LQ	1.1 LQ	**1.7**	**34**	**1.6**
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1	4.1	1.7 LQ	0.6 LQ	**2.1**	**82**	**1.6**
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.1	0.2 ND	0.2 ND	0.2 ND	**0.2**	**---**	**0.2**
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1	30	18	5.5 LQ	**17.8**	**69**	**14.3**
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	0.01	10.0	4.7	1.5 LQ	**5.4**	**79**	**4.2**
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.01	2.8 LQ	1.2 LQ	0.6 LQ	**1.5**	**75**	**1.3**
	Octachloro	0.0001	0.0001	0.0001	31	24	17	**24.2**	**28**	**23.5**
	TOTAL Dioxin-Equivalents (Fish):				**14.2**	**12.2**	**9.8**	**12.1**	**18**	**11.9**
	Percent Lipid:				**2.50**	**2.40**	**2.50**	**2.47**	**2**	**2.47**

* Dioxin Toxicity Equivalent Factors (Birds, Fish and Humans/Mammals) from Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

TEQs = Σ (Conc * TEF) except 0.5 Conc * TEF for ND

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 15. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish-rev.xls
Date Reported: Apr. 9, 2001-Revised Nov. 19, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

		Toxicity Equiv.Factors: (Birds):	(Fish):	(Humans/ Mammals):	Quality Assurance Samples: Procedure Blank	Bluegill Blank #1	Sag.Carp #1 *
Sample Site/Matrix:							
CERC Number:							
GC/HRMS Sets: DF36- & DF38- Injection No.					36-5	36-6	36-11,38-11
					4/10/2000	4/10/2000	4/10/2000
Sample Submitter No.					**Conc. (pg/g-eq) based on sample**		
Sample Mass Extracted (grams):					**wgts 10 g**	10.06	10.07
DIOXINS	2,3,7,8-Tetrachloro	1.0	1.0	1.0	**0.2 ND**	0.2 ND	21.6
	1,2,3,7,8-Pentachloro	1.0	1.0	1.0	**0.2 ND**	0.2 ND	10.8
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1	**0.2 ND**	0.2 ND	4.5
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1	**0.2 ND**	0.2 ND	13.2
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1	**0.2 ND**	0.2 ND	2.1 LQ
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.01	**0.2 LQ**	0.5 LQ	18.0
	Octachloro	0.0001	0.0001	0.0001	**0.2 LQ**	10.1	19.4
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	0.1	**0.2 ND**	0.2 ND	34.1
	1,2,3,7,8-Pentachloro	0.1	0.05	0.05	**0.2 ND**	0.2 ND	12.2
	2,3,4,7,8-Pentachloro	1.0	0.5	0.5	**0.2 ND**	0.2 ND	36.1
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1	**0.2 ND**	0.2 ND	9.3 LQ
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1	**0.2 ND**	0.2 ND	6.4
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.1	**0.2 ND**	0.2 ND	0.2 LQ
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1	**0.2 ND**	0.2 ND	16.9
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	0.01	**3.3**	2.6 LQ	17.6
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.01	**0.2 ND**	0.2 ND	1.9 LQ
	Octachloro	0.0001	0.0001	0.0001	**11**	14	36.2
	TOTAL Dioxin-Equivalents (Fish):				**0.4**	**0.4**	**60**
	Percent Lipid:				**---**	**4.8**	**15.1**

* Dioxin Toxicity Equivalent Factors (Birds, Fish and Humans/Mammals) from Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

TEQs = Σ (Conc * TEF) except 0.5 Conc * TEF for ND

* Values updated using the corrected amount of ^{13}C-surrogates in Saginaw Carp by matching native DFs with long-term avgs.

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances

ND Not Detected at Specified Detection Limit

Table 16. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish-rev.xls
Date Revised Nov. 19, 2001
Date Analyzed: Mar. 6-8, 2001; Mar. 15-16, 2001

Sample Site/Matrix:	3 Mile Pond Largemouth Bass			Rising Pond Largemouth Bass		
CERC Number:	3MP-B	3MP-C	3MP-D	RP-A	RP-B	RP-C
GC/HRMS Sets: DF36- & DF38- Inj. No.	36-12, 38-2	36-13,38-6	36-15, 38-10	36-16,38-3	36-17	36-18
Sample Submitter No.						
Sample Mass Extracted (grams):	10.06	10.07	10.02	10.00	10.08	10.01
			(% Recovery)			
DIOXINS						
2,3,7,8-Tetrachloro	43	47	53	63	66	70
1,2,3,7,8-Pentachloro	70	67	76	64	68	69
1,2,3,4,7,8-Hexachloro	58	62	76	67	70	70
1,2,3,6,7,8-Hexachloro	46	48	59	52	50	54
1,2,3,7,8,9-Hexachloro	44	41	47	43	50	44
1,2,3,4,6,7,8-Heptachloro	59	65	61	62	60	68
Octachloro	56	49	52	50	57	51
FURANS 2,3,7,8-Tetrachloro	79	74	80	73	73	74
1,2,3,7,8-Pentachloro	70	66	74	57	62	62
2,3,4,7,8-Pentachloro	73	72	75	69	76	72
1,2,3,4,7,8-Hexachloro	7	27	75	61	58	61
1,2,3,6,7,8-Hexachloro	10	42	120	97	90	84
1,2,3,7,8,9-Hexachloro	44	56	61	76	77	74
1,2,3,4,6,7,8-Heptachloro	12	42	114	88	82	84
1,2,3,4,7,8,9-Heptachloro	65	73	76	82	86	87

Table 16. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish-rev.xls
Date Revised Nov. 19, 2001
Date Analyzed: Mar. 6-8, 2001; Mar. 15-16, 2001

Sample Site/Matrix:	Woods Pond Largemouth Bass			Deep Reach Pond Largemouth Bass		
CERC Number:	WP-A	WP-B	WP-C	DRP-A	DRP-B	DRP-C
GC/HRMS Sets: DF36- & DF38- Inj. No.	36-20, 38-4	36-21,38-7	36-22,38-8	36-23	36-25	36-26
Sample Submitter No.						
Sample Mass Extracted (grams):	9.98	10.11	10.01	10.01	10.01	9.98
			(% Recovery)			
DIOXINS 2,3,7,8-Tetrachloro	55	75	79	34	69	77
1,2,3,7,8-Pentachloro	84	98	82	42	92	93
1,2,3,4,7,8-Hexachloro	77	101	80	45	98	92
1,2,3,6,7,8-Hexachloro	59	75	64	32	81	77
1,2,3,7,8,9-Hexachloro	54	73	58	26	63	68
1,2,3,4,6,7,8-Heptachloro	75	102	79	40	97	91
Octachloro	62	84	68	31	77	74
FURANS 2,3,7,8-Tetrachloro	93	90	91	46	90	89
1,2,3,7,8-Pentachloro	80	88	77	44	90	82
2,3,4,7,8-Pentachloro	86	105	94	43	104	102
1,2,3,4,7,8-Hexachloro	67	69	57	36	74	75
1,2,3,6,7,8-Hexachloro	114	104	81	56	110	111
1,2,3,7,8,9-Hexachloro	69	111	91	39	99	99
1,2,3,4,6,7,8-Heptachloro	98	114	92	53	124	120
1,2,3,4,7,8,9-Heptachloro	86	130	106	48	135	127

Table 16. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish-rev.xls
Date Revised Nov. 19, 2001
Date Analyzed: Mar. 6-8, 2001; Mar. 15-16, 2001

Sample Site/Matrix:		Quality Assurance Samples		
CERC Number:		Procedure Blank	Bluegill Blank #1	Sag.Carp #1 *
GC/HRMS Sets: DF36- & DF38- Inj. No.		36-5	36-6	36-12,38-11
		4/10/2000	4/10/2000	4/10/2000
Sample Submitter No.				
Sample Mass Extracted (grams):			10.06	10.07
DIOXINS			(% Recovery)	
	2,3,7,8-Tetrachloro	70	57	58
	1,2,3,7,8-Pentachloro	78	65	81
	1,2,3,4,7,8-Hexachloro	79	66	83
	1,2,3,6,7,8-Hexachloro	63	51	64
	1,2,3,7,8,9-Hexachloro	56	44	58
	1,2,3,4,6,7,8-Heptachloro	79	64	79
	Octachloro	70	54	64
FURANS	2,3,7,8-Tetrachloro	81	65	88
	1,2,3,7,8-Pentachloro	84	67	78
	2,3,4,7,8-Pentachloro	81	69	88
	1,2,3,4,7,8-Hexachloro	62	45	79
	1,2,3,6,7,8-Hexachloro	106	77	125
	1,2,3,7,8,9-Hexachloro	47	45	76
	1,2,3,4,6,7,8-Heptachloro	81	65	119
	1,2,3,4,7,8,9-Heptachloro	72	68	90

* Values updated using the corrected amount of ^{13}C-surrogates in Saginaw Carp by matching native DFs with long-term avgs.

