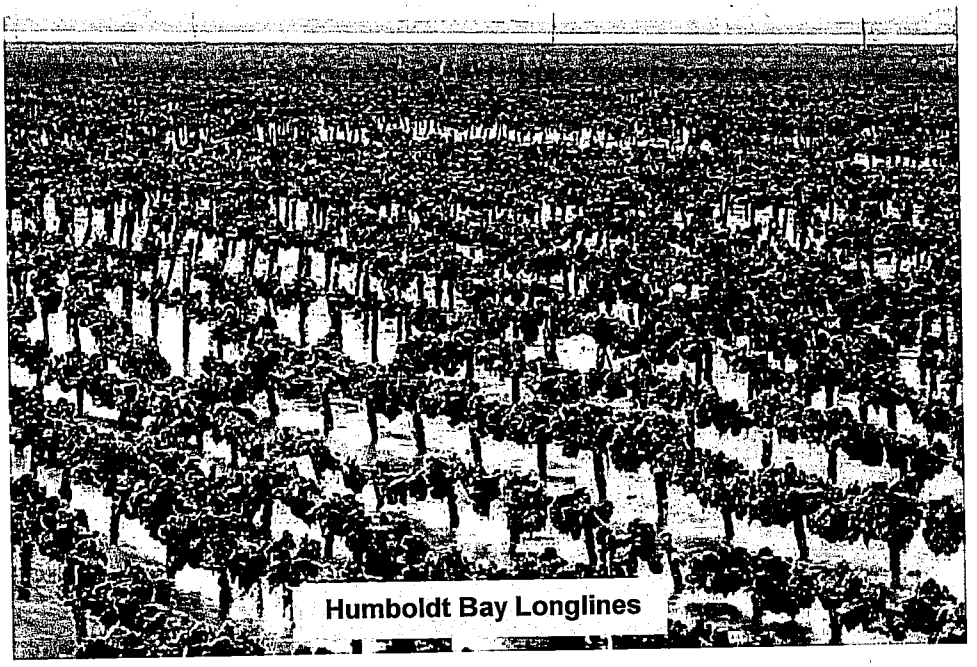
EVALUATION OF THE RESULTS OF DIOXIN AND OTHER CHEMICAL TESTING OF COMMERCIAL OYSTER BEDS IN HUMBOLDT BAY, CALIFORNIA FROM JUNE AND OCTOBER, 2002



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I. Acronyms and Abbreviations

ADD	Average daily dose
ATSDR	Agency for Toxic Substances and Disease Registry
BAAQMD	Bay Area Air Quality Management District
BW	Body weight
Cal/EPA	California Environmental Protection Agency
CDI	Chronic daily intake
CSF	Cancer slope factor
DHS	Department of Health Services
DTSC	California Department of Toxic Substances Control
EMPC	Estimated maximum possible concentration
HQ	Hazard quotient
kg	Kilogram
LADD	Lifetime average daily dose
mg	Milligram
mg/day	Milligram per day
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCDD	Octachlorinated dibenzo-p-dioxins
OCDF	Octachlorinated dibenzofurans
OEHHA	Office of Environmental Health Hazard Assessment
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
PCP	Pentachlorophenol
pg	Picograms
pg/g	Picograms per gram (or part per trillion)
RfD	Reference dose
RfC	Reference concentration
RME	Reasonably maximally exposed
SFRWQCB	San Francisco Regional Water Quality Control Board
SPI	Sierra Pacific Industries
TEFs	Toxic equivalency factors
TEQs	Toxic equivalents
TEQ/g	Toxic equivalents per gram (or parts per trillion)
UCL^{95}	95 percent upper confidence limit on the mean
USEPA	U.S. Environmental Protection Agency
USFDA	U.S. Food and Drug Administration
WHO	World Health Organization
2,3,7,8-TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin

II. Executive Summary

EnviroNet and ENVIRON on behalf of Sierra Pacific Industries (SPI), Arcata Division Sawmill located near Arcata, California, conducted dioxin, metals, and semivolatile organic compound testing in commercially grown oysters and mussels from Humboldt Bay, California. The initial study in June 2002 was in response to concerns raised by Coast Seafoods, Inc., and other local commercial shellfish businesses about possible contamination of commercial oyster beds located in Humboldt Bay. The October 2002 study was completed to comply with a specific request made by the Department of Health Services (DHS) to Coast Seafoods, Inc. The field sampling, chemical testing, and screening-level exposure analysis described in this report were performed in a manner consistent with U.S. Environmental Protection Agency (USEPA) and State of California guidance for collection and chemical testing of biota (and specifically shellfish) and risk assessment. The sampling and testing was conducted in June and October of 2002 in order to assess any seasonal variation that many be present.

This report summarizes the field sampling and chemical testing results and serves to update the previous report submitted by ENVIRON on July 18, 2002 by including the additional chemical testing results from the October 21st sampling event. This report also includes ENVIRON's evaluation of health risks to consumers posed by the presence of trace levels of dioxin in oysters and mussels using the June data, which is presented as the worst-case scenario from the two sampling events. The evaluation includes comparisons to levels in fish, oysters, and other shellfish reported in the scientific literature, comparisons to U.S. Food Drug Administration (USFDA) action levels for dioxins in fish and shellfish, and a screening-level shellfish consumption exposure analysis. The October data that are presented herein would indicate a health risk on the order of a factor of ten lower than that based on the evaluation of the June data. The results of this study together with data from additional environmental studies currently underway will be included in a detailed human health and ecological risk assessment to be submitted to the North Coast Regional Water Quality Board later in 2003.

As discussed below, pentachlorophenol (PCP) was not detected in either oysters or mussels; and the levels of dioxins that were detected in oysters and shellfish do not pose a significant health risk.

Investigation Methods

Oysters were collected from nine different commercial oyster beds in Humboldt Bay, California, and from one oyster and mussel storage platform located in the Mad River Slough on June 21, 2002 by ENVIRON and EnviroNet personnel. These locations were then resampled for oysters and mussels on October 21, 2002 by the same personnel to make a seasonal comparison of the beds and to investigate the changes in dioxin level with the change in percent lipid content of the oysters and mussels. At each commercial oyster bed, approximately 12 to 24 individual oysters were collected from oyster flats located on the sediment bottom or from longlines suspended in the water column. The oysters and mussels at the Mad River Slough storage platform location were maintained in nets suspended below the water surface. A total of 23 composite samples of whole oyster tissues and two composite samples of mussel tissue were assayed for total dioxins/furans

and the seventeen individual 2,3,7,8- substituted polychlorinated dibenzo-p-dioxins and furans by Alta Analytical Laboratory (El Dorado Hills, California) using USEPA Method 8290. Toxscan (Watsonville, California) performed the PCP testing using USEPA Method 8270 for the June sampling event and Caltest (Napa, California) performed the testing for the October sampling event. Caltest also analyzed the other semivolatile compounds by USEPA Method 8270 for the October sampling event, as well as chlorinated pesticides by USEPA Method 8081A, polychlorinated biphenyls by USEPA Method 8082, and metals by USEPA Method 6010B with mercury by USEPA Method 7471A.

Results

The dioxin and PCP test results are summarized in Table ES-1. The results of laboratory testing for dioxins in 23 composite samples of commercially grown oysters and two composite samples of commercially grown mussels indicated the presence of trace levels of dioxins. The 10 composite whole oyster tissue samples from the June sampling event had a total dioxin TEQ[1] concentration range between 0.8 and 4.3 pg dioxin TEQ/g (Toxic equivalents /gram or parts per trillion) with a mean concentration valve of 1.8 pg dioxin TEQ/g. The 13 composite whole oyster tissue samples from the October sampling event had a total dioxin TEQ concentration range between 0.12 and 0.25 pg dioxin TEQ/g with a mean concentration value of 0.21 pg dioxin TEQ/g. The dioxin TEQ concentration from the two composite mussel samples that were collected for the June and October sampling events was 1.0 pg and 0.1 pg dioxin TEQ/g, respectively. PCP was not detected in oysters or mussels from either sampling event.

Table ES-1. Results of dioxin and pentachlorophenol testing of composite whole oyster and mussel tissues collected from commercial beds in Humboldt Bay, California.

Chemical Tested	June 21, 2002		October 21, 2002	
	Mussel (1 sample)	Oyster (10 samples)	Mussel (1 sample)	Oyster (13 samples)
Dioxin (pg dioxin TEQ/g wet weight)	1.0	1.80	0.10	0.21
Pentachlorophenol	ND	ND	ND	ND

In general, dioxin TEQ concentrations were lower in October than in June. This may be due, in part, to the lipid content in oysters and mussels, which also were generally lower in October than in June. Dioxin TEQ concentrations were slightly, but not statistically significantly, higher in diploid Pacific oysters than in Kumamoto oysters and triploid Pacific oysters. There was no statistical difference in the concentrations of dioxin TEQs in oysters cultivated using a longline suspended in the water and oysters cultivated in beds on the sediment bottom. The dioxin TEQ concentration in one mussel sample from the Mad River Slough was within the range of dioxin TEQ concentrations found in oysters collected in the Humboldt Bay. The concentrations of

[1] TEQ stands for "toxicity equivalent" and takes into account the relative toxicities of 17 individual dioxin/furan congeners recognized by USEPA and CalEPA as posing possible health concerns to humans. The method used to calculate TEQs in this report comes from the World Health Organization (1998) and has been adopted by USEPA and Cal/EPA.

dioxins in oysters from two background commercial oyster beds located furthest from the Mad River Slough and close to the City of Eureka were not statistically different from the concentrations found in oysters collected elsewhere in the Humboldt Bay.

Comparisons to Levels in Fish and Shellfish

Few data on dioxins in oysters, fish, and other shellfish are available in the scientific literature (Figure ES-1). Testing for dioxins has not been included as part of local, state, or federal monitoring programs in the State of California. The few data available from the literature and from U.S. coastal monitoring programs conducted elsewhere by the National Oceanic and Atmospheric Administration (NOAA) suggests similar levels of dioxins from oysters in Humboldt Bay for the October sampling event. Dioxin TEQ levels for the June sampling event when percent lipid content was higher were slightly elevated from other sites within the United States, but still at approximately half the dioxin TEQ level from oysters reported from British Columbia. It was not clear from the literature, however, if these comparisons were made for similar lipid contents.

Comparisons to USFDA Action Levels

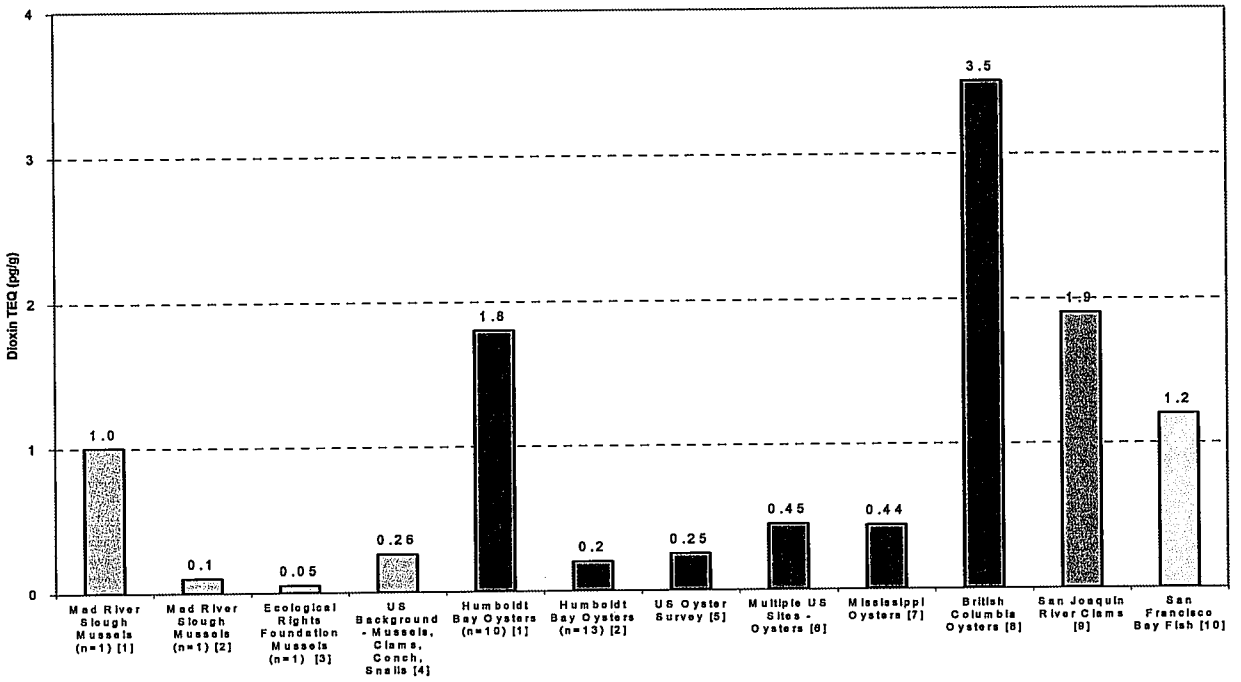
Dioxin levels in oysters and mussels also were compared to action levels in fish and shellfish established by the U.S. Food and Drug Administration (U.S. FDA; Figure ES-2). The concentrations of total dioxin TEQs in oysters and mussels from Humboldt Bay are well below the 25 pg TEQ/g benchmark for dioxins in fish or shellfish tissues that U.S. FDA has identified as a level associated with no serious health effects, and well below the 50 pg TEQ/g action level at which USFDA recommends against fish and shellfish consumption.

Assessment of Risks to Shellfish Consumers

To further evaluate the potential health risks to shellfish consumers, a conservative screening-level exposure model was used to predict the theoretical daily intake of dioxin TEQs by a person who consumes oysters and mussels commercially grown in Humboldt Bay. Using conservative consumption estimates developed by USEPA and assuming the person's shellfish diet consists entirely of oysters or mussels from Humboldt Bay (and from nowhere else) and that the levels of dioxins were always at their elevated levels (similar to the June sampling event level where percent lipid content are elevated due to spawning, which makes the oysters less desirable [personal communications from representatives of Coast Seafoods, Inc. to S. Knuttel of EnviroNet, January 2003], and dioxin concentrations are on the order of ten times higher than the October sampling levels), the occurrence of dioxins in oysters and mussels does not pose a significant health risk to shellfish consumers. The theoretical health risks posed by exposure to dioxins assuming a daily diet of oysters and mussels from Humboldt Bay posed an incremental lifetime cancer risk below 1 in 1,000,000 (10^{-6} risk). The predicted theoretical health risks were below the 10^{-4} to 10^{-6} risk range considered acceptable by USEPA, and below the 10^{-5} risk level specified in California Proposition 65 as the threshold for communicating a potential health hazard of a consumer product to the general public (Figure ES-3).

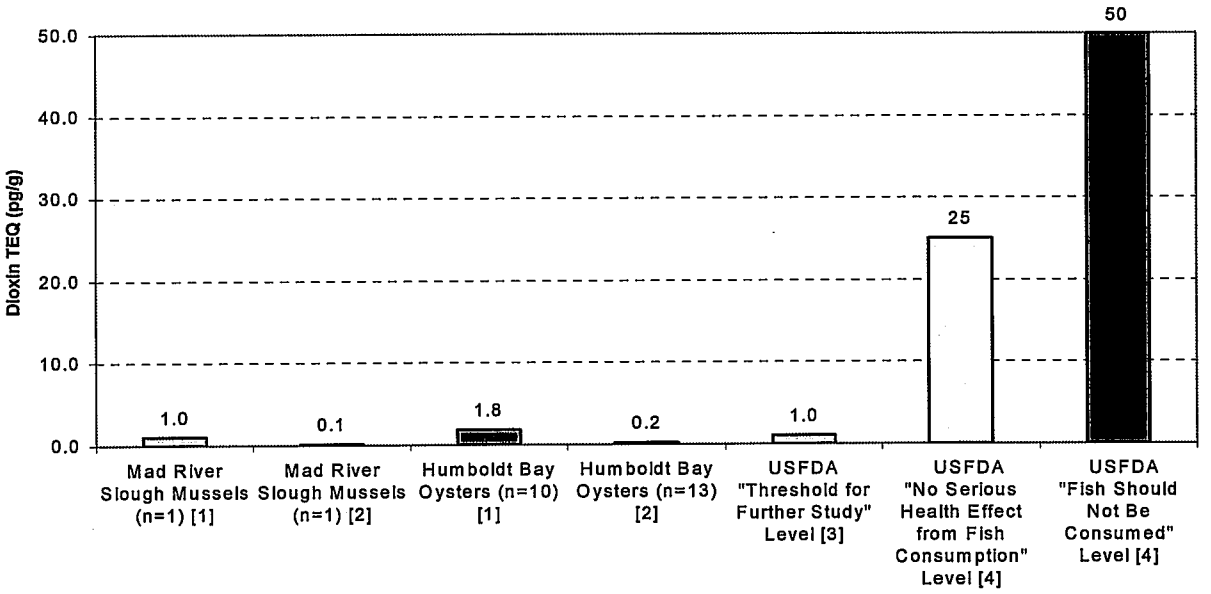
Furthermore, the results of the screening exposure model indicate that the consumption of Humboldt Bay oysters represents a small contribution to the total daily intake of dioxins typically encountered in the diet (Figure ES-4). Based on the June sampling information, the results of the shellfish consumption assessment indicated that a person consuming oysters and mussels from Humboldt Bay would ingest approximately 0.3 and 0.07 pg TEQ/day, respectively. These values would be a factor of 10 lower (approximately 0.03 and 0.007 pg TEQ/day respectively for oysters and mussels) using the October sample results. Exposure to dioxin in Humboldt Bay oysters by shellfish consumers represents less then 0.1% of the typical background intake associated with food consumption (53 pg TEQ/day) and exposure from all environmental sources (59 pg TEQ/day).

Figure ES-1. Comparison of dioxin TEQ levels in composite whole oyster and mussel tissues collected from commercial beds in Humboldt Bay, California, with levels in reported in fish and shellfish from California and elsewhere (n = number of samples tested).



Notes: [1] June 21, 2002 Sampling Event from Humboldt Bay.
[2] October 21, 2002 Sampling Event from Humboldt Bay.
[3] Ecological Rights Foundation mussel sample collected on March 24, 2002 in Mad River Slough.
[4] USEPA (2000) Draft Dioxin Reassessment, Part 1, Vol. 3, Table 3-28, TEQ.
[5] Wade, et al. NOAA (1998 and unpublished data) Average TEQ from 32 samples.
[6] USFDA Fish and Shellfish Data for 1995-1999 (Jensen and Bolger, 2000; Jensen, et al. 2000). ND=DL/2.
[7] Fiedler, et al. (1997). Average TEQ from 15 samples. ND=DL/2.
[8] Hagen, et al. (1997). Data collected in 1992 from 2 British Columbia coastal pulp mills. Extrapolated from graphical data.
[9] Haywad, et al. (1996). Data from 9 San Joaquin River sites near a wood-treatment facility; ITEQ.
[10] San Francisco Regional Water Quality Control Board (1995) Average TEQ from 19 samples.

Figure ES-2. Comparison of dioxin TEQ levels in composite whole oyster and mussel tissues collected from commercial beds in Humboldt Bay, California, with U.S. Food and Drug Administration (USFDA) action levels in fish and shellfish (n = number of samples tested).



Notes: [1] June 21, 2002 Sampling Event from Humboldt Bay
[2] October 21, 2002 Sampling Event from Humboldt Bay
[3] Personal communication from Barbara Montwill, USFDA office of Seafood, May 17, 2002
[4] ATSDR 1998 toxicological profile for chlorinated dibenzo-p-dioxins, USFDA - levels are for 2,3,7,8-TCDD in Great Lakes fish 1981

Figure ES-3. Theoretical additional cancer risk associated with the consumption of oysters and mussels from Humboldt Bay, California based on June sampling levels.

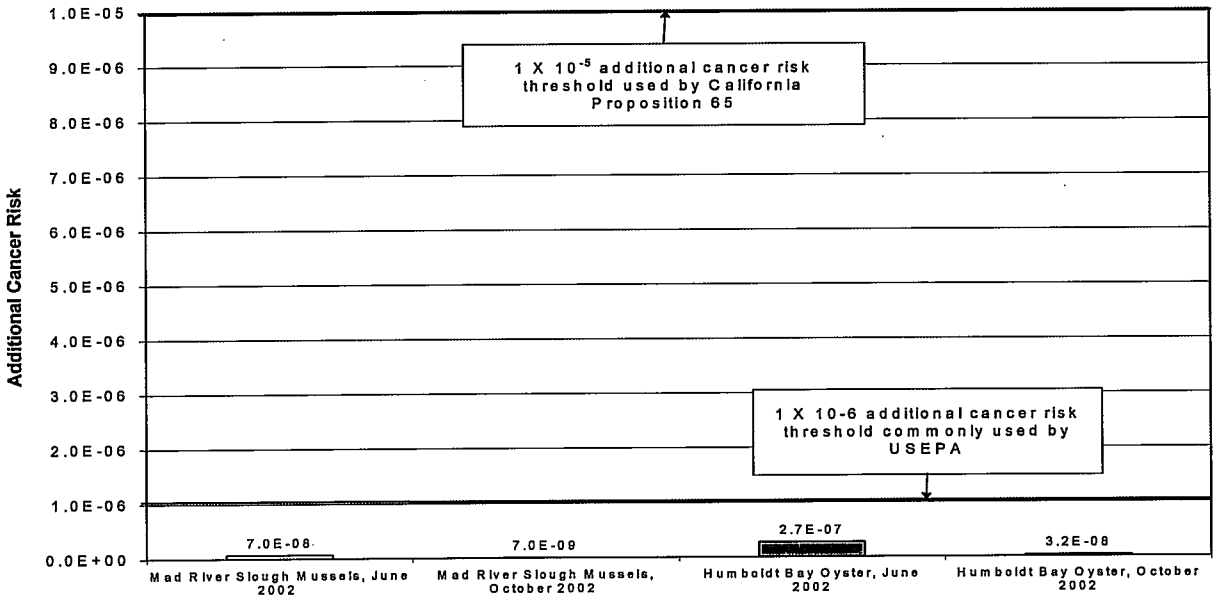
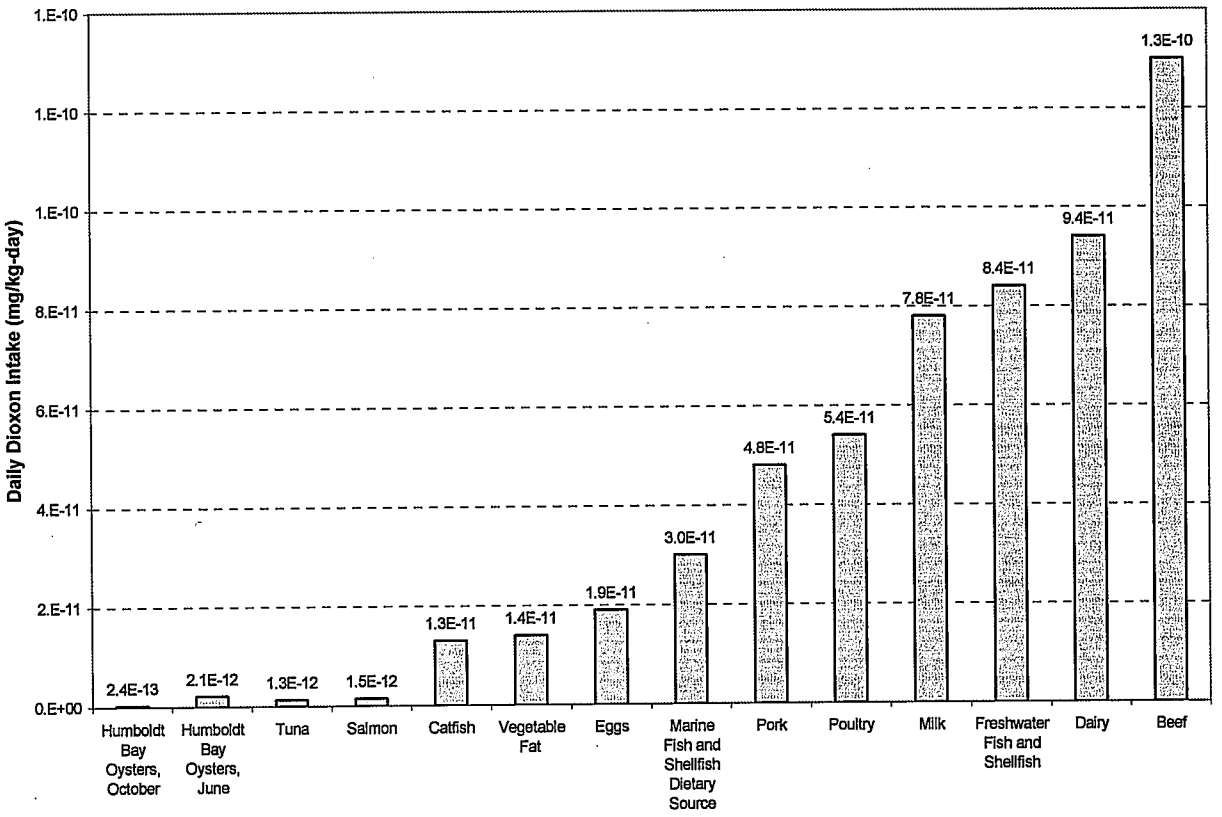


Figure ES-4. Comparison of the theoretical average daily intake of dioxin TEQ from consumption of Humboldt Bay oysters with total dioxin intake from all dietary sources estimated by USEPA in the Draft Dioxin Reassessment (USEPA, 2000b).



Conclusions of the Study

The results of this study support the following conclusions:

1. Testing of composite samples of whole oyster and mussel tissues collected from Humboldt Bay indicated the presence of low concentrations of dioxins. Levels were less than 2.3 pg total dioxin TEQ/g in all but one composite oyster tissue sample with a level of 4.3 pg total dioxin TEQ/g from the June sampling event. Dioxin TEQ levels were all less than 0.3 pg total dioxin TEQ/g from the October sampling event. The June sampling data falls within the range for San Francisco Bay fish and San Joaquin River clams while the October sampling data seems to fall within the range for oysters from other United States sites.

2. The levels of dioxins in oysters and mussels are well below the 25 pg/g (picograms/gram or part per trillion) benchmark for dioxins in fish or shellfish tissues that USFDA has identified as a level associated with no serious health effects.

3. Using a screening-level exposure model to evaluate intake and health risks to shellfish consumers using only the June data, the occurrence of dioxins in oysters and mussels from

Humboldt Bay does not pose a significant health risk to shellfish consumers. The theoretical health risks posed by exposure to dioxins assuming a daily diet of oysters and mussels from Humboldt Bay posed an incremental lifetime cancer risk below 1 in 1,000,000 (10^{-6} risk), which is below the 10^{-4} to 10^{-6} risk range considered acceptable by USEPA and the State of California, and below the 10^{-5} risk level specified in California Proposition 65 as the threshold for communicating a potential health hazard of a consumer product to the general public in the State of California.

4. The presence of dioxins in oysters and mussels from Humboldt Bay represents a negligible contribution to a person's normal background exposure to dioxins. Dioxin exposure to shellfish consumers represents less than 0.1% of the typical background daily intake estimated by the USEPA.

III. Introduction

EnviroNet and ENVIRON on behalf of Sierra Pacific Industries, Arcata Division Sawmill located near Arcata, California, conducted dioxin, metals, and semivolatile organic compound testing in commercially grown oysters and mussels from Humboldt Bay, California. The initial study in June 2002 was in response to concerns raised by Coast Seafoods, Inc., and other local commercial shellfish businesses about possible contamination of commercial oyster beds located in Humboldt Bay. The October 2002 study was completed to comply with a specific request made by the Department of Health Services (DHS) to Coast Seafoods, Inc. The field sampling, chemical testing, and screening-level exposure analysis described in this report were performed in a manner consistent with USEPA and State of California guidance for collection and chemical testing of biota (and specifically shellfish) and risk assessment. The sampling and testing was conducted in June and October of 2002 in order to assess any seasonal variation that many be present.