Table 17. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish.xls
Date Reported: Apr. 20, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

Sample Site/Matrix:			3 Mile Pond					
CERC Number:			3MP-B		3MP-C		3MP-D	**Mean**	**% CV**
GC/HRMS Sets: DF36- & DF38- Injection No.			36-12, 38-2		36-13,38-6		36-15, 38-10		
Sample Submitter No.									
Sample Mass Extracted (grams):			10.06	Number of Congeners	10.07	Number of Congeners	10.02	Number of Congeners	
		Toxicity Equiv.Factors:							
		(Birds):	(Fish):	**VALUES in this Sheet are NOT revised for photolysis as in Sheet 1 (Native DFs)**					
DIOXINS									
	2,3,7,8-Tetrachloro	1.0	1.0	0.3 LQ		0.2 ND		0.2 ND	**0.2**	---
	Total Tetrachloro-			--- *ND or LQ*		--- *ND or LQ*		--- *ND or LQ*		
	1,2,3,7,8-Pentachloro	1.0	1.0	0.2 ND		0.2 ND		0.2 ND	**0.2**	---
	Total Pentachloro-			--- *ND or LQ*		--- *ND or LQ*		--- *ND or LQ*		
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.2 ND		0.2 ND		0.2 ND	**0.2**	---
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.5 LQ		0.2 ND		0.2 ND	**0.3**	---
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.2 ND		0.2 ND		0.2 ND	**0.2**	---
	Total Hexachloro-			--- *ND or LQ*		--- *ND or LQ*		--- *ND or LQ*		
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.5 LQ		0.2 ND		0.4 LQ	**0.4**	45
	Total Heptachloro-			--- *ND or LQ*		--- *ND or LQ*		--- *ND or LQ*		
	Octachloro	0.0001	0.0001	1.7 LQ		1.3		2.0	**1.7**	23
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	1.3		0.6 LQ		0.6 LQ	**0.8**	44
	Total Tetrachloro-			*1.3*	*1*	--- *ND or LQ*		--- *ND or LQ*		
	1,2,3,7,8-Pentachloro	0.1	0.05	0.5 LQ		0.2 ND		0.2 ND	**0.3**	---
	2,3,4,7,8-Pentachloro	1.0	0.5	0.3 LQ		0.2 ND		0.2 LQ	**0.2**	---
	Total Pentachloro-			*0.4*	*1*	--- *ND or LQ*		--- *ND or LQ*		
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.2 ND,LRB		0.2 ND, LRA		0.2 ND	**0.2**	---
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.2 ND,LRB		0.2 ND, LRA		0.2 ND	**0.2**	---
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.2 LRA		0.2 ND		0.2 ND	**0.2**	---
	2,3,4,6,7,8-Hexachloro	0.1	0.1	1.8		0.2 ND		0.2 ND	**0.7**	---
	Total Hexachloro-			*0.2*	*1*	--- *ND or LQ*		--- *ND or LQ*		
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	8.1 LQ, LRB		4.6 LRA		6.2 LQ	**6.3**	28
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.2 ND, LRA		0.2 ND		0.2 ND	**0.2**	---
	Total Heptachloro-			--- *ND or LQ*	*4.6*	*1*		--- *ND or LQ*		
	Octachloro	0.0001	0.0001	17		47		38	**34.1**	46
	Total Dioxin-Toxicity Equivalents (Fish):			**1.2**		**0.8**		**0.8**	**0.9**	24
	Percent Lipid:			1.80		1.70		1.90	**1.80**	

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LRA Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV=25%
LRB Denotes Recovery of ^{13}C-labelled surrogate below 10% (See Table 3); %CV=50%

Table 17. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish.xls
Date Reported: Apr. 20, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

				Rising Pond											
Sample Site/Matrix:															
CERC Number:				RP-A			RP-B			RP-C			**Mean**	**% CV**	
GC/HRMS Sets: DF36- & DF38- Injection No.				36-16,38-3			36-17			36-18					
Sample Submitter No.															
Sample Mass Extracted (grams):				10.00	Number of Congeners		10.08	Number of Congeners		10.01	Number of Congeners				
		Toxicity Equiv.Factors:													
		(Birds):	(Fish):	**VALUES in this Sheet are NOT revised for photolysis as in Sheet 1 (Native DFs)**											
DIOXINS															
	2,3,7,8-Tetrachloro	1.0	1.0	3.3			2.2			1.9			**2.5**	31	
	Total Tetrachloro-			*3.3*		*1*	---	*ND or LQ*		*1.9*		*1*			
	1,2,3,7,8-Pentachloro	1.0	1.0	0.6			0.8			0.5	LQ		**0.6**	20	
	Total Pentachloro-			*0.6*		*1*	---	*ND or LQ*		---	*ND or LQ*				
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.2	ND		0.5			0.2	ND		**0.3**	---	
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.4	LQ		0.5			0.4			**0.4**	15	
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.2			0.2	ND		0.2	ND		**0.2**	---	
	Total Hexachloro-			---	*ND or LQ*		---	*ND or LQ*		---	*ND or LQ*				
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.4	LQ		0.3			0.5	LQ		**0.4**	21	
	Total Heptachloro-			---	*ND or LQ*		---	*ND or LQ*		---	*ND or LQ*				
	Octachloro	0.0001	0.0001	1.6	LQ		2.5			1.9	LQ		**2.0**	22	
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	8.3			7.8			8			**8**	3	
	Total Tetrachloro-			*8.3*		*1*	*13*		*3*	*12*		*3*	***10.9***	*21*	
	1,2,3,7,8-Pentachloro	0.1	0.05	2.9			2.2			2.4	LQ		**2.5**	15	
	2,3,4,7,8-Pentachloro	1.0	0.5	35			28			31			**31.4**	11	
	Total Pentachloro-			*41*		*4*	*56*		*4*	*45*		*2*	***47.6***	*16*	
	1,2,3,4,7,8-Hexachloro	0.1	0.1	1.3	LQ		1.5			1.2			**1.3**	12	
	1,2,3,6,7,8-Hexachloro	0.1	0.1	1.1	LQ		1.7			1.5			**1.4**	21	
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.2	ND		0.2	ND		0.2	ND		**0.2**	---	
	2,3,4,6,7,8-Hexachloro	0.1	0.1	2.8	LQ		5.3			3.7			**3.9**	32	
	Total Hexachloro-			*15*		*1*	*41*		*4*	*38*		*6*	***31.3***	*45*	
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	2.3			3.0			3.1			**3**	16	
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.3	LQ		1.0			0.2	ND		**0.5**	---	
	Total Heptachloro-			*2.3*	*ND or LQ*		*11*		*2*	*8.8*		*2*	***7.5***	*63*	
	Octachloro	0.0001	0.0001	31			31			36			**32.8**	9	
	Total Dioxin-Toxicity Equivalents (Fish):			**22.8**			**18.8**			**19.2**			**20.2**	11	
	Percent Lipid:			2.00			1.90			1.80			**1.90**		

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 17. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish.xls
Date Reported: Apr. 20, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

				Woods Pond				
Sample Site/Matrix:								
CERC Number:				WP-A	WP-B	WP-C	**Mean**	**% CV**
GC/HRMS Sets: DF36- & DF38- Injection No.				36-20, 38-4	36-21,38-7	36-22,38-8		
Sample Submitter No.								
Sample Mass Extracted (grams):				9.98 Number of Congeners	10.11 Number of Congeners	10.01 Number of Congeners		
		Toxicity Equiv.Factors: (Birds):	(Fish):	**VALUES in this Sheet are NOT revised for photolysis as in Sheet 1 (Native DFs)**				
DIOXINS	2,3,7,8-Tetrachloro	1.0	1.0	2.7	3.2	2.8	**2.9**	9
	Total Tetrachloro-			*2.4 1*	*3.0 1*	--- *ND or LQ*		
	1,2,3,7,8-Pentachloro	1.0	1.0	0.7 LQ	1.2	0.7	**0.8**	33
	Total Pentachloro-			--- *ND or LQ*	*1.0 1*	--- *ND or LQ*		
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.2 ND	0.2 ND	0.2 ND	**0.2**	---
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.4 LQ	0.4 LQ	0.2 ND	**0.3**	---
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.2 ND	0.2 ND	0.2 ND	**0.2**	---
	Total Hexachloro-			--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*		
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.4 LQ	0.3 LQ	0.4 LQ	**0.4**	14
	Total Heptachloro-			--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*		
	Octachloro	0.0001	0.0001	1.7 LQ	0.8 LQ	1.2	**1.2**	39
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	14	14	11.1	**13.2**	14
	Total Tetrachloro-			*28 3*	*22 3*	*12 3*	***21***	*38*
	1,2,3,7,8-Pentachloro	0.1	0.05	3.7	3.8	2.9 LQ	**3.4**	14
	2,3,4,7,8-Pentachloro	1.0	0.5	26	26	22	**24.6**	8
	Total Pentachloro-			*72 4*	*55 4*	*37 4*	***55***	*33*
	1,2,3,4,7,8-Hexachloro	0.1	0.1	3.8 LQ	2.4 LQ	1.9	**2.7**	36
	1,2,3,6,7,8-Hexachloro	0.1	0.1	7.6 LQ	3.8	2.8	**4.7**	53
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.2 ND	0.2	0.2 ND	**0.2**	---
	2,3,4,6,7,8-Hexachloro	0.1	0.1	45	16	8.8 LQ	**23.2**	84
	Total Hexachloro-			*366 3*	*158 3*	*15 2*	***180***	*98*
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	18 LQ	8.9	4.9	**10.6**	63
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	4.9	2.2	1.2	***2.8***	*69*
	Total Heptachloro-			*83 2*	*43 2*	--- *ND or LQ*		
	Octachloro	0.0001	0.0001	55	42	27	**41.1**	34
	Total Dioxin-Toxicity Equivalents (Fish):			**23.2**	**20.5**	**16.9**	**20.2**	16
	Percent Lipid:			2.30	2.50	2.00	**2.27**	

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from: Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 17. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish.xls
Date Reported: Apr. 20, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001

				Deep Reach Pond				
Sample Site/Matrix:								
CERC Number:				DRP-A	DRP-B	DRP-C	**Mean**	**% CV**
GC/HRMS Sets: DF36- & DF38- Injection No.				36-23	36-25	36-26		
Sample Submitter No.								
Sample Mass Extracted (grams):				10.01 Number of Congeners	10.01 Number of Congeners	9.98 Number of Congeners		
		Toxicity Equiv.Factors: (Birds):	(Fish):	**VALUES in this Sheet are NOT revised for photolysis as in Sheet 1 (Native DFs)**				
DIOXINS	2,3,7,8-Tetrachloro	1.0	1.0	2.3 LQ, LRA	2.5 LQ	1.9	**2.2**	14
	Total Tetrachloro-			--- *ND or LQ*	--- *ND or LQ*	*1.6* *1*		
	1,2,3,7,8-Pentachloro	1.0	1.0	1.0	0.8	0.8 LQ	**0.9**	14
	Total Pentachloro-			*0.9* *1*	*0.7* *1*	--- *ND or LQ*		
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.2 ND	0.2 ND	0.2 ND	**0.2**	---
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.4	0.2 LQ	0.4 LQ	**0.3**	32
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.2 ND	0.2 ND	0.2 ND	**0.2**	---
	Total Hexachloro-			*0.5* *1*	--- *ND or LQ*	--- *ND or LQ*		
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.4 LQ	0.3 LQ	0.4 LQ	**0.4**	11
	Total Heptachloro-			--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*		
	Octachloro	0.0001	0.0001	1.3 LQ, LRA	2.7 LQ	1.4 LQ	**1.8**	42
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	21	17	13 LQ	**17.0**	23
	Total Tetrachloro-			*85* *7*	*35* *5*	*6* *3*	***42***	*95*
	1,2,3,7,8-Pentachloro	0.1	0.05	2.7	3.4	3.6	**3.3**	14
	2,3,4,7,8-Pentachloro	1.0	0.5	28 LRA	27	25	**26.7**	6
	Total Pentachloro-			*193* *7*	*86* *6*	*42* *4*	***107***	*73*
	1,2,3,4,7,8-Hexachloro	0.1	0.1	3.0 LQ	2.2 LQ	1.5 LQ	**2.2**	34
	1,2,3,6,7,8-Hexachloro	0.1	0.1	8.0	3.4 LQ	1.2 LQ	**4.2**	82
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.2 ND, LRA	0.2 ND	0.2 ND	**0.2**	---
	2,3,4,6,7,8-Hexachloro	0.1	0.1	30	18	5.5 LQ	**17.8**	69
	Total Hexachloro-			*301* *5*	*141* *4*	*31* *2*	***157***	*86*
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	20	9.4	3.1 LQ	**10.9**	79
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	5.6 LQ, LRA	2.3 LQ	1.2 LQ	***3.1***	*75*
	Total Heptachloro-			*71* *2*	*33* *2*	--- *ND or LQ*		
	Octachloro	0.0001	0.0001	62	49	35	**48.4**	28
	Total Dioxin-Toxicity Equivalents (Fish):			**24.3**	**20.5**	**17.0**	**20.6**	18
	Percent Lipid:			2.50	2.40	2.50	**2.47**	