This report summarizes the field sampling and chemical testing results and serves to update the previous report submitted by ENVIRON on July 18, 2002 by including the additional chemical testing results from the October 21st sampling event. This report also includes ENVIRON's evaluation of health risks to consumers posed by the presence of trace levels of dioxin in oysters and mussels using the June data, which is presented as the worst-case scenario from the two sampling events. The evaluation includes comparisons to levels in fish, oysters, and other shellfish reported in the scientific literature, comparisons to U.S. Food Drug Administration (USFDA) action levels for dioxins in fish and shellfish, and a screening-level shellfish consumption exposure analysis. The October data that are presented herein would indicate a health risk on the order of a factor of ten lower than that based on the evaluation of the June data. The results of this study together with data from additional environmental studies currently underway will be included in a detailed human health and ecological risk assessment to be submitted to the North Coast Regional Water Quality Board later in 2003.

This work was performed in a manner consistent with USEPA and State of California guidance for collection and chemical testing of biota (and specifically shellfish) and human health risk assessment. Sampling and chemical testing of commercially grown oysters was performed to accomplish four objectives:

1. Collect a sufficient number of oysters from different commercial oyster beds in Humboldt Bay from two seasonal events to obtain a statistically meaningful, representative data set describing chemical levels in whole oyster tissue from each sampling event.

2. Characterize the chemical content in oysters collected from each commercial oyster bed.

3. Determine whether the chemical content in oysters from each commercial bed exceeds the chemical content in oysters from commercial beds in Humboldt Bay or elsewhere that are not affected by activities associated with the SPI Sawmill.

4. Develop data to support a determination of whether the chemical content in oysters from each commercial bed poses a health risk to consumers.

Dioxins

Dioxins have received considerable attention over the past two decades because of their widespread occurrence in the environment and potential health effects associated with occupational exposure in certain industrial environments (USEPA, 2000a, 2000b). The name "dioxin" commonly used for the family of structurally related chemicals called polychlorinated dibenzo-para-dioxins (sometimes referred to as PCDDs or chlorinated dioxins or dioxins) and polychlorinated dibenzofurans (sometimes referred to as PCDFs or chlorinated furans or furans). This family includes 75 individual compounds referred to as dioxin congeners and 135 individual compounds referred to as furan congeners. The most toxic chemical in this family, called 2,3,7,8-tetrachlorodibenzo-p-dioxin (typically referred to as 2,3,7,8-TCDD or "TCDD"), is widely recognized as the most toxic of the 210 individual dioxin congeners.

Both man-made and natural processes generate dioxins. Dioxins are by-products of a wide range of industrial processes and are typically formed when thermal processes involve chlorine-containing organic substances. Industrial processes identified by the USEPA (2000a, 2000b) as capable of generating dioxins include waste incineration, bleaching of paper pulp, and the manufacturing of some herbicides and pesticides. Other major sources include the production of iron and steel, backyard burning of household waste, wood burning, burning fuel for home heating, automobile engines, and electrical power generation. In terms of dioxin release into the environment, municipal solid waste incinerators are among the largest sources. Relatively small amounts of dioxins are formed during wastewater and drinking water treatment. Dioxins also result from natural processes, such as volcanic eruptions and forest fires.

It is widely recognized by USEPA and the scientific community that dioxins are ubiquitous in the environment. Dioxins are persistent, long-lived chemicals and do not readily degrade. When released into the air bound to airborne particles, dioxins may be transported long distances, even around the globe. When released to rivers and streams through wastewater discharges, dioxins attach to particulate matter and settle to bottom sediments. When deposited to soil or bottom sediments, dioxins may accumulate in the food chain (e.g., in fish, beef cattle, chickens, dairy cows, and other farm animals), resulting in measurable levels in a variety of foods and beverages.

In California, studies conducted in the San Francisco Bay Area by the Regional Water Quality Control Board and Bay Area Air Quality Management District (BAAQMD) hypothesize that the primary mechanism by which dioxins enter the environment and human diet is through atmospheric deposition and storm-water runoff (SFRWQCB, 1998; BAAQMD, 1996). Measurable levels of dioxins have been reported in fish from San Francisco Bay and in Bay Area and Central Valley lakes (OEHHA, 1999). An investigation of dioxins and their sources performed by the San Francisco Regional Water Quality Control Board (SFRWQCB) concluded that the distribution of dioxins typically found in sport fish, air, and storm water closely resembles that observed in releases from a wide variety of combustion sources (Wenning et al., 1999, 2000; SFRWQCB, 1998).

The single largest source of human exposure to dioxins is through the consumption of food, primarily meat, dairy products, and fish (Jensen and Bolger, 2001; USEPA, 2000b). According to USEPA (2000b), more than 90% of a person's average daily intake of dioxins is from the diet.

Food products of animal origin (i.e., fish, meat, eggs, and dairy products), which have a high fat content, have higher concentrations of dioxins than food products that have lower fat content. Generally, of all the food products, fish and meat products are the largest source of dietary exposure to dioxins (USEPA, 2000b).

Dioxin Toxicity Equivalents

Throughout this report, dioxins are reported using a toxic equivalency (TEQ) scheme developed by the World Health Organization (WHO) and adopted by the USEPA and California EPA. Among the 210 congeners that comprise the family of dioxins, seventeen congeners are generally recognized by scientists as capable of eliciting a toxic response in animals and humans. The structure of each of the 17 dioxin congeners includes a basic chemical ring structure with one or more chlorine atoms attached. The toxicity of the different dioxins is largely determined by the position and number of chlorine atoms on the molecule.

Because the majority of toxicological studies have been conducted with 2,3,7,8-TCDD and relatively few studies have been conducted for most of the other dioxin congeners, the toxicity of different dioxins are calculated using the WHO's TEQ scheme. The WHO (van den Berg et al., 1998; IARC, 1997) and the USEPA (2000b) have adopted the TEQ scheme to estimate the potential effects of environmental samples that contain individual dioxin congeners. Each of the seventeen 2,3,7,8-substituted dioxin congeners has been assigned a toxicity equivalence factor (TEF) value. TEFs are estimates of the toxicity of different dioxin congeners *as compared to* the toxicity of 2,3,7,8-TCDD, which has been assigned a TEF value of one.

The concentrations of dioxins in environmental samples are reported as total dioxin toxic equivalents (sometimes referred to as total TEQ or as total dioxin TEQ). These total dioxin TEQ levels are evaluated in three steps. First, the laboratory measures the concentration of each individual dioxin congener. Second, the measured concentration of the individual congener is multiplied by its corresponding TEF value to produce a TEQ for each congener. And, third, the TEQ congeners for each of the 17 dioxin congeners are added together to determine the total dioxin TEQ concentration in the sample. For congeners reported as non-detect, a value of "0.0" is used to determine the minimum TEQ value and a value equal to the detection limit or estimated maximum possible concentration (EMPC) is used to determine the maximum TEQ value. As is standard practice, a value of one-half the detection limit or EMPC is used to determine the TEQ calculations in this report.

Organization of this Report

In this report, the results of dioxin are summarized, and the data are compared to levels in fish and shellfish reported in the scientific literature. The results of a screening-level exposure and risk analysis also are presented to compare exposures to dioxin through consumption of oysters and mussels from Humboldt Bay to total dietary exposure, and to evaluate whether the levels found in oysters and mussels commercially-grown in Humboldt Bay pose a health threat to shellfish consumers.

The dioxin laboratory data sheets for the June sampling event (ENVIRON, 2002) are included as Appendix I. The semivolatile organic compounds, PCB Aroclors and Chlorinated Pesticides laboratory data sheets for the October samples are included as Appendix II. The Dioxin laboratory data sheets for October sampling events are included as Appendixes III. The TEQ values for this report along with the minimum and maximum TEQ values are also presented as calculation spreadsheets for the October samples in Appendix III. The screening-level exposure model and assumptions used to calculate theoretical exposures and risks associated with the consumption of oysters and mussels is provided as Appendix IV. As this document was provided to update the original report submitted on July 18, 2002 and similar methods were used by ENVIRON for both sampling events, ENVIRON's field sampling and analysis plan, field sampling documentation, and question and answer fact sheet on dioxin are not provided with this document.

IV. Environmental Results and Discussion

Sampling and Chemical Testing Methods

The Sampling and Analysis Plan describing the protocols used by EnviroNet and ENVIRON during the collection of oysters and mussels and the chemical testing methods for dioxins and semivolatile organic compounds is provided in ENVIRON's original report (ENVIRON, 2002 Appendix I); documentation of the field sampling activities, including photographs taken during the June field sampling activities, a sample location table and map, and chain of custody documents are also provided in that report (ENVIRON, 2002 Appendix II).

Oysters were collected from nine different commercial oyster beds in Humboldt Bay, California, on June 21 and October 21, 2002 (Table 1). Oysters and mussels were also collected from one oyster and mussel storage platform located in the Mad River Slough on the same days. A map of the sampling locations is included as Figure 1.

The different cultivation methods of the commercial oyster beds are listed in Table 1. With two exceptions, Coast Seafoods, Inc. manages all of the commercial beds included in this study. The oyster bed at Location 3 in Humboldt Bay and the oyster and mussel storage platform in the Mad River Slough (Location 4) are managed by North Bay Shellfish Company. The commercial oyster beds at Locations 1 and 2 in the southern portion of Humboldt Bay were selected as background locations that have not been impacted by activities associated with the SPI Sawmill, which is located in the northern portion of Humboldt Bay at the confluence of the Mad River Slough, west of the City of Arcata.

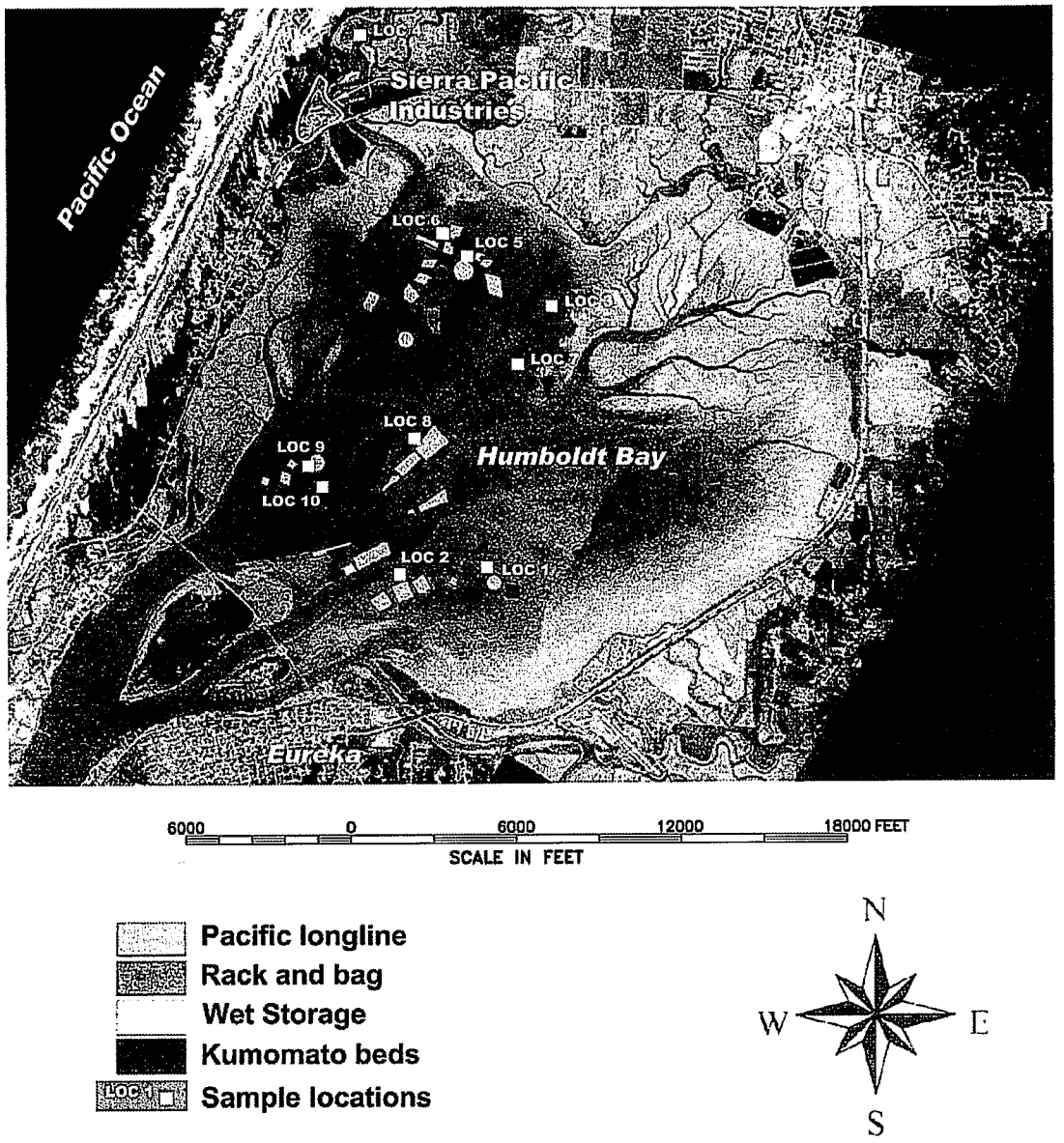
At each commercial oyster bed, approximately 12 to 24 individual oysters were collected from oyster flats located on the sediment bottom or from longlines suspended in the water column. Oysters grown on longline beds were typically four to five feet below the water surface. Oysters grown on the bottom were approximately six feet below the water surface. The oysters and mussels at the Mad River Slough storage platform location were maintained at approximately four feet below the water surface. Mussels grown in suspended nets were collected from the storage platform in the Mad River Slough. Oysters and mussels grown in bedded flats or suspended on longlines in the water column were handled and tested separately.

Representatives of either Coast Seafoods, Inc. or North Bay Shellfish Company used typical commercial harvesting methods to harvest oysters on June 21 and October 21, 2002. For bedded oysters, an oyster rake was used to detach the oysters from the sediment bottom and bring them aboard the boat. Oysters were harvested from the upper portion of the longline that was suspended in the water column. The longlines were hauled aboard the boat and cut at a length sufficient to provide approximately 12 to 24 individual oysters. In the Mad River Slough, mussels grown in net bags suspended in the water column beneath a floating raft were hauled aboard and approximately 50-60 individual mussels were collected.

Table 1. Summary of oyster and mussel sample locations.

SAMPLE ID	DATE COLLECTED	LOCATION	LOCATION DESCRIPTION	BED TYPE	TYPE	SAMPLE TYPE
020621-EBAY-6-2	6/21/2002	1	Coast Seafood, Inc., East Bay Bed 6-2	Bottom	Tissue	Pacific Triploid Oyster
020621-EBAY-1-2	6/21/2002	2	Coast Seafoods, Inc., East Bay Bed 1-2	Longline	Tissue	Pacific Triploid Oyster
020621-NBSC	6/21/2002	3	North Bay Shellfish Company Bed	Longline	Tissue	Pacific Diploid Oyster
020621-NBSCM	6/21/2002	4	North Bay Shellfish Company Mussel	Rack & Bag	Tissue	Mussel
020621-NBSC-02	6/21/2002	4	North Bay Shellfish Company Wet Storage Oyster	Rack & Bag	Tissue	Pacific Diploid Oyster
020621-MR-7-1	6/21/2002	5	Coast Seafoods, Inc., Mad River Bed 7-1	Bottom	Tissue	Pacific Diploid Oyster
020621-MR-7-2	6/21/2002	6	Coast Seafoods, Inc., Mad River Bed 7-2	Longline	Tissue	Pacific Diploid Oyster
020621-SIN	6/21/2002	7	Coast Seafoods, Inc., Sand Island North Bed	Longline	Tissue	Pacific Diploid Oyster
020621-SIN-1-2	6/21/2002	8	Coast Seafoods, Inc., Sand Island North Bed 1-2	Longline	Tissue	Kumamoto Oyster
020621-BIN	6/21/2002	9	Coast Seafoods, Inc., Bird Island North Bed	Longline	Tissue	Pacific Diploid Oyster
020621-BIS	6/21/2002	10	Coast Seafoods, Inc., Bird Island South Bed	Longline	Tissue	Kumamoto Oyster
DM-0003	10/21/2002	1	Coast Seafoods, Inc., East Bay Bed 6-2	Longline	Tissue	Kumamoto Oyster
DM-0001	10/21/2002	2	Coast Seafoods, Inc., East Bay Bed 1-2	Longline	Tissue	Pacific Diploid Oyster
DM-0015a	10/21/2002	3	North Bay Shellfish Company Bed	Longline	Tissue	Pacific Diploid Oyster
DM-0015b	10/21/2002	3	North Bay Shellfish Company Bed	Longline	Tissue	Pacific Diploid Oyster
DM-0021	10/21/2002	4	North Bay Shellfish Company Wet Storage Oyster	Rack & Bag	Tissue	Pacific Diploid Oyster
DM-0023	10/21/2002	4	North Bay Shellfish Company Mussel	Rack & Bag	Tissue	Mussel
DM-0025	10/21/2002	4	North Bay Shellfish Company Oyster	Rack & Bag	Tissue	Olympia Oyster
DM-0017	10/21/2002	5	Coast Seafoods, Inc., Mad River Bed 7-1	Bottom	Tissue	Pacific Diploid Oyster
DM-0019	10/21/2002	6	Coast Seafoods, Inc., Mad River Bed 7-2	Longline	Tissue	Pacific Diploid Oyster
DM-0013	10/21/2002	7	Coast Seafoods, Inc., Sand Island North Bed	Longline	Tissue	Pacific Diploid Oyster
DM-0011	10/21/2002	8	Coast Seafoods, Inc., Sand Island North Bed 1-2	Longline	Tissue	Kumamoto Oyster
DM-0005	10/21/2002	9	Coast Seafoods, Inc., Bird Island North Bed	Longline	Tissue	Pacific Diploid Oyster
DM-0007	10/21/2002	10	Coast Seafoods, Inc., Bird Island South Bed	Longline	Tissue	Pacific Diploid Oyster
DM-0009	10/21/2002	10	Coast Seafoods, Inc., Bird Island South Bed	Longline	Tissue	Kumamoto Oyster

Figure 1. Sample location map.



Unshucked oysters and mussels collected at each location were placed in double sealable Ziploc™ plastic storage bags, labeled, and stored with blue ice packs in coolers for shipment to the appropriate analytical laboratory. The oyster and mussel tissue samples were then shipped using a chain-of-custody protocol by courier for same-day delivery.

Composite samples of whole oyster and mussel tissue were assayed for total dioxins/furans and the individual seventeen 2,3,7,8-substituted polychlorinated dibenzo-p-dioxins and furans (dioxins) by Alta Analytical Laboratory (El Dorado Hills, California) using USEPA Method 8290. Results for percent lipid and percent moisture content were generated as well. PCP testing of the composite samples using USEPA Method 8270 was performed by Toxscan (Watsonville, California) for the June sampling event and by Caltest (Napa, California) for the October sampling event. The October samples were also tested for the other semivolatile organic compounds by

USEPA Method 8270, chlorinated pesticides using USEPA Method 8081A, polychlorinated biphenyls using USEPA Method 8082, and metals using USEPA Method 6010B (USEPA Method 7471A for mercury) by Caltest (Napa, California).

Pentachlorophenol and Results of Other Chemicals Tested

A summary of the semivolatile organic compounds including PCP and metals detected in the mussel and oyster tissue samples is found in Table 2. Complete sample results are found in Appendixes II.

Testing by Toxscan and Caltest for PCP resulted in no detectable quantities in any of the mussel or oyster samples. Analyses of the other semivolatile organic compounds were also non detect, except for minor condensations of Di-n-butlyphalate, bis (2-ethyhexyl) phthalate, and Pyridine. The detection limit was 1 part per million (after dilution). Di-n-butlyphalate and bis (2-ethyhexyl) phthalate are common lab contaminates associated with plastics and plasticizers and Di-n-butlyphalate was also found in the lab blanks. Pyridine is reported within all samples at estimated quantity except for the two locations in Humboldt Bay (5 and 6) closest to the SPI mill site, which were non detect. Pyridine is use in the manufacturing of a number of different chemicals and can also be formed from the breakdown of many natural materials in the environment (ATSDR 1995). The pyridine results may also be created either as a result of the extraction chemical protocol which involves decaying biological matter or created in the mass spectrometer's ion source during high energy fragmentation of other abundant nitrogen containing ring compounds as the analytical method used was intended for sediment and not to prepare the tissue samples (personal communication from M.A. Valentini, Ph.D. of Analytical Sciences to S. Knuttel of EnviroNet, December, 2002).

Non-detectable quantities were found for chlorinated pesticides and polychlorinated biphenyls for all mussel and oyster tissue samples from the October sampling event. Metals data for the samples were non-detect for Antimony, Barium, Beryllium, Chromium, Cobalt, Lead, Molybdenum, Nickel, Selenium, Thallium, and Vanadium, with levels of Arsenic, Cadmium, Mercury and Zinc at similar levels to background (Location 1 and 2) levels. Silver was detected at Locations 3, 5 and 6 at a maximum concentration of 2.2 milligram per kilogram (mg/kg). Copper levels were similar to background at each location with slightly elevated levels of 39 and 51 mg/kg at locations 5 & 6, respectively.

Table 2. Results of semivolatile organic compounds and metals testing of composite whole oyster and mussel tissues collected from commercial beds in Humboldt Bay, California.

LOCATION	SAMPLE ID	SAMPLE TYPE	Semivolatile Organic Compounds		
			Di-n-butylphthalate	bis (2-Ethyhexyl) phthalate	Pyridine
4	DM-0023	Mussel	B 8.6	ND	E 34
1	DM-0003	Kumamoto Oyster	ND	ND	E 34
2	DM-0001	Pacific Diploid Oyster	17.0	2.6	E 40
3	DM-0015a	Pacific Diploid Oyster	B 3.0	ND	E 27
3	DM-0015b	Pacific Diploid Oyster	B 2.9	ND	E 25
4	DM-0021	Pacific Diploid Oyster	B 4.8	ND	ND
4	DM-0025	Olympia Oyster	B 8.2	ND	E 40
5	DM-0017	Pacific Diploid Oyster	B 3.4	ND	ND
6	DM-0019	Pacific Diploid Oyster	B 10	ND	ND
7	DM-0013	Pacific Diploid Oyster	ND	ND	E 34
8	DM-0011	Kumamoto Oyster	ND	ND	E 36
9	DM-0005	Pacific Diploid Oyster	ND	ND	E 42
10	DM-0007	Pacific Diploid Oyster	B 1.2	ND	E 26
10	DM-0009	Kumamoto Oyster	B 1.6	ND	E 33
NA	NA	QC Sample	1.35	ND	ND

B = Blank contaminate

E = Estimated concentration above the laboratory calibration limit of 20

LOCATION	SAMPLE ID	SAMPLE TYPE	Metals (Detection Limit) *					
			Arsenic (1 mg/kg)	Cadmium (0.2 mg/kg)	Copper (1 mg/kg)	Mercury (0.02 mg/kg)	Silver (0.6 mg/kg)	Zinc (4 mg/kg)
4	DM-0023	Mussel	2	0.4	ND	0.02	ND	12
1	DM-0003	Kumamoto Oyster	2	0.8	16	0.02	ND	96
2	DM-0001	Pacific Diploid Oyster	2	0.7	12	0.02	ND	79
3	DM-0015a	Pacific Diploid Oyster	2	0.7	22	0.03	0.6	130
3	DM-0015b	Pacific Diploid Oyster	2	0.8	20	0.03	ND	100
4	DM-0021	Pacific Diploid Oyster	2	0.7	17	0.02	ND	78
4	DM-0025	Olympia Oyster	1	0.4	30	0.02	ND	110
5	DM-0017	Pacific Diploid Oyster	1	0.8	39	0.03	1.8	110
6	DM-0019	Pacific Diploid Oyster	2	1.3	51	0.03	2.2	140
7	DM-0013	Pacific Diploid Oyster	2	0.8	6	0.03	ND	60
8	DM-0011	Kumamoto Oyster	2	0.9	13	0.03	ND	130
9	DM-0005	Pacific Diploid Oyster	2	0.7	5	0.03	ND	58
10	DM-0007	Pacific Diploid Oyster	2	0.8	6	0.02	ND	63
10	DM-0009	Kumamoto Oyster	2	0.8	11	0.03	ND	110

* Antimony (2 mg/kg), Barium (1 mg/kg), Beryllium (0.2 mg/kg), Chromium (1 mg/kg), Cobalt (0.4 mg/kg), Lead (1 mg/kg), Molybdenum (1 mg/kg), Nickel (1 mg/kg), Selenium (2 mg/kg), Thallium (2 mg/kg), and Vanadium (0.4 mg/kg) are all Non Detect

Dioxin Results

Alta Analytical Laboratory's dioxin testing laboratory data sheets for all mussel and oyster tissues samples are provided in Appendixes I and III and are summarized in Table 3.

The results of laboratory testing for dioxins in composite samples of commercially grown oysters and mussels indicated the presence of low levels of dioxins. In composite whole oyster tissue samples, the total dioxin TEQ concentration (using World Health Organization mammalian toxic equivalency factors; WHO-TEQ) ranged between 0.8 and 4.3 pg dioxin TEQs/gram (mean concentration of 1.8 pg dioxin TEQ/g) for the June sampling event when percent lipid content were elevated. However, the total dioxin TEQ concentration ranged between 0.12 and 0.25 pg dioxin TEQs/gram (mean concentration of 0.21 pg dioxin TEQ/g) for the October sampling event when percent lipid content were lower. Total dioxin concentrations (the sum of all tetra- through octa-chlorinated dioxin and furan congeners) ranged between 36 and 174 pg/g (mean concentration of 85 pg/g) for the June sampling event and between 3.5 and 10.7 pg/g (mean concentration of 8.2 pg/g) for the October sampling event. The concentration of dioxin in the composite mussel samples was comparable to the levels found in oysters; the dioxin TEQ and total dioxin concentration were 1.0 pg TEQ/g and 91 pg/g, respectively for the June sample and 0.1 pg TEQ/g and 6.6 pg/g, respectively for the October sample.

The dioxin test results did not reveal a significant difference between oysters grown using a longline suspended in the water and oysters grown on the sediment bottom. Given that dioxins are relatively insoluble in water and typically associated with the particulate fraction in water samples, it was expected that oysters grown using longlines would be associated with lower dioxin concentrations than those grown in beds directly on the sediment bottom.

The concentrations of total dioxin TEQs in composite samples of whole oyster tissues from each sampling location are shown in Figure 2. In general, total dioxin TEQ concentrations in composite samples of whole oyster tissues in commercial beds representing background conditions in Humboldt Bay (Locations 1 and 2 shown on Figures 1 and 2) were not statistically different from dioxin TEQ concentrations in oysters collected elsewhere in Humboldt Bay. The concentrations of dioxins in the two composite samples of oysters or mussels collected from the Mad River Slough (Location 4) were not the highest concentrations found in this study. The highest dioxin TEQ concentration in a composite oyster sample was found in diploid Pacific oysters grown using longlines at Location 3 (Figures 1 and 2) nearest to the City of Arcata.

Table 3. Results of dioxin testing of composite whole oyster and mussel tissues collected from commercial beds in Humboldt Bay, California.

Dioxin toxic equivalency (TEQ) was calculated using World Health Organization mammalian toxic equivalency factors, which have been endorsed by both the U.S. Environmental Protection Agency and California Environmental Protection Agency and California Department of Health Services. Non-detect measurements are represented using ½ the congener-specific detection limit or estimated maximum possible concentration reported by the laboratory.