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from: Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LRA Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV=25%

Table 17. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Largemouth Bass from the Housatonic River

File: DF36-housatonicfish.xls
Date Reported: Apr. 20, 2001
Date Analyzed: March 6-8, 2001; March 15-16, 2001
Sample Site/Matrix:
CERC Number:
GC/HRMS Sets: DF36- & DF38- Injection No.

Sample Submitter No.

Sample Mass Extracted (grams):

		Toxicity Equiv.Factors: (Birds):	(Fish):	Quality Assurance Samples: Procedure Blank 36-5 4/10/2000 Conc. (pg/g-eq) based on sa wgts 10 g	Bluegill Blank #1 36-6 4/10/2000 Number of Congeners 10.06	Bluegill Spike #1 36-10 4/10/2000 250 or 1250 pg total (25 or 125 p Number of Congeners 9.97	Sag.Carp #1 36-11,38-11 4/10/2000 Number of Congeners 10.07	CARP QC AVG. from 1994-2000 (N=39)
				VALUES in this Sheet are NOT revised for photolysis as in Sheet 1 (Native DFs)				
DIOXINS	2,3,7,8-Tetrachloro	1.0	1.0	**0.2** ND	0.2 ND	17 LQ, LRA	37	*21.6*
	Total Tetrachloro-			--- *1*	--- *ND or LQ*	*18.6* *1*	*37.3* *1*	
	1,2,3,7,8-Pentachloro	1.0	1.0	**0.2** ND	0.2 ND	21	13	*10.8*
	Total Pentachloro-			--- *1*	--- *ND or LQ*	*46.0* *2*	*13.2* *1*	
	1,2,3,4,7,8-Hexachloro	0.05	0.5	**0.2** ND	0.2 ND	26	5.9	*4.5*
	1,2,3,6,7,8-Hexachloro	0.01	0.01	**0.2** ND	0.2 ND	28	13	*14.7*
	1,2,3,7,8,9-Hexachloro	0.1	0.01	**0.2** ND	0.2 ND	25 LQ	2.2 LQ	*2.1*
	Total Hexachloro-			--- *2*	--- *ND or LQ*	*59* *2*	*24* *2*	
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	**0.2** LQ	0.6 LQ	30	22	*18*
	Total Heptachloro-			--- *2*	--- *ND or LQ*	*32* *2*	*23* *2*	
	Octachloro	0.0001	0.0001	**0.2** LQ	12	201	24	*18.1*
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	**0.2** ND	0.2 ND	36	63	*34.1*
	Total Tetrachloro-			--- *4*	--- *ND or LQ*	*42* *3*	*100* *4*	
	1,2,3,7,8-Pentachloro	0.1	0.05	**0.2** ND	0.2 ND	31	15	*12.2*
	2,3,4,7,8-Pentachloro	1.0	0.5	**0.2** ND	0.2 ND	33	67	*36.1*
	Total Pentachloro-			--- *4*	--- *ND or LQ*	*68* *4*	*151* *4*	
	1,2,3,4,7,8-Hexachloro	0.1	0.1	**0.2** ND	0.2 ND	29	12 LQ	*9.3*
	1,2,3,6,7,8-Hexachloro	0.1	0.1	**0.2** ND	0.2 ND	30	13	*6.4*
	1,2,3,7,8,9-Hexachloro	0.1	0.1	**0.2** ND, LRA	0.2 ND, LRA	19 LQ, LRA	0.2 LQ	*0.3*
	2,3,4,6,7,8-Hexachloro	0.1	0.1	**0.2** ND	0.2 ND	40	24	*5.0*
	Total Hexachloro-			--- *4*	--- *ND or LQ*	*147* *4*	*267* *4*	
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	**6.5**	5.1 LQ	106	35	*10.8*
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	**0.2** ND	0.2 ND	24 LQ	3.9 LQ	*0.6*
	Total Heptachloro-			*65.3* *3*	--- *ND or LQ*	*132* *2*	*110* *3*	
	Octachloro	0.0001	0.0001	**21.0**	28.2	157	72	*5.3*
	Total Dioxin-Toxicity Equivalents (Fish):			**0.8**	**0.8**	**89**	**97**	**57**
	Percent Lipid:			---	4.8	4.8	15.1	14

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LRA Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV=25%

Table 18. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Fish from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				3 Mile Pond			
Sample Site/Matrix:							
CERC Number:				3MP-Composite	3MP-26-12	3MP-28-5	3MP-28-13
GC/HRMS Sets: DF36 & DF37- Injection No.				37-30, 43; 36-35	37-32, 36-36	37-33, 36-37	37-34
Sample Submitter No.							
Sample Mass Extracted (grams):				10.01	10.08	10.00	10.07
		Toxicity Equiv.Factors: (Birds):	(Fish):				
DIOXINS							
	2,3,7,8-Tetrachloro	1.0	1.0	0.1 ND	0.2	0.4 LQ	0.2 LQ
	1,2,3,7,8-Pentachloro	1.0	1.0	0.2	0.2 LQ	0.1 ND	0.2 LQ
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1 ND	0.1 ND	0.1 ND	0.1 ND
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1 ND	0.1	0.1 ND	0.1 ND
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1 ND	0.1 LQ	0.1 ND	0.1 ND
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.4 LQ	0.3 LQ	0.2 ND	0.3 LQ
	Octachloro	0.0001	0.0001	1.8	1.8	1.0 LQ	1.1 LQ
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	1.0	1.1	2.3	0.9
	1,2,3,7,8-Pentachloro	0.1	0.05	0.2	0.2 LQ	0.2	0.1
	2,3,4,7,8-Pentachloro	1.0	0.5	0.3	0.2 LQ	0.2 LQ	0.2 LQ
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1 ND	0.1 ND	0.1 ND	0.1 ND
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1 ND	0.2	0.1 ND	0.1 ND
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.2 ND, LR	0.2 ND, LR	0.2 ND	0.2 ND
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1 ND	0.2 LQ	0.1 ND	0.1 ND
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	4.3	4.0	1.1 LQ	1.4 LQ
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.3 ND, LR	0.3 ND, LR	0.3 ND	0.3 ND
	Octachloro	0.0001	0.0001	16	15	9 LQ	7.9 LQ
	Total Dioxin-Toxicity Equivalents (Fish):			**0.6**	**0.8**	**0.9**	**0.7**
	Percent Lipid:						

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV is about 25%

Table 18. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Fish from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

		Toxicity Equiv.Factors: (Birds):	(Fish):	Rising Pond RP-Composite	RP-25-12	RP-30-7	RP-30-9
Sample Site/Matrix:							
CERC Number:							
GC/HRMS Sets: DF36 & DF37- Injection No.				37-35	37-37	37-38	37-39
Sample Submitter No.							
Sample Mass Extracted (grams):				10.01	10.04	10.02	10.02
DIOXINS							
	2,3,7,8-Tetrachloro	1.0	1.0	5.6	7.9 LQ	3.5	11 LQ
	1,2,3,7,8-Pentachloro	1.0	1.0	2.4 LQ	2.3 LQ	0.5 ND	7.0
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.5 ND	0.5 ND	0.5 ND	0.5 ND
	1,2,3,6,7,8-Hexachloro	0.01	0.01	1.2 LQ	1.1	0.5 ND	2.5
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.5 ND	0.5 ND	0.5 ND	0.5 ND
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.9 LQ	1.0 ND	1.0 ND	1.3 LQ
	Octachloro	0.0001	0.0001	2.2	1.0 ND	1.0 ND	4.3
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	23	41	9	64
	1,2,3,7,8-Pentachloro	0.1	0.05	5.2	10 LQ	1.5	16
	2,3,4,7,8-Pentachloro	1.0	0.5	85	130	22	300
	1,2,3,4,7,8-Hexachloro	0.1	0.1	2.3 LQ	2.3 LQ	2.7 LQ	8.3
	1,2,3,6,7,8-Hexachloro	0.1	0.1	2.8 LQ	4.0 LQ	2.7	18
	1,2,3,7,8,9-Hexachloro	0.1	0.1	1.0 ND	1.0 ND	1 ND	1.0 ND
	2,3,4,6,7,8-Hexachloro	0.1	0.1	11 LQ	12 LQ	15 LQ	66
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	7.9	5.6 LQ	9.7 LQ	41
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	3.3 LQ	2.4 LQ	2.7 LQ	16 LQ
	Octachloro	0.0001	0.0001	14 LQ	16 LQ	19	31
	Total Dioxin-Toxicity Equivalents (Fish):			**53.6**	**79.8**	**18.0**	**180**
	Percent Lipid:						