June 21, 2002 Sampling Event

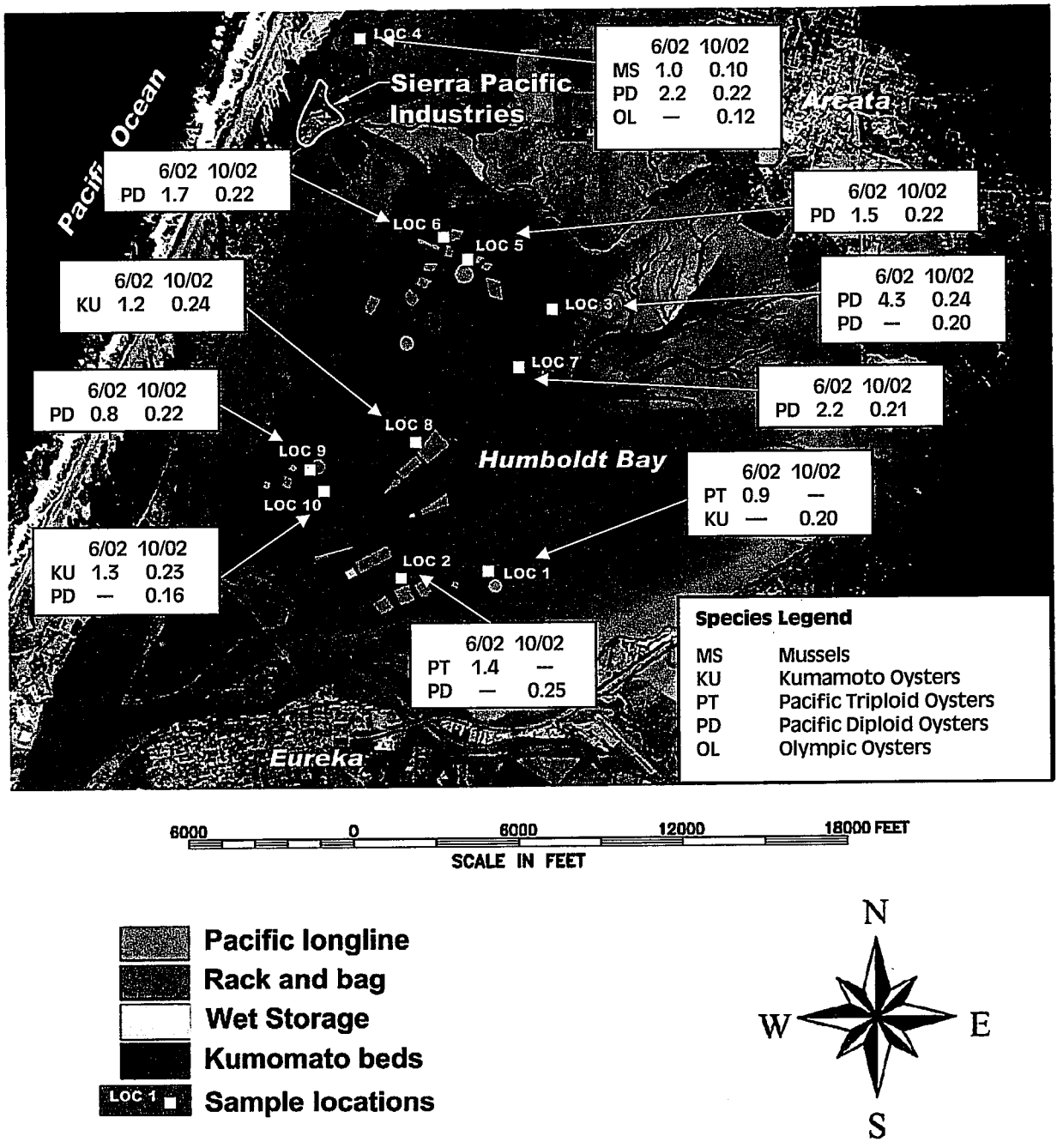
LOCATION	SAMPLE ID	% LIPIDS	SAMPLE TYPE	TEQ
4	020621-NBSCM	41.0	Mussel	1.0
1	020621-EBAY-6-2	40.1	Pacific Tripliod Oyster	0.9
2	020621-EBAY-1-2	42.4	Pacific Tripliod Oyster	1.4
3	020621-NBSC	41.3	Pacific Diploid Oyster	4.3
4	020621-NBSC-02	41.4	Pacific Diploid Oyster	2.2
5	020621-MR-7-1	40.8	Pacific Diploid Oyster	1.5
6	020621-MR-7-2	38.4	Pacific Diploid Oyster	1.7
7	020621-SIN	43.2	Pacific Diploid Oyster	2.2
8	020621-SIN-1-2	40.0	Kumamoto Oyster	1.2
9	020621-BIN	39.4	Pacific Diploid Oyster	0.8
10	020621-BIS	40.7	Kumamoto Oyster	1.3
Mean Value (n = 10)		40.8		1.8

October 21, 2002 Sampling Event

LOCATION	SAMPLE ID	% LIPIDS	SAMPLE TYPE	TEQ
4	DM-0023	0.62	Mussel	0.10
1	DM-0003	2.21	Kumamoto Oyster	0.20
2	DM-0001	2.12	Pacific Diploid Oyster	0.25
3	DM-0015a	1.41	Pacific Diploid Oyster	0.24
3	DM-0015b	1.60	Pacific Diploid Oyster	0.20
4	DM-0021	1.44	Pacific Diploid Oyster	0.22
4	DM-0025	0.70	Olympia Oyster	0.12
5	DM-0017	0.61	Pacific Diploid Oyster	0.22
6	DM-0019	1.32	Pacific Diploid Oyster	0.22
7	DM-0013	2.31	Pacific Diploid Oyster	0.21
8	DM-0011	1.93	Kumamoto Oyster	0.24
9	DM-0005	2.38	Pacific Diploid Oyster	0.22
10	DM-0007	2.16	Pacific Diploid Oyster	0.16
10	DM-0009	2.57	Kumamoto Oyster	0.23
Mean Value (n = 13)		1.75		0.21

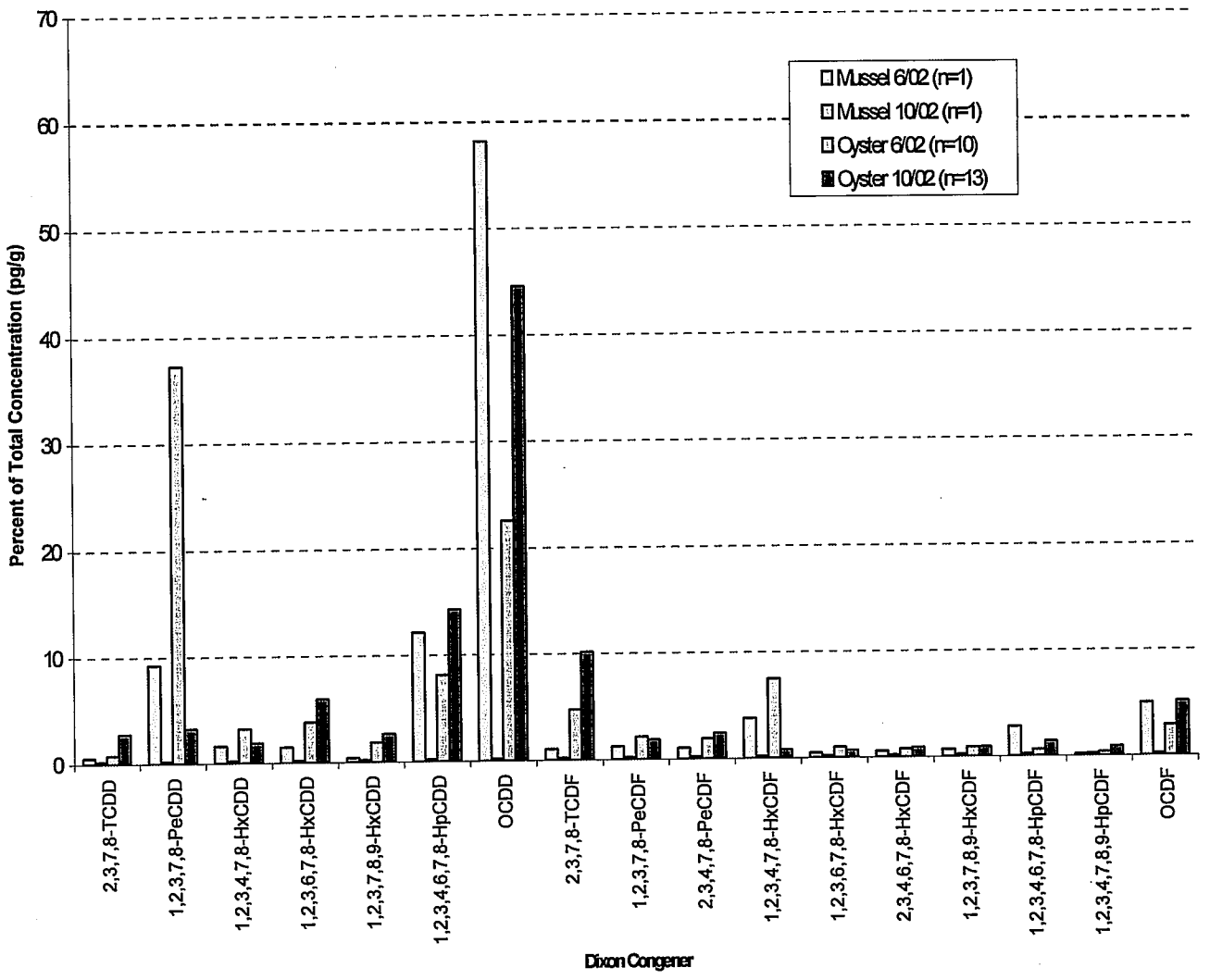
Figure 2. The locations of the different commercial oyster beds included in the study and the concentrations of total dioxin TEQs in composite samples of whole oyster tissues from each sampling location.

Results shown represent the concentration reported in each individual composite sample. Dioxin toxic equivalency (TEQ) was calculated using World Health Organization mammalian toxic equivalency factors, which have been endorsed by both the U.S. Environmental Protection Agency and California Environmental Protection Agency and California Department of Health Services. Non-detect measurements were represented using ½ the congener-specific detection limit or estimated maximum possible concentration reported by the laboratory.



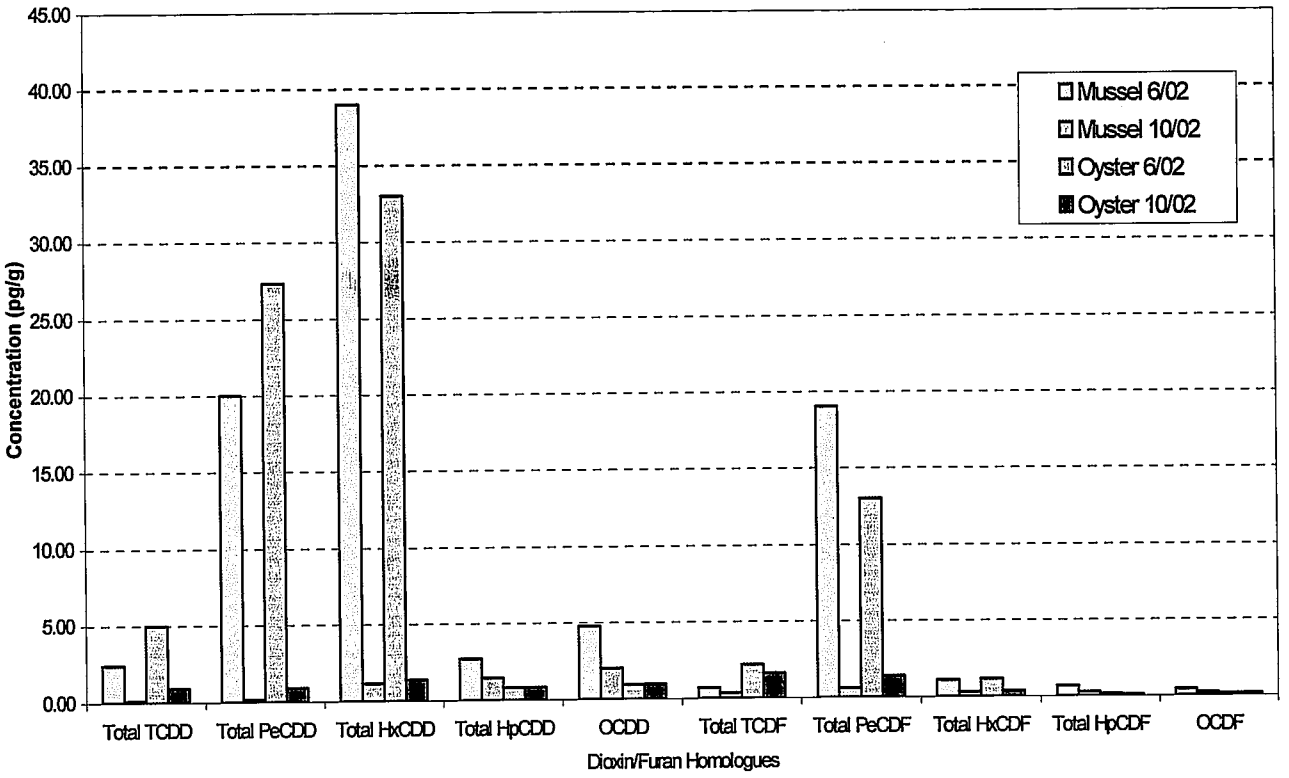
The occurrence of several 2,3,7,8-substituted and non-2,3,7,8-substituted congeners suggests more than one source of the dioxins found in oysters and mussels. The profile of 2,3,7,8-substituted dioxins and dioxin and furan homologues in oysters and in the single composite mussel sample is presented in Figure 3. The profile of total dioxin and furan homologues is shown in Figure 4. The pattern of dioxins found in oysters and mussels is unlike the dioxin profile described by USEPA (2000b) as typically associated with wood treatment products containing PCP. The presence of trace concentrations of several dioxin and furan congeners suggests that the presence of dioxins in oysters and mussels is the result of contributions from more than one source. Possible environmental sources that should be investigated further include storm water and surface water runoff, effluents from municipal sewage treatment plants, and releases from combustion sources that reach Humboldt Bay either directly through effluent or indirectly through deposition of particulates in air.

Figure 3. Average profile of 2,3,7,8-substituted dioxins in composite whole oyster and mussel tissues from June and October 2002 sampling in Humboldt Bay, California.



Dioxin Profile for Mussels and Oyster Samples in June and October 2002 from Humboldt Bay

Figure 4. Average profile of total dioxin and furan homologues in composite whole oyster and mussel tissues from June and October 2002 sampling in Humboldt Bay, California.