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 18. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Fish from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Woods Pond			
Sample Site/Matrix:							
CERC Number:				WP-Composite	WP-35-6	WP-35-8	WP-35-9
GC/HRMS Sets: DF36 & DF37- Injection No.				37-40	37-18	37-19	37-20
Sample Submitter No.							
Sample Mass Extracted (grams):				10.01	10.06	8.62	10.09
		Toxicity Equiv.Factors: (Birds):	(Fish):				
DIOXINS							
	2,3,7,8-Tetrachloro	1.0	1.0	5.3 LQ	4.9	11	6.6
	1,2,3,7,8-Pentachloro	1.0	1.0	2.7 LQ	1.8 LQ	3.5	2.1 LQ
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.5 ND	0.5 ND	0.5 ND	0.5 ND
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.6 LQ	0.5 LQ	0.8 LQ	0.7
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.5 ND	0.5 ND	0.5 ND	0.5 ND
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.7 LQ	0.6	1.0 LQ	0.8 LQ
	Octachloro	0.0001	0.0001	2.5 LQ	3.0	3.5 LQ	2.2
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	36	32	62	66
	1,2,3,7,8-Pentachloro	0.1	0.05	7.1	6.7 LQ	11	12
	2,3,4,7,8-Pentachloro	1.0	0.5	47	43	53	43
	1,2,3,4,7,8-Hexachloro	0.1	0.1	4.1	1.1	2.5 LQ	2.2
	1,2,3,6,7,8-Hexachloro	0.1	0.1	10	2.5	11	3.4
	1,2,3,7,8,9-Hexachloro	0.1	0.1	1.0 ND	1.0 ND	1.0 ND	1.0 ND
	2,3,4,6,7,8-Hexachloro	0.1	0.1	31	8	48 LQ	9.2 LQ
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	26	5.9 LQ	34	7.5
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	7.7	1.7 LQ	8.4	2.3
	Octachloro	0.0001	0.0001	22 LQ	13	30	15
	Total Dioxin-Toxicity Equivalents (Fish):			**38.8**	**32.0**	**51.1**	**36.0**
	Percent Lipid:						

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 18. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Fish from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Deep Reach Pond				
Sample Site/Matrix:								
CERC Number:				DRP-Composite A	DRP-Composite B	DRP-Composite C	**Mean**	**% CV**
GC/HRMS Sets: DF36 & DF37- Injection No.				37-22	37-23	37-24		(Coefficient
				Replicate A	Replicate B	Replicate C		of Variation
Sample Submitter No.								
Sample Mass Extracted (grams):				10.01	10.01	10.01		
		Toxicity Equiv.Factors: (Birds):	(Fish):					
DIOXINS								
	2,3,7,8-Tetrachloro	1.0	1.0	4.3 LQ	4.1 LQ	4.0	**4.1**	4
	1,2,3,7,8-Pentachloro	1.0	1.0	2.0 LQ	2.4 LQ	2.4 LQ	**2.3**	10
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.5 ND	0.5 ND	0.5 ND	**0.5 ND**	
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.5 ND	1.2 LQ	0.6	**0.8**	49
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.5 ND	0.5 ND	0.5 ND	**0.5 ND**	
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.7 LQ	0.5 LQ	0.8 LQ	**0.7**	27
	Octachloro	0.0001	0.0001	3.4 LQ	2.8	3.0 LQ	**3.1**	10
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	39	35	34	**36.1**	6
	1,2,3,7,8-Pentachloro	0.1	0.05	6.9	5.7 LQ	6.2	**6.3**	10
	2,3,4,7,8-Pentachloro	1.0	0.5	46	48	45	**46.3**	3
	1,2,3,4,7,8-Hexachloro	0.1	0.1	2.1	1.5 LQ	2.7 LQ	**2.1**	30
	1,2,3,6,7,8-Hexachloro	0.1	0.1	3.7 LQ	3.3 LQ	7.0	**4.7**	44
	1,2,3,7,8,9-Hexachloro	0.1	0.1	1.0 ND	1.0 ND	1.0 ND	**1.0 ND**	
	2,3,4,6,7,8-Hexachloro	0.1	0.1	11 LQ	11	26 LQ	**15.8**	53
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	11	9.5	18	**12.7**	35
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	3.2 LQ	2.0 LQ, LR	6.0	**3.7**	55
	Octachloro	0.0001	0.0001	13 LQ	11	15 LQ	**13.1**	14
	Total Dioxin-Toxicity Equivalents (Fish):			**33.8**	**34.5**	**35.2**	**34.5**	2
	Percent Lipid:							

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV is about 25%

Table 18. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Fish from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Deep Reach Pond				
Sample Site/Matrix:								
CERC Number:				DRP-27-7	DRP-31-1	DRP-31-2	Procedure Blank #1	Procedure Blank #2
GC/HRMS Sets: DF36 & DF37- Injection No.				37-25	37-27	37-42	36-27, 37-2	36-28, 37-3
							2/15/2000	2/15/2000
Sample Submitter No.							**Conc. (pg/g-eq) based on sample**	**Conc. (pg/g-eq) based on sample**
Sample Mass Extracted (grams):				10.05	10.04	10.05	**wgts 10 g**	**wgts 10 g**
		Toxicity Equiv.Factors: (Birds):	(Fish):					
DIOXINS								
	2,3,7,8-Tetrachloro	1.0	1.0	2.8 LQ	12	5.4	**0.1 ND**	**0.1 ND**
	1,2,3,7,8-Pentachloro	1.0	1.0	1.7 LQ	3.4	3.2	**0.1 ND**	**0.1 ND**
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.5 ND	0.5 ND	0.5 ND	**0.1 ND**	**0.1 ND**
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.7 LQ	0.9 LQ	0.6 LQ	**0.1 ND**	**0.1 ND**
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.5 ND	0.5 ND	0.5 ND	**0.1 ND**	**0.1 ND**
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.9 LQ	0.9 LQ	0.5	**0.2 ND**	**0.2 ND**
	Octachloro	0.0001	0.0001	2.1 LQ	2	2.5 LQ	**0.6**	**0.2 ND**
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	15	160	54	**0.1 ND**	**0.1 ND**
	1,2,3,7,8-Pentachloro	0.1	0.05	2.7	17	10	**0.1 ND**	**0.1 ND**
	2,3,4,7,8-Pentachloro	1.0	0.5	31	90	58	**0.1 ND**	**0.1 ND**
	1,2,3,4,7,8-Hexachloro	0.1	0.1	2.3 LQ	2.2 LQ	4.7 LQ	**0.1 ND**	**0.1 ND**
	1,2,3,6,7,8-Hexachloro	0.1	0.1	3.9 LQ	7.7 LQ	10 LQ	**0.1 ND**	**0.1 ND**
	1,2,3,7,8,9-Hexachloro	0.1	0.1	1.0 ND	1.0 ND	1.0 ND	**0.2 ND**	**0.2 ND**
	2,3,4,6,7,8-Hexachloro	0.1	0.1	11	29	52	**0.1 ND**	**0.1 ND**
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	9.2	21	31	**1.7**	**1.2**
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	2.7 LQ	5.7 LQ	8.2 LQ	**0.3 ND, LR**	**0.3 ND, LR**
	Octachloro	0.0001	0.0001	15	15	25	**8.2**	**8.6**
	Total Dioxin-Toxicity Equivalents (Fish):			**23.3**	**75.5**	**48.1**	**0.4**	**0.4**
	Percent Lipid:							

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV is about 25%

Table 18. 2,3,7,8-Substituted Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Fish from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Quality Assurance Samples				
Sample Site/Matrix:								
CERC Number:				Bluegill Blank #1	Bluegill Blank #2	Bluegill Spike	Sag.Carp	*CARP*
GC/HRMS Sets: DF36 & DF37- Injection No.				36-30, 37-4	36-31, 37-5, -29	36-32	36-33	*QC AVG.*
				2/15/2000	2/15/2000	2/15/2000	2/15/2000	*from*
Sample Submitter No.						250 or 1250 pg total		*1994-2000*
						(25 or 125 pg/g)		*(N=39)*
Sample Mass Extracted (grams):				10.07	10.02	10.02	10.06	
		Toxicity Equiv.Factors: (Birds):	(Fish):					
DIOXINS								
	2,3,7,8-Tetrachloro	1.0	1.0	0.1 ND	0.1 LQ	24	25	*21.6*
	1,2,3,7,8-Pentachloro	1.0	1.0	0.1 ND	0.1 ND	23	11	*10.8*
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1 ND	0.1 ND	24	5.0 LQ	*4.5*
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1 ND	0.1 LQ	28	14 LQ	*14.7*
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1 ND	0.1 ND	29	2.0	*2.1*
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.5 LQ	0.3 LQ	26	19	*18*
	Octachloro	0.0001	0.0001	12	10	190	19	*18.1*
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	0.1 ND	0.3 LQ	27	38	*34.1*
	1,2,3,7,8-Pentachloro	0.1	0.05	0.1 ND	0.1 ND	27	11	*12.2*
	2,3,4,7,8-Pentachloro	1.0	0.5	0.1 ND	0.1 ND	29	39	*36.1*
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1 ND	0.1 ND	28	9.9	*9.3*
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1 ND	0.1 ND	25	6.8 LQ	*6.4*
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.2 ND	0.2 ND	24	0.2 ND	*0.3*
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1 ND	0.1 ND	80	15	*5.0*
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	1.6	1.4	56	16	*10.8*
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.3 ND, LR	0.3 ND	25 LR	0.9 LQ, LR	*0.6*
	Octachloro	0.0001	0.0001	8.8	8.0	110	20 LQ	*5.3*
	Total Dioxin-Toxicity Equivalents (Fish):			**0.4**	**0.4**	**93.6**	**63.3**	**57**
	Percent Lipid:							

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV is about 25%

Table 19. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Ovaries of Bass Collected from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 17, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:		3 Mile Pond			
CERC Number:		3MP-Composite	3MP-26-12	3MP-28-5	3MP-28-13
GC/HRMS Sets: DF36 & DF37- Injection No.		37-30, 43; 36-35	37-32, 36-36	37-33, 36-37	37-34
Sample Submitter No.					
Sample Mass Extracted (grams):		10.01	10.08	10.00	10.07
DIOXINS					
	2,3,7,8-Tetrachloro	42	38	44	38
	1,2,3,7,8-Pentachloro	59	52	50	50
	1,2,3,4,7,8-Hexachloro	51	49	46	48
	1,2,3,6,7,8-Hexachloro	53	51	47	45
	1,2,3,7,8,9-Hexachloro	46	46	41	40
	1,2,3,4,6,7,8-Heptachloro	55	49	49	48
	Octachloro	39	37	33	32
FURANS	2,3,7,8-Tetrachloro	59	50	54	54
	1,2,3,7,8-Pentachloro	67	62	62	63
	2,3,4,7,8-Pentachloro	52	48	48	48
	1,2,3,4,7,8-Hexachloro	39	37	43	44
	1,2,3,6,7,8-Hexachloro	49	44	49	50
	1,2,3,7,8,9-Hexachloro	16	14	28	26
	1,2,3,4,6,7,8-Heptachloro	37	28	45	43
	1,2,3,4,7,8,9-Heptachloro	18	19	34	30