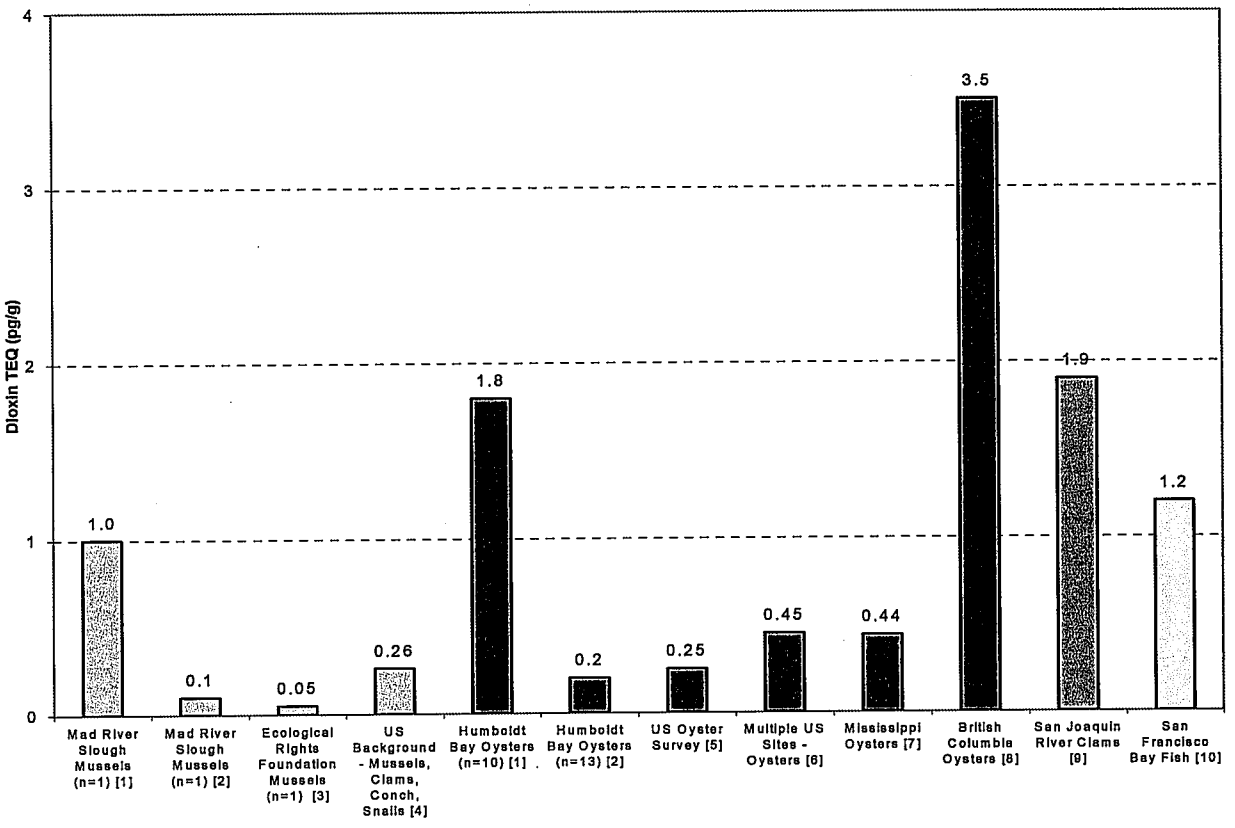
The most toxic congener among the family of dioxin compounds, 2,3,7,8-TCDD, was found at trace levels (below one part per trillion) in four of the eleven oyster and mussel tissue samples from the June sampling event and four of the 13 oyster and mussel tissue samples from the October sampling event and below detection limits in all others. At Locations 4, 5, 6, and 8 (Figure 1), the concentration of 2,3,7,8-TCDD was between 0.04 and 0.06 pg/g (or parts per trillion) during the June sampling event. However, at Locations 2, 5, 7, and 9 (Figure 1), the concentration of 2,3,7,8-TCDD was between 0.07 and 0.15 pg/g during the October sampling event. At these locations, trace levels of 2,3,7,8-TCDD were measured in mussel and diploid Pacific oysters (Location 4), diploid Pacific oysters (Locations 2, 5, 6, 7, and 9), and Kumamoto oysters (Location 8).

Comparisons to Shellfish Data Reported in the Scientific Literature

The levels of dioxin TEQ measured in the mussels and oysters collected from Humboldt Bay were compared to published data in the scientific literature to evaluate the significance of the detected levels (Figure 5). However, few data are available in the scientific literature and no monitoring of oysters has been performed by the State of California. The few data available from USEPA (2000b) describe background levels of dioxin in mussels, clams, conch, and snails as 0.26 pg TEQ/g, using WHO TEFs. One mussel sample (31M011700032402) collected by the Ecological Rights Foundation (ERF) on March 24, 2002 in the Mad River Slough near the Samoa Bridge

(ERF, 2002; exact location not shown), showed 0.05 pg TEQ/g, using WHO TEFs (ND = 0). The U.S. Food and Drug Administration (USFDA) and other researchers report background levels of dioxins in U.S. oysters as 0.44 and 0.45 pg TEQ/g, using WHO TEFs. The average concentration of dioxins in oysters collected from locations near pulp and paper mills in British Columbia, Canada, was 3.5 pg TEQ/g, using WHO TEFs, which is higher than the average oyster concentration from Humboldt Bay.

Figure 5. Comparison of dioxin TEQ levels in composite whole oyster and mussel tissues collected from commercial beds in Humboldt Bay, California, with levels in reported in fish and shellfish from California and elsewhere.



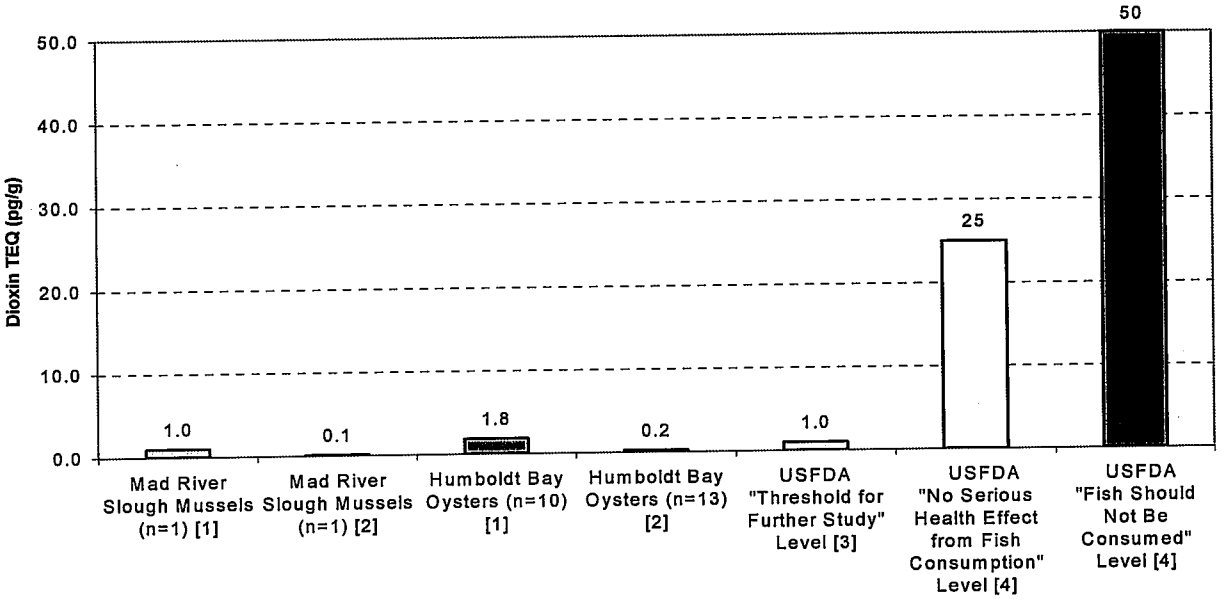
otes:
[1] June 21, 2002 Sampling Event from Humboldt Bay.
[2] October 21, 2002 Sampling Event from Humboldt Bay.
[3] Ecological Rights Foundation mussel sample collected on March 24, 2002 in Mad River Slough.
[4] USEPA (2000) Draft Dioxin Reassessment, Part 1, Vol. 3, Table 3-28, TEQ.
[5] Wade, et al. NOAA (1998 and unpublished data) Average TEQ from 32 samples.
[6] USFDA Fish and Shellfish Data for 1995-1999 (Jensen and Bolger, 2000; Jensen, et al. 2000). ND=DL/2.
[7] Fiedler, et al. (1997). Average TEQ from 15 samples. ND=DL/2.
[8] Hagen, et al. (1997). Data collected in 1992 from 2 British Columbia coastal pulp mills. Extrapolated from graphical data.
[9] Haywad, et al. (1996). Data from 9 San Joaquin River sites near a wood-treatment facility; ITEQ.
[10] San Francisco Regional Water Quality Control Board (1995) Average TEQ from 19 samples.

Comparisons to dioxin levels reported in fish from San Francisco Bay and lakes in the Bay Area and Central Valley indicate that dioxin levels are within the range found in Humboldt Bay oysters and mussels. The San Francisco Regional Water Quality Control Board (SFRWQCB, 1995) reported that dioxin TEQs in sport fish in San Francisco Bay, ranged between 0.22 and 2.3 pg TEQ/g wet weight. In a study of two California lakes reported in 1999, California EPA's Office of Environmental Health Hazard Assessment (OEHHA) reported dioxin TEQ concentrations in fish from both lakes ranged between 0.08 and 1.5 pg TEQ/g wet weight.

Comparison to USFDA Action Levels

The USFDA screening concentration for dioxin of 1 pg/g has been used informally to trigger further investigation and study to identify sources and to determine if the detected levels in the edible portions of fish and shellfish tissues pose a health hazard (personal communication from Barbara Montwill of the FDA by email to Scott Braithwaite of ENVIRON, May 17, 2002). The current USFDA action level for dioxin TEQs in edible fish and shellfish tissues is 25 pg TEQ/g. The USFDA recommends that fish and shellfish not be consumed at 50 pg TEQ/g. Comparison of the dioxin TEQ concentrations in Humboldt Bay oysters and mussels to the USFDA action levels is presented in Figure 6. The levels found in both oysters and mussels from Humboldt Bay are well below the USFDA No Serious Health Effect Level for the June sampling event and below the informally adopted threshold for further study level for the October sampling event.

Figure 6. Comparison of dioxin TEQ levels in composite whole oyster and mussel tissues collected from commercial beds in Humboldt Bay, California, with U.S. Food and Drug Administration (USFDA) action levels in fish and shellfish (n = number of samples tested).



Notes: [1] June 21, 2002 Sampling Event from Humboldt Bay
[2] October 21, 2002 Sampling Event from Humboldt Bay
[3] Personal communication from Barbara Montwill, USFDA office of Seafood, May 17, 2002
[4] ATSDR 1998 toxicological profile for chlorinated dibenzo-p-dioxins, USFDA - levels are for 2,3,7,8-TCDD in Great Lakes fish 1981

V. Screening-Level Shellfish Consumption Assessment

Approach to Calculating Theoretical Exposure and Risk

This screening-level exposure assessment relies on the information contained in the USEPA Draft Dioxin Reassessment for both exposure and toxicity information (USEPA, 2001a, 2001b, 2001c, 2000a, 2000b). During the past decade or more, scientists from the USEPA, other federal agencies, and the scientific community have conducted a comprehensive reassessment of dioxin exposure and human health effects. The current draft report of this effort, commonly referred to by scientists as the Draft Dioxin Reassessment, is expected to be finalized within the next several months.

In this assessment, exposures to dioxin by shellfish consumers were evaluated using two methods. The first method used a standard USEPA exposure model to evaluate the shellfish consumption habits of the reasonably maximally exposed (RME) individual, similar to the description of the RME profile described in USEPA (1989) risk assessment guidance. The RME is defined by USEPA (1989) as an individual who is of typical behavior and physical characteristics and represents the upper bound of the range of behaviors and physical characteristics in the population of interest (in this case, consumers of oysters and mussels).

The second method involved comparison of exposure levels to background exposures from dietary and other sources identified by USEPA in the Draft Dioxin Reassessment (USEPA, 2000b). In California, OEHHA has used this approach to evaluate the incremental increase in dioxin exposure from particular sources relative to the average person's normal daily exposure from background sources (OEHHA, 1995).

The exposure model used to calculate theoretical dioxin intake by a shellfish consumer was adopted from USEPA (1997), and the equation is given as follows:

$$CDI = C * IR * Afo * FI * CL * CF * 1/BW$$

Where:

CDI	is the chronic daily intake averaged over a lifetime (for cancer effects) and exposure period (for noncancer effects), respectively,
C	is the total dioxin TEQ concentration in oyster or mussel tissue (pg TEQ/g),
IR	is the shellfish ingestion rate (g/day),
Afo	is the oral absorption factor for dioxin (unitless),
FI	is the fraction of shellfish consumed that originates in Humboldt Bay (unitless),
CL	is the cooking loss factor that typically accounts for the reduction in dioxin levels in food as result of different cooking methods (unitless); and
CF	is a unit conversion factor (mg/pg),
BW	is body weight (kg).

The exposure assumptions used to predict theoretical exposure to dioxins by shellfish consumption from the June data are summarized in Table 4; a calculation sheet for the June and October data is included as Appendix IV. Data describing shellfish consumption habits in the U.S. population reported in the USEPA (2000b) Draft Dioxin Reassessment report were used to represent the amount of shellfish typically consumed by an adult. It was assumed that the typical shellfish consumer consumed, on average, 0.15 g/day of oysters and 0.07 g/day of mussels (Table 3-28, p. 3-147 of USEPA, 2000b). The National Marine Fisheries Service (NMFS, 2001) reports an oyster consumption rate of 0.255 g/day vs. 0.15 g/day. NMFS 2001 consumption data for mussels is not available. This would raise the pg TEQ/day values slightly, but would have little effect on either the Theoretical Cancer Risk or the Theoretical Hazard Index. A cooking loss factor was not included in the model; that is, changes in dioxin levels due to food preparation method were not considered. According to USEPA (2000b) only approximately one-half of ingested dioxin is absorbed in the gastrointestinal tract (54 percent; the remaining fraction of dioxin intake associated with the oral exposure route is excreted).

The typical shellfish consumer was assumed to obtain all of the oysters and mussels in his or her diet from Humboldt Bay and that the levels of dioxins in the oysters and mussels were at their elevated levels as in the June samples due to the high lipid content. The typical shellfish consumer was assumed to eat oysters and mussels every day of the year. The model did not consider limitations in the supply of oysters and mussels and the duration of the prime-harvesting season in Humboldt Bay, which would result in an exposure frequency of less than year-round. The model also ignored the fact that oysters are less desirable in the summer months when they were spawning and lipid contents were high. A more representative approach would have been to use only the sample result from the time that oysters were generally consumed (similar to the October results) and a realistic consumption period (approximately one half year) or to use an average of the two sampling events. The year round consumption rate and leveled dioxins levels in the June results were used for the model as a worst-case scenario for the two sampling events.

Three dioxin concentrations were evaluated in the exposure model. Consistent with California DTSC (1992) risk assessment guidance, dioxin intake was evaluated using the 95th percentile of the total dioxin TEQ concentration calculated from the ten composite whole oyster tissue sample results. In addition, the mean concentration from the ten composite whole oyster tissue sample results also was evaluated using the same model. Lastly, the total dioxin TEQ concentration in the single composite whole mussel tissue sample also was evaluated using the model.

The theoretical daily intake of dioxins from shellfish consumption was calculated and averaged over an average human lifetime to evaluate theoretical cancer risks. The incremental cancer risks describing the probability of an individual developing cancer during a 70-year average human lifetime of exposure to total dioxin TEQs were calculated using USEPA recommended methods (USEPA, 2000b, 1989). The theoretical excess cancer risk is a the product of the Lifetime Average Daily Dose (LADD), which is defined as the total incremental dose of total dioxin TEQs received as a result of exposure averaged over a lifetime, and the cancer slope factor (CSF). Consistent with USEPA (1989) guidance, the theoretical cancer risk was calculated as follows:

$$\textit{Theoretical Cancer Risk} = \textit{LADD} * \textit{CSF}$$

In accordance with USEPA (1989) risk assessment guidance, the probability of adverse non-cancer effects was evaluated using a "Hazard Quotient" (HQ) approach. Possible adverse non-cancer health effects were evaluated by comparing the predicted daily intake to the oral reference dose (RfD) established by the USEPA for dioxin. If the predicted dose was below the RfD, then the predicted dose would not be expected to pose a significant non-cancer health hazard under the conditions evaluated (USEPA, 1989). A HQ less than or equal to one indicates that exposure to dioxin is unlikely to result in adverse health effects to the receptor of interest.

$$\textit{Hazard Quotient} = ADD / RfD$$

Table 4. Exposure assumptions (using June data) for calculation of theoretical exposures to dioxins associated with consumption of oysters and mussels from Humboldt Bay, California.

Exposure Parameter	Variable	Units	Adult Receptor	Reference
Physiological Assumptions				
Body weight	BW	kg	70	USEPA (1997) EFH
Oyster ingestion rate	IRo	g/day	0.15	USEPA (2000) DR
Mussel ingestion rate	IRm	g/day	0.07	USEPA (2000) DR
Fraction of shellfish ingested from Humboldt Bay	FI	unitless	1	Assumes all consumed shellfish originates from Humboldt Bay
Environmental Assumptions				
Absorption factor, oral route	AFo	unitless	0.54	USEPA (2000) draft Dioxin Reassessment, vol. 4, p. 2-5)
Cooking loss	CL	unitless	1	Assumes no loss during cooking (or eaten raw)
Chemical Potency Assumptions				
TCDD Cancer Slope Factor, inhalation and oral	CSF	$(mg/kg\text{-}day)^{-1}$	1.3E+05	OEHHA, ARB (2002) Table 1
TCDD Reference Dose, oral	RfDo	mg/kg-day	1.0E-08	OEHHA chronic oral reference level
Chemical Assumptions				
Conversion Factor	CF	mg/pg	1.0E-09	
Total Dioxin TEQ concentration, 95th percentile, oysters only	Cd1	pg TEQ/g	3.4	N=10; ND = 1/2 DL or EMPC
Total Dioxin TEQ concentration, mean, oysters only	Cd2	pg TEQ/g	1.8	N=10; ND = 1/2 DL or EMPC
Total Dioxin TEQ concentration, single mussel	Cd3	pg TEQ/g	1	N=1; ND = 1/2 DL or EMPC

Key to Sources:

1 USEPA (1997) EFH - Exposure Factors Handbook, US Environmental Protection Agency, Office of Research and Development, August 1997

2 USEPA (2000) DR - Draft Dioxin Reassessment, US Environmental Protection Agency, Office of Research and Development, September 2000

3 OEHHA - Chronic Toxicity Summary, Chlorinated Dibenzo-p-dioxins and Chlorinated Dibenzofurans, California Office of Environmental Health Hazard Assessment

Evaluating Dioxin Health Effects in Humans

With regard to carcinogenicity, USEPA's Draft Dioxin Reassessment characterizes the complex mixtures of dioxin to which people are exposed to as a "likely human carcinogen" (USEPA, 2001b). This is based on USEPA's conclusion that there is not sufficient epidemiology data to confidently characterize the cancer hazard of 2,3,7,8-TCDD and conclude that 2,3,7,8-TCDD is a "human carcinogen". By combining the limited and inconclusive evidence from epidemiology studies with the unequivocal evidence from experimental animal studies, the USEPA has characterized the complex mixtures of dioxin as "likely" cancer hazards (USEPA, 2001b).

For the purposes of evaluating the theoretical incremental cancer risk associated with exposure to dioxin, this screening-level analysis relied upon the cancer potency estimate currently used by California OEHHA (2002). The USEPA has proposed 1 x 10^6 per mg 2,3,7,8-TCDD/kgBW/day in the Draft Dioxin Reassessment as the slope factor to use to estimate the upper bound cancer risk for both background intakes and incremental intakes above background (USEPA, 2001a, 2001c, 2000b). The USEPA's revised slope factor is sharply higher than the Agency's earlier cancer slope factor of 1.56 x 10^5 per mg 2,3,7,8-TCDD/KgBW/day (USEPA, 1984) and California OEHHA/ARB approved oral and inhalation slope factors of 1.3 x 10^5 per mg 2,3,7,8-TCDD/kgBW/day (Table 1; OEHHA, 2002). The proposed slope factor has not been formally endorsed as new policy by USEPA.

With regard to health effects other than cancer, USEPA (2000b) has concluded from its evaluation of the available epidemiologic and animal data that humans, in general, are neither extremely sensitive nor insensitive to the individual effects of dioxins. The available information suggests that human response to exposure to dioxin is highly variable, although the vast majority of the research has highlighted only certain prominent, and potentially significant, effects associated with 2,3,7,8-TCDD. Relatively little information is available to independently evaluate the effects of exposure to other dioxin congeners.

Because of the relatively high background level of exposure compared to effects levels observed or calculated from animal bioassays, USEPA's Draft Dioxin Reassessment does not recommend revisions to non-cancer Reference Doses (RfDs, for evaluating oral and dermal exposures) for dioxin previously established by the USEPA (USEPA, 2000b). Although RfDs are often useful because they represent a health risk benchmark below which there is likely no appreciable risk of non-cancer effects, their primary use is to evaluate increments of exposure from specific sources when background exposures are low and insignificant. In the case of dioxin, USEPA (2000b) states that any RfD recommended by the Agency under the traditional approach for setting an RfD would likely be 2 to 3 orders of magnitude (i.e., 100 to 1,000) below current background intakes and human body burdens. Consequently, USEPA (2001b, 2000b) has concluded that setting an RfD for incremental exposure when the RfD has already been exceeded in the general population by background conditions is meaningless.

Both the Agency for Toxic Substance and Disease Registry (ATSDR) and USEPA (2000b) recommend characterization of average background exposures, as well as characterization of the percent increase over background of individuals or populations of interest. The USEPA states that

while it would be reasonable in a risk assessment to evaluate incremental exposure relative to an RfD, since "background" exposures have already been determined to be above the RfD. The determination of the incremental increase over background exposures would provide more useful information on total dioxin exposure.

Theoretical Shellfish Consumption and Risk

A summary of the exposure modeling results is presented in Table 5. Assuming the typical shellfish consumer enjoys a diet of oysters and mussels obtained only from Humboldt Bay, the theoretical cancer risk and non-cancer hazard to a shellfish consumer associated with exposure to dioxins is below 1 x 10^{-6} risk and well below a hazard index of one, respectively. The predicted theoretical cancer risk to shellfish consumers was approximately five in ten million (5.1 x 10^{-7} risk) using the June data and approximately four in one hundred million (3.6 x 10^{-8} risk) using the October data, which are both below the range of 1 x 10^{-4} to 1 x 10^{-6} risk considered acceptable by USEPA and below the 1 x 10^{-5} risk level considered acceptable in the State of California under Proposition 65. The hazard quotient representing the theoretical non-cancer threat posed by exposure to dioxins was three to fours orders of magnitude below one (Table 5).

Table 5. Theoretical daily intake and health risks posed by exposure to total dioxin TEQs from consumption of oysters and mussels consumed exclusively from Humboldt Bay, California.

Exposures were calculated using the mean and 95th percentile of the mean concentration of total dioxin TEQs in composite whole oyster tissues, as well as the concentration of total dioxin TEQs in the single composite whole mussel tissue collected for each sampling event from the Mad River Slough.

June Data	Oysters, 95th percentile	Oysters, mean	Mussels
Theoretical daily intake (mg TEQ/kgBW-day)	3.9 x 10^{-12}	2.1 x 10^{-12}	5.4 x 10^{-13}
Theoretical cancer risk	5.1 x 10^{-7}	2.7 x 10^{-7}	7.0 x 10^{-8}
Theoretical hazard index	0.0004	0.0002	0.00005
October Data	**Oysters, 95th percentile**	**Oysters, mean**	**Mussels**
Theoretical daily intake (mg TEQ/kgBW-day)	2.8 x 10^{-13}	2.4 x 10^{-13}	5.4 x 10^{-14}
Theoretical cancer risk	3.6 x 10^{-8}	3.2 x 10^{-8}	7.0 x 10^{-9}
Theoretical hazard index	0.00003	0.00002	0.000005

Background Exposures to Dioxin

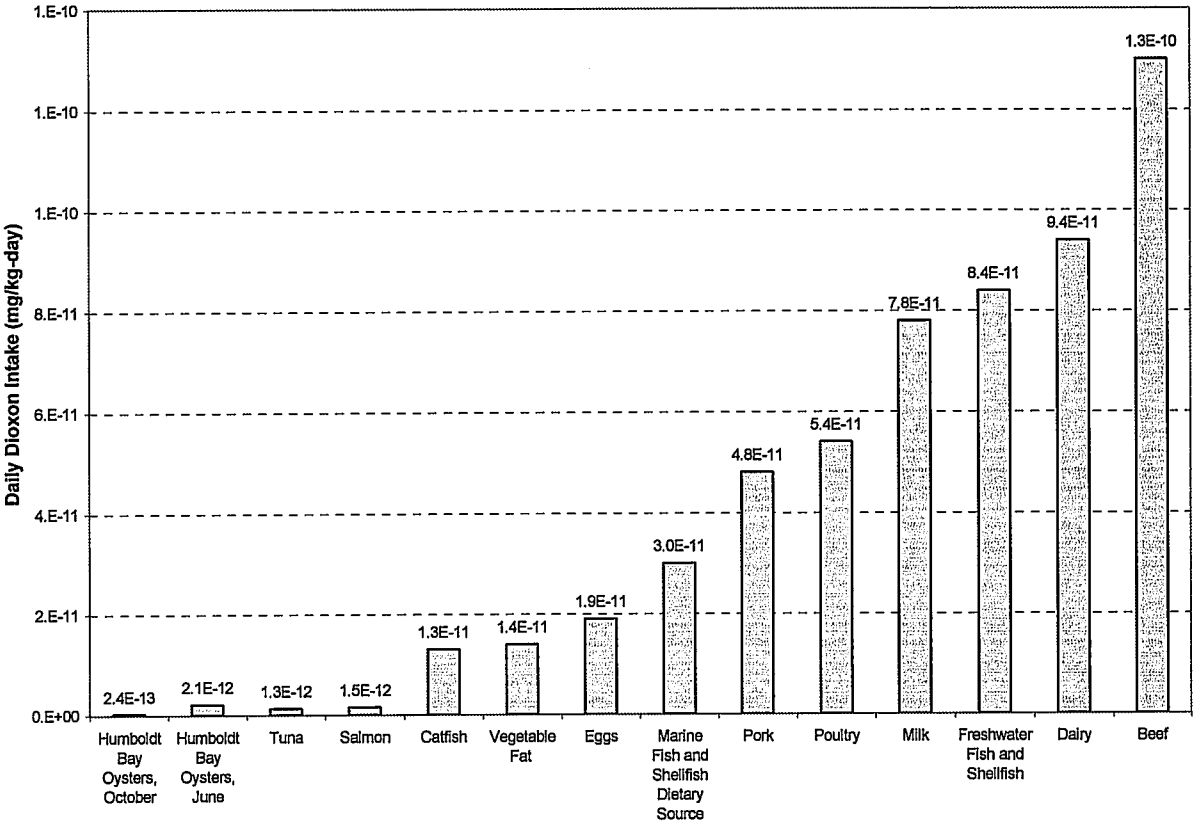
The term "background" exposure is used by USEPA (2000b) to describe exposure of the general population that is not exposed to readily identifiable point sources. Dioxins are ubiquitous in the environment and can be found virtually everywhere. These substances work their way up the food chain by accumulating in the body fat of fish and animals. Because of this, the single largest source of exposure to dioxins is through the consumption of food, primarily meat, dairy products,

and fish. More than 90% of a person's average daily intake of dioxins is from the diet (Jensen and Bolger, 2001; USEPA, 2000b).

Using the conservative assumptions described in this preliminary exposure analysis, the consumption of shellfish from Humboldt Bay is responsible for a very small fraction of a person's daily intake of dioxins. According to a recent study of store-bought fish and dairy products conducted by the U.S. Food and Drug Administration (USFDA), the mean estimated per capita daily intake of 2,3,7,8-substituted dioxins in the general U.S. population is between 12 and 29 pg dioxin TEQ/day, and may be as high as 80 pg dioxin TEQ/day at the 90th percentile of the U.S. population (Jensen and Bolger, 2001).

Comparison of the predicted theoretical daily intake of dioxins from consumption of Humboldt Bay oysters to intake from other dietary sources is presented in Figure 7.

Figure 7. Comparison of the theoretical average daily intake of dioxin TEQ from consumption of Humboldt Bay oysters with total dioxin intake from all dietary sources estimated by USEPA in the Draft Dioxin Reassessment (USEPA, 2000b).



Both USEPA's Draft Dioxin Reassessment and studies conducted in the San Francisco Bay Area by the Regional Water Quality Control Board and Bay Area Air Quality Management District hypothesize that the primary mechanism by which dioxins enter the environment and human diet is through atmospheric deposition (USEPA, 2000b; SFRWQCB, 1998; BAAQMD, 1996). For example, an investigation of dioxins and their sources performed by the San Francisco Regional

Water Quality Control Board (SFRWQCB) concluded that the distribution of dioxins typically found in sport fish, air, and storm water closely resembles that observed in releases from a wide variety of combustion sources (Wenning et al., 1999, 2000; SFRWQCB, 1998). Dioxins enter the atmosphere directly through air emissions and are widely spread in the environment as a result of a number of physical processes (e.g., re-suspension of particles). At present, it is unclear whether atmospheric deposition represents primarily current contributions of dioxins from all media, or past emissions that persist and recycle in the environment.