Table 19. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Ovaries of Bass Collected from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 17, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:		Rising Pond			
CERC Number:		RP-Composite	RP-25-12	RP-30-7	RP-30-9
GC/HRMS Sets: DF36 & DF37- Injection No.		37-35	37-37	37-38	37-39
Sample Submitter No.					
Sample Mass Extracted (grams):		10.01	10.04	10.02	10.02
DIOXINS					
	2,3,7,8-Tetrachloro	57	47	46	32
	1,2,3,7,8-Pentachloro	51	103	52	57
	1,2,3,4,7,8-Hexachloro	48	82	43	53
	1,2,3,6,7,8-Hexachloro	49	79	39	50
	1,2,3,7,8,9-Hexachloro	42	69	31	44
	1,2,3,4,6,7,8-Heptachloro	50	77	50	59
	Octachloro	38	58	28	37
FURANS	2,3,7,8-Tetrachloro	54	99	46	47
	1,2,3,7,8-Pentachloro	57	77	54	62
	2,3,4,7,8-Pentachloro	47	77	54	52
	1,2,3,4,7,8-Hexachloro	47	81	38	44
	1,2,3,6,7,8-Hexachloro	52	91	49	47
	1,2,3,7,8,9-Hexachloro	36	50	27	28
	1,2,3,4,6,7,8-Heptachloro	48	83	44	39
	1,2,3,4,7,8,9-Heptachloro	35	59	27	28

Table 19. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Ovaries of Bass Collected from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 17, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:		Woods Pond			
CERC Number:		WP-Composite	WP-35-6	WP-35-8	WP-35-9
GC/HRMS Sets: DF36 & DF37- Injection No.		37-40	37-18	37-19	37-20
Sample Submitter No.					
Sample Mass Extracted (grams):		10.01	10.06	8.62	10.09
DIOXINS					
	2,3,7,8-Tetrachloro	49	44	45	45
	1,2,3,7,8-Pentachloro	49	54	53	53
	1,2,3,4,7,8-Hexachloro	46	51	49	51
	1,2,3,6,7,8-Hexachloro	45	51	48	45
	1,2,3,7,8,9-Hexachloro	40	45	43	43
	1,2,3,4,6,7,8-Heptachloro	48	51	59	53
	Octachloro	35	35	33	35
FURANS	2,3,7,8-Tetrachloro	49	52	45	54
	1,2,3,7,8-Pentachloro	53	59	58	57
	2,3,4,7,8-Pentachloro	52	54	50	52
	1,2,3,4,7,8-Hexachloro	43	46	50	43
	1,2,3,6,7,8-Hexachloro	45	44	51	46
	1,2,3,7,8,9-Hexachloro	35	37	36	40
	1,2,3,4,6,7,8-Heptachloro	43	47	48	47
	1,2,3,4,7,8,9-Heptachloro	35	40	37	39

Table 19. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Ovaries of Bass Collected from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 17, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:		Deep Reach Pond		
CERC Number:		DRP-Composite A	DRP-Composite B	DRP-Composite C
GC/HRMS Sets: DF36 & DF37- Injection No.		37-22	37-23	37-24
		Replicate A	Replicate B	Replicate C
Sample Submitter No.				
Sample Mass Extracted (grams):		10.01	10.01	10.01
DIOXINS				
	2,3,7,8-Tetrachloro	54	48	66
	1,2,3,7,8-Pentachloro	58	59	66
	1,2,3,4,7,8-Hexachloro	54	51	63
	1,2,3,6,7,8-Hexachloro	49	45	62
	1,2,3,7,8,9-Hexachloro	44	41	51
	1,2,3,4,6,7,8-Heptachloro	57	48	60
	Octachloro	37	37	43
FURANS	2,3,7,8-Tetrachloro	54	51	65
	1,2,3,7,8-Pentachloro	61	55	74
	2,3,4,7,8-Pentachloro	56	50	64
	1,2,3,4,7,8-Hexachloro	55	50	57
	1,2,3,6,7,8-Hexachloro	51	51	58
	1,2,3,7,8,9-Hexachloro	42	43	42
	1,2,3,4,6,7,8-Heptachloro	54	53	55
	1,2,3,4,7,8,9-Heptachloro	44	43	44

Table 19. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Ovaries of Bass Collected from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 17, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:		Deep Reach Pond		
CERC Number:		DRP-27-7	DRP-31-1	DRP-31-2
GC/HRMS Sets: DF36 & DF37- Injection No.		37-25	37-27	37-42
Sample Submitter No.				
Sample Mass Extracted (grams):		10.05	10.04	10.05
DIOXINS				
	2,3,7,8-Tetrachloro	57	41	55
	1,2,3,7,8-Pentachloro	65	48	66
	1,2,3,4,7,8-Hexachloro	65	52	61
	1,2,3,6,7,8-Hexachloro	61	49	58
	1,2,3,7,8,9-Hexachloro	54	34	51
	1,2,3,4,6,7,8-Heptachloro	64	48	61
	Octachloro	41	34	39
FURANS	2,3,7,8-Tetrachloro	61	50	64
	1,2,3,7,8-Pentachloro	70	65	73
	2,3,4,7,8-Pentachloro	61	34	57
	1,2,3,4,7,8-Hexachloro	58	44	55
	1,2,3,6,7,8-Hexachloro	61	53	56
	1,2,3,7,8,9-Hexachloro	41	30	29
	1,2,3,4,6,7,8-Heptachloro	58	59	43
	1,2,3,4,7,8,9-Heptachloro	46	15	29

Table 19. Percent Recovery of ^{13}C-Substituted Polychlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Ovaries of Bass Collected from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 17, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:			Quality Assurance Samples			
CERC Number:	Procedure Blk #1	Procedure Blk #2	Bluegill Blank #1	Bluegill Blank #2	Bluegill Spike	Sag.Carp
GC/HRMS Sets: DF36 & DF37- Injection No.	36-27, 37-2	36-28, 37-3	36-30, 37-4	36-31, 37-5, -29	36-32	36-33
	2/15/2000	2/15/2000	2/15/2000	2/15/2000	2/15/2000	2/15/2000
Sample Submitter No.						
Sample Mass Extracted (grams):			10.07	10.02	10.02	10.06
DIOXINS						
2,3,7,8-Tetrachloro	42	43	44	43	40	46
1,2,3,7,8-Pentachloro	57	60	56	56	59	60
1,2,3,4,7,8-Hexachloro	53	51	46	77	52	49
1,2,3,6,7,8-Hexachloro	55	53	51	98	53	55
1,2,3,7,8,9-Hexachloro	47	47	46	100	49	47
1,2,3,4,6,7,8-Heptachloro	55	50	46	119	50	53
Octachloro	43	40	33	36	37	39
FURANS 2,3,7,8-Tetrachloro	54	56	51	53	52	56
1,2,3,7,8-Pentachloro	68	62	59	65	65	64
2,3,4,7,8-Pentachloro	51	52	48	62	48	54
1,2,3,4,7,8-Hexachloro	48	46	41	58	39	46
1,2,3,6,7,8-Hexachloro	56	51	51	72	51	52
1,2,3,7,8,9-Hexachloro	24	23	23	57	15	23
1,2,3,4,6,7,8-Heptachloro	46	45	38	98	32	41
1,2,3,4,7,8,9-Heptachloro	34	32	30	74	23	31

Table 20. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				3 Mile Pond			
Sample Site/Matrix:							
CERC Number:				3MP-Composite	3MP-26-12	3MP-28-5	3MP-28-13
GC/HRMS Sets: DF36 & DF37- Injection No.				37-30, 43; 36-35	37-32, 36-36	37-33, 36-37	37-34
Sample Submitter No.							
Sample Mass Extracted (grams):				10.01	10.08	10.00	10.07
		Toxicity Equiv.Factors: (Birds):	(Fish):	Number of Congeners	Number of Congeners	Number of Congeners	Number of Congeners
DIOXINS							
	2,3,7,8-Tetrachloro	1.0	1.0	0.1 ND	0.2	0.4 LQ	0.2 LQ
	Total Tetrachloro-			--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*
	1,2,3,7,8-Pentachloro	1.0	1.0	0.2	0.2 LQ	0.1 ND	0.2 LQ
	Total Pentachloro-			--- *ND or LQ*	---	--- *ND or LQ*	--- *ND or LQ*
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1 ND	0.1 ND	0.1 ND	0.1 ND
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1 ND	0.1	0.1 ND	0.1 ND
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1 ND	0.1 LQ	0.1 ND	0.1 ND
	Total Hexachloro-			--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.4 LQ	0.3 LQ	0.2 ND	0.3 LQ
	Total Heptachloro-			--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*
	Octachloro	0.0001	0.0001	1.8	1.8	1.0 LQ	1.1 LQ
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	1.0	1.1	2.3	0.9
	Total Tetrachloro-			*1* *2*	*1* *1*	*2* *2*	*1* *1*
	1,2,3,7,8-Pentachloro	0.1	0.05	0.2	0.2 LQ	0.2	0.1
	2,3,4,7,8-Pentachloro	1.0	0.5	0.3	0.2 LQ	0.2 LQ	0.2 LQ
	Total Pentachloro-			*3* *4*	*2* *1*	*0.2* *1*	*0.1* *1*
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1 ND	0.1 ND	0.1 ND	0.1 ND
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1 ND	0.2	0.1 ND	0.1 ND
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.2 ND, LR	0.2 ND, LR	0.2 ND	0.2 ND
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1 ND	0.2 LQ	0.1 ND	0.1 ND
	Total Hexachloro-			*0.9* *1*	*0.1* *1*	--- *ND or LQ*	--- *ND or LQ*
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	4.3	4.0	1.1 LQ	1.4 LQ
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.3 ND, LR	0.3 ND, LR	0.3 ND	0.3 ND
	Total Heptachloro-			*4.3* *1*	*4.3* *1*	--- *ND or LQ*	--- *ND or LQ*
	Octachloro	0.0001	0.0001	16	15	9 LQ	7.9 LQ
	Total Dioxin-Toxicity Equivalents (Fish):			**0.6**	**0.8**	**0.9**	**0.7**
	Percent Lipid:						

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV is about 25%

Table 20. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Rising Pond			
Sample Site/Matrix:							
CERC Number:				RP-Composite	RP-25-12	RP-30-7	RP-30-9
GC/HRMS Sets: DF36 & DF37- Injection No.				37-35	37-37	37-38	37-39
Sample Submitter No.							
Sample Mass Extracted (grams):				10.01	10.04	10.02	10.02
				Number of Congeners	Number of Congeners	Number of Congeners	Number of Congeners
		Toxicity Equiv.Factors: (Birds):	(Fish):				
DIOXINS							
	2,3,7,8-Tetrachloro	1.0	1.0	5.6	7.9 LQ	3.5	11 LQ
	Total Tetrachloro-			*5.7* *1*	*--- ND or LQ*	*3.6* *1*	*--- ND or LQ*
	1,2,3,7,8-Pentachloro	1.0	1.0	2.4 LQ	2.3 LQ	0.5 ND	7.0
	Total Pentachloro-			*--- ND or LQ*	*--- ND or LQ*	*--- ND or LQ*	*7.0* *1*
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.5 ND	0.5 ND	0.5 ND	0.5 ND
	1,2,3,6,7,8-Hexachloro	0.01	0.01	1.2 LQ	1.1	0.5 ND	2.5
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.5 ND	0.5 ND	0.5 ND	0.5 ND
	Total Hexachloro-			*1.1* *1*	*1.3* *1*	*--- ND or LQ*	*3.1* *1*
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.9 LQ	1.0 ND	1.0 ND	1.3 LQ
	Total Heptachloro-			*--- ND or LQ*	*--- ND or LQ*	*--- ND or LQ*	*--- ND or LQ*
	Octachloro	0.0001	0.0001	2.2	1.0 ND	1.0 ND	4.3
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	23	41	9	64
	Total Tetrachloro-			*49* *6*	*56* *3*	*10* *1*	*157* *9*
	1,2,3,7,8-Pentachloro	0.1	0.05	5.2	10 LQ	1.5	16
	2,3,4,7,8-Pentachloro	1.0	0.5	85	130	22	300
	Total Pentachloro-			*183* *6*	*239* *3*	*72* *2*	*607* *5*
	1,2,3,4,7,8-Hexachloro	0.1	0.1	2.3 LQ	2.3 LQ	2.7 LQ	8.3
	1,2,3,6,7,8-Hexachloro	0.1	0.1	2.8 LQ	4.0 LQ	2.7	18
	1,2,3,7,8,9-Hexachloro	0.1	0.1	1.0 ND	1.0 ND	1 ND	1.0 ND
	2,3,4,6,7,8-Hexachloro	0.1	0.1	11 LQ	12 LQ	15 LQ	66
	Total Hexachloro-			*117* *4*	*129* *3*	*129* *3*	*585* *6*
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	7.9	5.6 LQ	9.7 LQ	41
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	3.3 LQ	2.4 LQ	2.7 LQ	16 LQ
	Total Heptachloro-			*8.0* *1*	*24* *1*	*39* *1*	*200* *3*
	Octachloro	0.0001	0.0001	14 LQ	16 LQ	19	31
	Total Dioxin-Toxicity Equivalents (Fish):			**53.6**	**79.8**	**18.0**	**180**
	Percent Lipid:						

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from: Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 20. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Woods Pond			
Sample Site/Matrix:							
CERC Number:				WP-Composite	WP-35-6	WP-35-8	WP-35-9
GC/HRMS Sets: DF36 & DF37- Injection No.				37-40	37-18	37-19	37-20
Sample Submitter No.							
Sample Mass Extracted (grams):				10.01 Number of Congeners	10.06 Number of Congeners	8.62 Number of Congeners	10.09 Number of Congeners
		Toxicity Equiv.Factors: (Birds):	(Fish):				
DIOXINS							
	2,3,7,8-Tetrachloro	1.0	1.0	5.3 LQ	4.9	11	6.6
	Total Tetrachloro-			*--- ND or LQ*	*5.0 1*	*11 1*	*6.7 1*
	1,2,3,7,8-Pentachloro	1.0	1.0	2.7 LQ	1.8 LQ	3.5	2.1 LQ
	Total Pentachloro-			*--- ND or LQ*	*--- ND or LQ*	*3.5 1*	*--- ND or LQ*
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.5 ND	0.5 ND	0.5 ND	0.5 ND
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.6 LQ	0.5 LQ	0.8 LQ	0.7
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.5 ND	0.5 ND	0.5 ND	0.5 ND
	Total Hexachloro-			*--- ND or LQ*	*--- ND or LQ*	*--- ND or LQ*	*--- ND or LQ*
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.7 LQ	0.6	1.0 LQ	0.8 LQ
	Total Heptachloro-			*--- ND or LQ*	*0.5 1*	*0.9 1*	*0.7 1*
	Octachloro	0.0001	0.0001	2.5 LQ	3.0	3.5 LQ	2.2
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	36	32	62	66
	Total Tetrachloro-			*81 7*	*53 7*	*160 8*	*84 5*
	1,2,3,7,8-Pentachloro	0.1	0.05	7.1	6.7 LQ	11	12
	2,3,4,7,8-Pentachloro	1.0	0.5	47	43	53	43
	Total Pentachloro-			*220 4*	*84 5*	*470 7*	*107 8*
	1,2,3,4,7,8-Hexachloro	0.1	0.1	4.1	1.1	2.5 LQ	2.2
	1,2,3,6,7,8-Hexachloro	0.1	0.1	10	2.5	11	3.4
	1,2,3,7,8,9-Hexachloro	0.1	0.1	1.0 ND	1.0 ND	1.0 ND	1.0 ND
	2,3,4,6,7,8-Hexachloro	0.1	0.1	31	8	48 LQ	9.2 LQ
	Total Hexachloro-			*385 6*	*85 6*	*476 5*	*111 5*
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	26	5.9 LQ	34	7.5
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	7.7	1.7 LQ	8.4	2.3
	Total Heptachloro-			*140 3*	*18 1*	*159 3*	*36 3*
	Octachloro	0.0001	0.0001	22 LQ	13	30	15
	Total Dioxin-Toxicity Equivalents (Fish):			**38.8**	**32.0**	**51.1**	**36.0**
	Percent Lipid:						

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from: Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 20. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Deep Reach Pond				
Sample Site/Matrix:								
CERC Number:				DRP-Composite A	DRP-Composite B	DRP-Composite C	**Mean**	**% CV**
GC/HRMS Sets: DF36 & DF37- Injection No.				37-22	37-23	37-24		(Coefficient
				Replicate A	Replicate B	Replicate C		of Variation)
Sample Submitter No.								
Sample Mass Extracted (grams):				Number of 10.01 Congeners	Number of 10.01 Congeners	Number of 10.01 Congeners		
		Toxicity Equiv.Factors: (Birds):	(Fish):					
DIOXINS								
	2,3,7,8-Tetrachloro	1.0	1.0	4.3 LQ	4.1 LQ	4.0	**4.1**	4
	Total Tetrachloro-			--- *ND or LQ*	--- *ND or LQ*	*4.1* *1*		
	1,2,3,7,8-Pentachloro	1.0	1.0	2.0 LQ	2.4 LQ	2.4 LQ	**2.3**	10
	Total Pentachloro-			--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*		
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.5 ND	0.5 ND	0.5 ND	**0.5 ND**	
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.5 ND	1.2 LQ	0.6	**0.8**	49
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.5 ND	0.5 ND	0.5 ND	**0.5 ND**	
	Total Hexachloro-			--- *ND or LQ*	--- *ND or LQ*	--- *ND or LQ*		
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.7 LQ	0.5 LQ	0.8 LQ	**0.7**	27
	Total Heptachloro-			*1.3* *1*	--- *ND or LQ*	*1.0* *1*		
	Octachloro	0.0001	0.0001	3.4 LQ	2.8	3.0 LQ	**3.1**	10
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	39	35	34	**36.1**	6
	Total Tetrachloro-			*61* *6*	*64* *8*	*77* *10*		
	1,2,3,7,8-Pentachloro	0.1	0.05	6.9	5.7 LQ	6.2	**6.3**	10
	2,3,4,7,8-Pentachloro	1.0	0.5	46	48	45	**46.3**	3
	Total Pentachloro-			*132* *4*	*147* *4*	*223* *4*		
	1,2,3,4,7,8-Hexachloro	0.1	0.1	2.1	1.5 LQ	2.7 LQ	**2.1**	30
	1,2,3,6,7,8-Hexachloro	0.1	0.1	3.7 LQ	3.3 LQ	7.0	**4.7**	44
	1,2,3,7,8,9-Hexachloro	0.1	0.1	1.0 ND	1.0 ND	1.0 ND	**1.0 ND**	
	2,3,4,6,7,8-Hexachloro	0.1	0.1	11 LQ	11	26 LQ	**15.8**	53
	Total Hexachloro-			*147* *4*	*124* *3*	*260* *5*		
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	11	9.5	18	**12.7**	35
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	3.2 LQ	2.0 LQ, LR	6.0	**3.7**	55
	Total Heptachloro-			*52* *2*	*44* *2*	*89* *3*		
	Octachloro	0.0001	0.0001	13 LQ	11	15 LQ	**13.1**	14
	Total Dioxin-Toxicity Equivalents (Fish):			**33.8**	**34.5**	**35.2**	**34.5**	2
	Percent Lipid:							

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV is about 25%

Table 20. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Deep Reach Pond					
Sample Site/Matrix:				DRP-27-7	DRP-31-1	DRP-31-2	Procedure Blank #1	Procedure Blank #2	
CERC Number:									
GC/HRMS Sets: DF36 & DF37- Injection No.				37-25	37-27	37-42	36-27, 37-2	36-28, 37-3	
							2/15/2000	2/15/2000	
Sample Submitter No.							Conc. (pg/g-eq)	Conc. (pg/g-eq)	
				Number of	Number of	Number of	based on sa Number of	based on s Number of	
Sample Mass Extracted (grams):				10.05 Congeners	10.04 Congeners	10.05 Congeners	wgts 10 g Congeners	wgts 10 g Congeners	
		Toxicity Equiv.Factors: (Birds):	(Fish):						
DIOXINS									
	2,3,7,8-Tetrachloro	1.0	1.0	2.8 LQ	12	5.4	**0.1 ND**	**0.1 ND**	
	Total Tetrachloro-			*--- ND or LQ*	*12* 1	*5.5* 1	*--- ND or LQ*	*--- ND or LQ*	
	1,2,3,7,8-Pentachloro	1.0	1.0	1.7 LQ	3.4	3.2	**0.1 ND**	**0.1 ND**	
	Total Pentachloro-			*--- ND or LQ*	*3.4* 1	*3.2* 1	*--- ND or LQ*	*--- ND or LQ*	
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.5 ND	0.5 ND	0.5 ND	**0.1 ND**	**0.1 ND**	
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.7 LQ	0.9 LQ	0.6 LQ	**0.1 ND**	**0.1 ND**	
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.5 ND	0.5 ND	0.5 ND	**0.1 ND**	**0.1 ND**	
	Total Hexachloro-			*--- ND or LQ*	*--- ND or LQ*	*--- ND or LQ*	*--- ND or LQ*	*--- ND or LQ*	
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.9 LQ	0.9 LQ	0.5	**0.2 ND**	**0.2 ND**	
	Total Heptachloro-			*--- ND or LQ*	*0.8* 1	*1.8* 2	*--- ND or LQ*	*--- ND or LQ*	
	Octachloro	0.0001	0.0001	2.1 LQ	2	2.5 LQ	**0.6**	**0.2 ND**	
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	15	160	54	**0.1 ND**	**0.1 ND**	
	Total Tetrachloro-			*30* 6	*224* 7	*85* 7	*--- ND or LQ*	*--- ND or LQ*	
	1,2,3,7,8-Pentachloro	0.1	0.05	2.7	17	10	**0.1 ND**	**0.1 ND**	
	2,3,4,7,8-Pentachloro	1.0	0.5	31	90	58	**0.1 ND**	**0.1 ND**	
	Total Pentachloro-			*130* 6	*402* 7	*431* 6	*--- ND or LQ*	*--- ND or LQ*	
	1,2,3,4,7,8-Hexachloro	0.1	0.1	2.3 LQ	2.2 LQ	4.7 LQ	**0.1 ND**	**0.1 ND**	
	1,2,3,6,7,8-Hexachloro	0.1	0.1	3.9 LQ	7.7 LQ	10 LQ	**0.1 ND**	**0.1 ND**	
	1,2,3,7,8,9-Hexachloro	0.1	0.1	1.0 ND	1.0 ND	1.0 ND	**0.2 ND**	**0.2 ND**	
	2,3,4,6,7,8-Hexachloro	0.1	0.1	11	29	52	**0.1 ND**	**0.1 ND**	
	Total Hexachloro-			*148* 5	*358* 4	*464* 4	*--- ND or LQ*	*--- ND or LQ*	
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	9.2	21	31	**1.7**	**1.2**	
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	2.7 LQ	5.7 LQ	8.2 LQ	**0.3 ND, LR**	**0.3 ND, LR**	
	Total Heptachloro-			*45* 2	*187* 3	*146* 2	*1.8* 1	*1.1* 1	
	Octachloro	0.0001	0.0001	15	15	25	**8.2**	**8.6**	
	Total Dioxin-Toxicity Equivalents (Fish):			**23.3**	**75.5**	**48.1**	**0.4**	**0.4**	
	Percent Lipid:								

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from: Van den Berg et.al, Environ. H. Persp, 106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV is about 25%

Table 20. 2,3,7,8-Substituted and Total Polychlorinated Dibenzo-*p*-dioxin and Dibenzofuran Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: Apr. 11, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

				Quality Assurance Samples							
Sample Site/Matrix:											
CERC Number:				Bluegill Blank #1		Bluegill Blank #2		Bluegill Spike		Sag.Carp	*CARP*
GC/HRMS Sets: DF36 & DF37- Injection No.				36-30, 37-4		36-31, 37-5, -29		36-32		36-33	*QC AVG.*
				2/15/2000		2/15/2000		2/15/2000		2/15/2000	*from*
Sample Submitter No.								250 or 1250 pg total			*1994-2000*
				Number of		Number of		(25 or 125 p	Number of	Number of	*(N=39)*
Sample Mass Extracted (grams):				10.07	Congeners	10.02	Congeners	10.02	Congeners	10.06 Congeners	
		Toxicity Equiv.Factors: (Birds):	(Fish):								
DIOXINS											
	2,3,7,8-Tetrachloro	1.0	1.0	0.1	ND	0.1	LQ	24		25	*21.6*
	Total Tetrachloro-			---	*ND or LQ*	---	*ND or LQ*	*24*	*1*	*25*	*1*
	1,2,3,7,8-Pentachloro	1.0	1.0	0.1	ND	0.1	ND	23		11	*10.8*
	Total Pentachloro-			---	*ND or LQ*	---	*ND or LQ*	*52*	*2*	*11*	*1*
	1,2,3,4,7,8-Hexachloro	0.05	0.5	0.1	ND	0.1	ND	24		5.0 LQ	*4.5*
	1,2,3,6,7,8-Hexachloro	0.01	0.01	0.1	ND	0.1	LQ	28		14 LQ	*14.7*
	1,2,3,7,8,9-Hexachloro	0.1	0.01	0.1	ND	0.1	ND	29		2.0	*2.1*
	Total Hexachloro-			---	*ND or LQ*	---	*ND or LQ*	*54*	*3*	*1.6*	*1*
	1,2,3,4,6,7,8-Heptachloro	0.001	0.001	0.5	LQ	0.3	LQ	26		19	*18*
	Total Heptachloro-			---	*ND or LQ*	---	*ND or LQ*	*29*	*2*	*19*	*1*
	Octachloro	0.0001	0.0001	12		10		190		19	*18.1*
FURANS	2,3,7,8-Tetrachloro	1.0	0.05	0.1	ND	0.3	LQ	27		38	*34.1*
	Total Tetrachloro-			---	*ND or LQ*	---	*ND or LQ*	*27*	*1*	*65*	*4*
	1,2,3,7,8-Pentachloro	0.1	0.05	0.1	ND	0.1	ND	27		11	*12.2*
	2,3,4,7,8-Pentachloro	1.0	0.5	0.1	ND	0.1	ND	29		39	*36.1*
	Total Pentachloro-			---	*ND or LQ*	---	*ND or LQ*	*58*	*4*	*130*	*5*
	1,2,3,4,7,8-Hexachloro	0.1	0.1	0.1	ND	0.1	ND	28		9.9	*9.3*
	1,2,3,6,7,8-Hexachloro	0.1	0.1	0.1	ND	0.1	ND	25		6.8 LQ	*6.4*
	1,2,3,7,8,9-Hexachloro	0.1	0.1	0.2	ND	0.2	ND	24		0.2 ND	*0.3*
	2,3,4,6,7,8-Hexachloro	0.1	0.1	0.1	ND	0.1	ND	80		15	*5.0*
	Total Hexachloro-			---	*ND or LQ*	---	*ND or LQ*	*160*	*5*	*84*	*5*
	1,2,3,4,6,7,8-Heptachloro	0.01	0.01	1.6		1.4		56		16	*10.8*
	1,2,3,4,7,8,9-Heptachloro	0.01	0.01	0.3	ND, LR	0.3	ND	25	LR	0.9 LQ, LR	*0.6*
	Total Heptachloro-			*0.2*	*1*	---	*ND or LQ*	*82*	*2*	*38*	*2*
	Octachloro	0.0001	0.0001	8.8		8.0		110		20 LQ	*5.3*
	Total Dioxin-Toxicity Equivalents (Fish):			**0.4**		**0.4**		**93.6**		**63.3**	**57**
	Percent Lipid:										

* Dioxin Toxicity Equivalent Factors (Birds and Fish) from:
Van den Berg et.al, Environ. H. Persp,
106 (12), 775-791 (1998).

Values not annotated have a Percent Coefficient of Variation of about 10%
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit
LR Denotes Recovery of ^{13}C-labelled surrogate below 25% but > 10% (See Table 3); %CV is about 25%

Table 21. Estimated Polychlorinated Dibenzothiophene Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: May. 9, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

		3 Mile Pond							
Sample Site/Matrix:									
CERC Number:		3MP-Composite		3MP-26-12		3MP-28-5		3MP-28-13	
GC/HRMS Sets: DF36 & DF37- Injection No.		37-30, 43; 36-35		37-32, 36-36		37-33, 36-37		37-34	
Sample Submitter No.			Total Number of		Total Number of		Total Number of		Total Number of
Sample Mass Extracted (grams):		10.01	Congeners	10.08	Congeners	10.00	Congeners	10.07	Congeners
THIOPHENES	RRT ^{13}C-2378-TCDF:								
Trichloro A	0.9517	---		---		---		---	
Trichloro B	0.9697	---		0.5		---		---	
Total Trichloro-	(Only those with correct ion ratio)	---	0	---	0	---	0	---	0
	RRT ^{13}C-23478-PeCDF:								
Tetrachloro A	0.8888	---		0.2		---		---	
Tetrachloro B	0.9407	---		---		---		---	
Tetrachloro C	0.9576	---		---		---		---	
Tetrachloro D	0.9642	---		---		---		---	
Tetrachloro E	0.9737	---		---		---		---	
Total Tetrachloro-	(Only those with correct ion ratio)	---	0	---	0	---	0	---	0
	RRT ^{13}C-234678-HxCDF:								
Pentachloro A	0.9007	---		---		---		---	
Pentachloro B	0.9536	---		---		---		---	
Pentachloro C	0.9780	---		---		---		---	
Pentachloro D	1.0184	---		---		---		---	
Pentachloro E	1.0363	---		---		---		---	
Total Pentachloro-	(Only those with correct ion ratio)	---	0	---	0	---	0	---	0
	RRT ^{13}C-1234678-HpCDF:								
Hexachloro A	0.9906	---		---		---		---	
Hexachloro B	0.9953	---		---		---		---	
Hexachloro C	1.0469	---		---		---		---	
Hexachloro D	1.0541	---		---		---		---	
Total Hexachloro-	(Only those with correct ion ratio)	---	0	---	0	---	0	---	0
	RRT ^{13}C-OCDD:								
Heptachloro	0.9855	---	0	---	0	---	0	---	0
Total Heptachloro-									
Octachloro	1.1377	---	0	---	0	---	0	---	0

Percent Lipid:

13C-TCDF elutes at ~ 17:36 min	1056
13C-23478-PeCDF at 22:47 min	1367
13C-234678-HxCDF at 28:01 min	1681
13C-1234678-HpCDF at 32:01 min	1921
13C-OCDD at 39:05 min	2345

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 21. Estimated Polychlorinated Dibenzothiophene Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: May. 9, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:	Rising Pond									
CERC Number:	RP-Composite		RP-25-12		RP-30-7		RP-30-9			
GC/HRMS Sets: DF36 & DF37- Injection No.	37-35		37-37		37-38		37-39			
Sample Submitter No.		Total Number of		Total Number of		Total Number of		Total Number of	Total	Number of
Sample Mass Extracted (grams):	10.01	Congeners	10.04	Congeners	10.02	Congeners	10.02	Congeners	Congeners	
THIOPHENES										
Trichloro A	---		---		---		---			
Trichloro B	2.8		---		---			17		
Total Trichloro-	---	0	---	0	---	0	17		1	
Tetrachloro A	---		---		---		7.2			
Tetrachloro B	---		---		---		---			
Tetrachloro C	---		---		---		---			
Tetrachloro D	---		---		---		---			
Tetrachloro E	---		---		---		5.9			
Total Tetrachloro-	---	0	---	0	---	0	---		0	
Pentachloro A	4.1		---		---		---			
Pentachloro B	7.8		---		---		5.4			
Pentachloro C	5.5		---		---		31			
Pentachloro D	---		---		---		---			
Pentachloro E	---		---		---		---			
Total Pentachloro-	4.1	1	---	0	---	0	46		3	
Hexachloro A	---		---		---		---			
Hexachloro B	26		3.3		---		11			
Hexachloro C	---		---		---		---			
Hexachloro D	0.5		---		---		---			
Total Hexachloro-	26	1	---	0	---	0	11		1	
Heptachloro	---	0	---	0	---	0	---		0	
Total Heptachloro-										
Octachloro	---	0	---	0	---	0	---		0	
Percent Lipid:							**#DIV/0!**			

13C-TCDF elutes at ~ 17:36 min
13C-23478-PeCDF at 22:47 min
13C-234678-HxCDF at 28:01 min
13C-1234678-HpCDF at 32:01 min
13C-OCDD at 39:05 min

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 21. Estimated Polychlorinated Dibenzothiophene Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: May. 9, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:	Woods Pond							
CERC Number:	WP-Composite		WP-35-6		WP-35-8		WP-35-9	
GC/HRMS Sets: DF36 & DF37- Injection No.	37-40		37-18		37-19		37-20	
Sample Submitter No.		Total Number of		Total Number of		Total Number of		Total Number of
Sample Mass Extracted (grams):	10.01	Congeners	10.06	Congeners	8.62	Congeners	10.09	Congeners
THIOPHENES								
Trichloro A	---		---		---		---	
Trichloro B	21		---		39		---	
Total Trichloro-	---	0	---	0	---	0	---	0
Tetrachloro A	5.4		---		8.7		---	
Tetrachloro B	---		---		---		---	
Tetrachloro C	---		---		---		---	
Tetrachloro D	---		---		32		6.7	
Tetrachloro E	---		---		4.4		---	
Total Tetrachloro-	5.4	1	---	0	8.7	1	---	0
Pentachloro A	---		---		---		---	
Pentachloro B	4.0		1.0		6.1		4.5	
Pentachloro C	20		5.8		28		6.7	
Pentachloro D	---		---		---		---	
Pentachloro E	---		---		3.3		---	
Total Pentachloro-	39	3	9.8	2	61	4	11	2
Hexachloro A	---		---		---		---	
Hexachloro B	16		2.7		36		3.0	
Hexachloro C	---		---		---		---	
Hexachloro D	---		---		1.0		---	
Total Hexachloro-	16	1	2.7	1	37	2	---	0
Heptachloro	---	0	2.6	1	4.9	1	0.9	1
Total Heptachloro-								
Octachloro	---	0	---	0	---	0	---	0
Percent Lipid:							**#DIV/0!**	

13C-TCDF elutes at ~ 17:36 min
13C-23478-PeCDF at 22:47 min
13C-234678-HxCDF at 28:01 min
13C-1234678-HpCDF at 32:01 min
13C-OCDD at 39:05 min

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 21. Estimated Polychlorinated Dibenzothiophene Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: May. 9, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:	Deep Reach Pond							
CERC Number:	DRP-Comp. A		DRP-Comp.B		DRP-Comp. C		**Mean**	**% CV**
GC/HRMS Sets: DF36 & DF37- Injection No.	37-22		37-23		37-24			(Coefficient
	Replicate A		Replicate B		Replicate C			of Variation)
Sample Submitter No.		Total		Total		Total		
		Number of		Number of		Number of		
Sample Mass Extracted (grams):		Congeners		Congeners		Congeners		
THIOPHENES								
Trichloro A	---		---		---			
Trichloro B	---		---		9.9			
Total Trichloro-	---	0	---	0	---	0		
Tetrachloro A	5.2		---		4.3			
Tetrachloro B	---		---		---			
Tetrachloro C	---		---		---			
Tetrachloro D	---		---		---			
Tetrachloro E	---		---		1.7			
Total Tetrachloro-	5.2	1	---	0	4.3	1		
Pentachloro A	---		---		---			
Pentachloro B	2.4		---		3.5			
Pentachloro C	7.5		5.9		10			
Pentachloro D	---		---		---			
Pentachloro E	---		---		---			
Total Pentachloro-	13	2	5.9	1	3.5	1		
Hexachloro A	---		---		---			
Hexachloro B	8.5		14		15			
Hexachloro C	---		---		---			
Hexachloro D	---		0.6		---			
Total Hexachloro-	---	0	14	1	15	1		
Heptachloro	1.7	1	1.7	1	1.0	1		
Total Heptachloro-								
Octachloro	---	0	---	0	---	0		
Percent Lipid:							**#DIV/0!**	

13C-TCDF elutes at ~ 17:36 min
13C-23478-PeCDF at 22:47 min
13C-234678-HxCDF at 28:01 min
13C-1234678-HpCDF at 32:01 min
13C-OCDD at 39:05 min

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit

Table 21. Estimated Polychlorinated Dibenzothiophene Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: May. 9, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:	Deep Reach Pond									
CERC Number:	DRP-27-7		DRP-31-1		DRP-31-2		Procedure Blank #1		Procedure Blank #2	
GC/HRMS Sets: DF36 & DF37- Injection No.	37-25		37-27		37-42		36-27, 37-2		36-28, 37-3	
							2/15/2000		2/15/2000	
Sample Submitter No.		Total		Total		Total	Conc. (pg/g	Total	Conc. (pg/g	Total
		Number of		Number of		Number of	based on sa	Number of	based on sa	Number of
Sample Mass Extracted (grams):	10.05	Congeners	10.04	Congeners	10.05	Congeners	wgts 10 g	Congeners	wgts 10 g	Congeners
THIOPHENES										
Trichloro A	---		---		---		---		---	
Trichloro B	---		39		22		---		---	
Total Trichloro-	---	0	---	0	---	0	---	0	---	0
Tetrachloro A	---		---		---		---		---	
Tetrachloro B	---		---		---		---		---	
Tetrachloro C	---		---		3.5		---		---	
Tetrachloro D	---		---		27		---		---	
Tetrachloro E	1.1		---		7.6		---		---	
Total Tetrachloro-	---	0	---	0	11	3	---	0	---	0
Pentachloro A	---		---		2.0		---		---	
Pentachloro B	4.2		3.3		---		---		---	
Pentachloro C	6.9		18		47		---		---	
Pentachloro D	---		---		---		---		---	
Pentachloro E	0.5		---		---		---		---	
Total Pentachloro-	4.2	1	49	4	103	3	---	0	---	0
Hexachloro A	---		---		---		---		---	
Hexachloro B	6.5		22		39		---		---	
Hexachloro C	---		---		---		---		---	
Hexachloro D	---		---		---		---		---	
Total Hexachloro-	---	0	---	0	39	1	---	0	---	0
Heptachloro	---	0	---	0	---	0	---	0	---	0
Total Heptachloro-										
Octachloro	---	0	---	0	---	0	---	0	---	0
Percent Lipid:										

13C-TCDF elutes at ~ 17:36 min
13C-23478-PeCDF at 22:47 min
13C-234678-HxCDF at 28:01 min
13C-1234678-HpCDF at 32:01 min
13C-OCDD at 39:05 min

Table 21. Estimated Polychlorinated Dibenzothiophene Concentrations (pg/g) in Ovaries of Bass from the Housatonic River

File: DF37-housatonic-ovaries.xls
Date Reported: May. 9, 2001
Date Analyzed: March 6-8, 2001; March 13-15, 2001

Sample Site/Matrix:	Quality Assurance Samples									
CERC Number:	Bluegill Blank #1		Bluegill Blank #2		Bluegill Spike		Sag.Carp		*CARP*	
GC/HRMS Sets: DF36 & DF37- Injection No.	36-30, 37-4		36-31, 37-5, -29		36-32		36-33		*QC AVG.*	
	2/15/2000		2/15/2000		2/15/2000		2/15/2000		*from*	
Sample Submitter No.		Total		Total	250 or 1250	Total		Total	*1994-2000*	Total
		Number of		Number of	(25 or 125 p	Number of		Number of	*(N=39)*	Number of
Sample Mass Extracted (grams):	10.07	Congeners	10.02	Congeners	10.02	Congeners	10.06	Congeners		Congeners
THIOPHENES										
Trichloro A	---		---		---		4.4			
Trichloro B	---		---		---		74			
Total Trichloro-	---	0	---	0	---	0	74	1		
Tetrachloro A	---		---		---		225			
Tetrachloro B	---		---		---		*			
Tetrachloro C	---		---		---		3.8			
Tetrachloro D	---		---		---		5.3			
Tetrachloro E	---		---		---		77			
Total Tetrachloro-	---	0	---	0	---	0	307	4		
Pentachloro A	---		---		---		83			
Pentachloro B	---		---		---		286			
Pentachloro C	---		---		---		201			
Pentachloro D	---		---		---		*			
Pentachloro E	---		---		---		*			
Total Pentachloro-	---	0	---	0	---	0	570	3		
Hexachloro A	---		---		---		8.1			
Hexachloro B	---		---		---		646			
Hexachloro C	---		---		---		*			
Hexachloro D	---		---		---		90			
Total Hexachloro-	---	0	---	0	---	0	744	3		
Heptachloro	---	0	---	0	---	0	212	1		
Total Heptachloro-										
Octachloro	---	0	---	0	---	0	*	0		
Percent Lipid:								14		

13C-TCDF elutes at ~ 17:36 min
13C-23478-PeCDF at 22:47 min
13C-234678-HxCDF at 28:01 min
13C-1234678-HpCDF at 32:01 min
13C-OCDD at 39:05 min

LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Ion Ratio Outside of +/- 15% Tolerances
ND Not Detected at Specified Detection Limit