In summary, the theoretical daily intake predicted for the typical shellfish consumer represented a very small fraction of estimates developed by USEPA in its current Draft Dioxin Reassessment of the typical average daily intake of dioxins from dietary and environmental sources of 59 pg dioxin TEQ/kg/day (USEPA, 2000b). The presence of dioxins in oysters and mussels represents a negligible contribution to a person's normal background exposure to dioxins. Dioxin exposure to shellfish consumers portrayed in this screening-level risk analysis represented less than 1% of the typical background intake of dioxins estimated by USEPA (2000b).

VII. Conclusions

Dioxin and other chemical testing of commercially grown oysters and mussels in Humboldt Bay, California was conducted by EnviroNet and ENVIRON on behalf of SPI, Arcata Division Sawmill located near Arcata, California, in response to concerns raised by Coast Seafoods, Inc., and other local commercial shellfish businesses about possible contamination of commercial oyster beds located in Humboldt Bay. The field sampling, chemical testing, and screening-level exposure assessment methods used in this study were performed in a manner consistent with USEPA and State of California guidance for collection and chemical testing of biota (and specifically shellfish) and risk assessment.

The results of this study support the following conclusions:

1. Testing of composite samples of whole oyster and mussel tissues collected from Humboldt Bay indicated the presence of low concentrations of dioxins. Levels were less than 2.3 pg total dioxin TEQ/g in all but one composite oyster tissue sample with a level of 4.3 pg total dioxin TEQ/g from the June sampling event. Dioxin TEQ levels were all less than 0.3 pg total dioxin TEQ/g from the October sampling event. The June sampling data falls within the range for San Francisco Bay fish and San Joaquin River clams while the October sampling data seems to fall within the range for oysters from other US sites.

2. The levels of dioxins in oysters and mussels is well below the 25 pg/g (i.e., part per trillion) benchmark for dioxins in fish or shellfish tissues that USFDA has identified as a level associated with no serious health effects.

3. Using a screening-level exposure model to evaluate intake and health risks to shellfish consumers using only the June data, the occurrence of dioxins in oysters and mussels from Humboldt Bay does not pose a significant health risk to shellfish consumers. The theoretical health risks posed by exposure to dioxins assuming a daily diet of oysters and mussels from Humboldt Bay posed an incremental lifetime cancer risk below 1 in 1,000,000 (10^{-6} risk), which is below the 10^{-4} to 10^{-6} risk range considered acceptable by USEPA and the State of California, and below the 10^{-5} risk level specified in California Proposition 65 as the threshold for communicating a potential health hazard of a consumer product to the general public in the State of California.

4. The presence of dioxins in oysters and mussels from Humboldt Bay represents a negligible contribution to a person's normal background exposure to dioxins. Dioxin exposure to shellfish consumers represents less than 0.1% of the typical background daily intake estimated by the USEPA.

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Appendix I

Dioxin Testing Laboratory Data Sheets
from Alta Analytical Laboratory (El Dorado Hills, CA)
for June Samples

Sample ID: 020621-EBAY-6-2 **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-001	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	25.19 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	40.1	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0301	0.0440	
1,2,3,7,8-PeCDD	0.773			0.0266	A
1,2,3,4,7,8-HxCDD	0.0840			0.0836	A
1,2,3,6,7,8-HxCDD	0.0941			0.0930	A
1,2,3,7,8,9-HxCDD	0.0735			0.0650	A
1,2,3,4,6,7,8-HpCDD	0.209			0.0954	A,B
OCDD	0.431			0.174	A,B
2,3,7,8-TCDF	0.109			0.0304	A
1,2,3,7,8-PeCDF	ND	0.107		0.103	
2,3,4,7,8-PeCDF	ND	0.0951		0.0947	
1,2,3,4,7,8-HxCDF	0.198			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND	0.0525		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0637		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0777		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0262		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0271		0.0868	
OCDF	0.107			0.0902	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	77.6	40 - 135	
	13C-1,2,3,7,8-PeCDD	72.4	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	74.3	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	78.2	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	86.0	40 - 135	
	13C-OCDD	76.4	40 - 135	
	13C-2,3,7,8-TCDF	84.7	40 - 135	
	13C-1,2,3,7,8-PeCDF	74.9	40 - 135	
	13C-2,3,4,7,8-PeCDF	75.3	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	61.8	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	59.2	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	67.9	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	73.8	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	70.1	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	81.1	40 - 135	
	13C-OCDF	72.0	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	76.7	40 - 135	

Totals					
Total TCDD	2.54		2.57		
Total PeCDD	11.9		13.1		
Total HxCDD	18.7				
Total HpCDD	0.209		0.483		B
Total TCDF	0.952				
Total PeCDF	0.288		6.56		
Total HxCDF	0.469				B
Total HpCDF	ND	0.0267			

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.831 - 0.934

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-EBAY-1-2 **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-002	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	25.05 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	42.4	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL [a]	EMPC [b]	MDL [c]	Qualifiers
2,3,7,8-TCDD	ND		0.0350	0.0440	
1,2,3,7,8-PeCDD	1.21			0.0266	
1,2,3,4,7,8-HxCDD	0.108			0.0836	A
1,2,3,6,7,8-HxCDD	0.143			0.0930	A
1,2,3,7,8,9-HxCDD	0.0887			0.0650	A
1,2,3,4,6,7,8-HpCDD	0.274			0.0954	A,B
OCDD	0.876			0.174	A,B
2,3,7,8-TCDF	0.243			0.0304	
1,2,3,7,8-PeCDF	ND	0.144		0.103	
2,3,4,7,8-PeCDF	ND	0.130		0.0947	
1,2,3,4,7,8-HxCDF	0.274			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND	0.0476		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0569		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0685		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0383		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0444		0.0868	
OCDF	0.144			0.0902	A,B

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	81.7	40 - 135	
	13C-1,2,3,7,8-PeCDD	77.1	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	81.3	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	81.6	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	84.6	40 - 135	
	13C-OCDD	87.5	40 - 135	
	13C-2,3,7,8-TCDF	91.0	40 - 135	
	13C-1,2,3,7,8-PeCDF	80.7	40 - 135	
	13C-2,3,4,7,8-PeCDF	82.2	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	67.4	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	64.1	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	72.8	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	79.2	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	76.7	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	79.4	40 - 135	
	13C-OCDF	81.5	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	81.3	40 - 135	

Totals					
Total TCDD	4.60		4.70		
Total PeCDD	20.5		22.6		
Total HxCDD	27.4				
Total HpCDD	0.274		0.706		B
Total TCDF	2.14				
Total PeCDF	0.402		9.93		
Total HxCDF	0.638		0.838		B
Total HpCDF	ND	0.0411			

Toxic Equivalent Quotient (TEQ) Data [e]

TEQ (Min-Max): 1.30 - 1.42

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-NBSC **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-003	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	25.93 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	41.3	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0492	0.0440	
1,2,3,7,8-PeCDD	4.04			0.0266	
1,2,3,4,7,8-HxCDD	0.178			0.0836	A
1,2,3,6,7,8-HxCDD	0.330			0.0930	A
1,2,3,7,8,9-HxCDD	0.214			0.0650	A
1,2,3,4,6,7,8-HpCDD	0.586			0.0954	A,B
OCDD	1.30			0.174	A,B
2,3,7,8-TCDF	0.361			0.0304	
1,2,3,7,8-PeCDF	ND	0.257		0.103	
2,3,4,7,8-PeCDF	ND	0.241		0.0947	
1,2,3,4,7,8-HxCDF	0.568			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND		0.0682	0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0902		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.109		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0285		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0287		0.0868	
OCDF	0.110			0.0902	A,B

Labeled Standard		%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	78.4	40 - 135	
	13C-1,2,3,7,8-PeCDD	74.5	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	77.1	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	79.4	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	86.9	40 - 135	
	13C-OCDD	77.8	40 - 135	
	13C-2,3,7,8-TCDF	88.2	40 - 135	
	13C-1,2,3,7,8-PeCDF	76.8	40 - 135	
	13C-2,3,4,7,8-PeCDF	77.6	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	63.6	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	61.0	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	70.3	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	76.2	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	70.2	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	75.6	40 - 135	
	13C-OCDF	73.6	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	77.8	40 - 135	

Totals			
Total TCDD	11.2	11.2	
Total PeCDD	58.1	61.3	
Total HxCDD	63.1		
Total HpCDD	0.586	1.56	B
Total TCDF	4.11		
Total PeCDF	1.14	28.6	
Total HxCDF	2.13	2.37	B
Total HpCDF	ND	0.0665	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 4.21 - 4.42

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-NBSCM **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-004	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	24.99 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	41.0	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.0455			0.0440	A
1,2,3,7,8-PeCDD	0.767			0.0266	A
1,2,3,4,7,8-HxCDD	0.136			0.0836	A
1,2,3,6,7,8-HxCDD	0.124			0.0930	A
1,2,3,7,8,9-HxCDD	ND	0.0639		0.0650	
1,2,3,4,6,7,8-HpCDD	1.01			0.0954	B
OCDD	4.81			0.174	B
2,3,7,8-TCDF	0.0842			0.0304	A
1,2,3,7,8-PeCDF	ND	0.209		0.103	
2,3,4,7,8-PeCDF	ND	0.175		0.0947	
1,2,3,4,7,8-HxCDF	0.314			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND	0.0762		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0914		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.115		0.0680	
1,2,3,4,6,7,8-HpCDF	0.236			0.0689	A
1,2,3,4,7,8,9-HpCDF	ND	0.0228		0.0868	
OCDF	0.412			0.0902	A,B

Labeled Standard		%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	79.6	40 - 135	
	13C-1,2,3,7,8-PeCDD	76.6	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	75.1	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	77.7	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	82.2	40 - 135	
	13C-OCDD	79.9	40 - 135	
	13C-2,3,7,8-TCDF	88.6	40 - 135	
	13C-1,2,3,7,8-PeCDF	81.0	40 - 135	
	13C-2,3,4,7,8-PeCDF	82.2	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	62.4	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	59.1	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	69.2	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	75.9	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	71.0	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	76.4	40 - 135	
	13C-OCDF	75.9	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	77.4	40 - 135	

Totals				
Total TCDD	2.49			
Total PeCDD	18.6	20.4		
Total HxCDD	39.0			
Total HpCDD	1.01	2.74		B
Total TCDF	0.692			
Total PeCDF	0.234	19.0		
Total HxCDF	1.08	1.15		B
Total HpCDF	0.608	0.676		

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.891 - 1.02

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-NBSC 02 **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-005	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	25.88 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	41.4	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.0519			0.0440	A
1,2,3,7,8-PeCDD	2.00			0.0266	
1,2,3,4,7,8-HxCDD	0.125			0.0836	A
1,2,3,6,7,8-HxCDD	0.193			0.0930	A
1,2,3,7,8,9-HxCDD	ND	0.0823		0.0650	
1,2,3,4,6,7,8-HpCDD	0.404			0.0954	A,B
OCDD	1.20			0.174	A,B
2,3,7,8-TCDF	0.209			0.0304	
1,2,3,7,8-PeCDF	ND	0.270		0.103	
2,3,4,7,8-PeCDF	ND	0.219		0.0947	
1,2,3,4,7,8-HxCDF	0.368			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND	0.0612		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0699		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0877		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0340		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0198		0.0868	
OCDF	0.129			0.0902	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	82.6	40 - 135	
	13C-1,2,3,7,8-PeCDD	77.3	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	79.9	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	82.0	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	84.7	40 - 135	
	13C-OCDD	83.6	40 - 135	
	13C-2,3,7,8-TCDF	93.8	40 - 135	
	13C-1,2,3,7,8-PeCDF	83.1	40 - 135	
	13C-2,3,4,7,8-PeCDF	84.3	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	66.5	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	62.8	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	73.2	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	80.3	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	73.6	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	80.3	40 - 135	
	13C-OCDF	78.8	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	81.3	40 - 135	

Totals			
Total TCDD	6.79	6.86	
Total PeCDD	32.4	36.2	
Total HxCDD	40.6		
Total HpCDD	0.404	1.08	B
Total TCDF	2.28	2.48	
Total PeCDF	0.621	24.5	
Total HxCDF	0.880	1.36	B
Total HpCDF	ND	0.0575	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 2.15 - 2.30

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-MR-7-1 **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-006	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	25.43 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	40.8	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.0565			0.0440	A
1,2,3,7,8-PeCDD	1.34			0.0266	
1,2,3,4,7,8-HxCDD	0.0798			0.0836	A
1,2,3,6,7,8-HxCDD	0.176			0.0930	A
1,2,3,7,8,9-HxCDD	0.0911			0.0650	A
1,2,3,4,6,7,8-HpCDD	0.476			0.0954	A,B
OCDD	1.69			0.174	A,B
2,3,7,8-TCDF	0.176			0.0304	A
1,2,3,7,8-PeCDF	ND	0.164		0.103	
2,3,4,7,8-PeCDF	ND	0.141		0.0947	
1,2,3,4,7,8-HxCDF	0.264			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND	0.0500		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0600		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0721		0.0680	
1,2,3,4,6,7,8-HpCDF	0.0754			0.0689	A
1,2,3,4,7,8,9-HpCDF	ND	0.0155		0.0868	
OCDF	0.169			0.0902	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	86.3	40 - 135	
	13C-1,2,3,7,8-PeCDD	80.5	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	83.8	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	86.1	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	87.6	40 - 135	
	13C-OCDD	89.7	40 - 135	
	13C-2,3,7,8-TCDF	97.8	40 - 135	
	13C-1,2,3,7,8-PeCDF	88.1	40 - 135	
	13C-2,3,4,7,8-PeCDF	88.4	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	69.6	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	65.7	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	75.7	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	83.3	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	77.2	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	83.7	40 - 135	
	13C-OCDF	84.2	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	84.2	40 - 135	

Totals			
Total TCDD	3.58		
Total PeCDD	20.9	22.4	
Total HxCDD	30.0		
Total HpCDD	0.476	1.25	B
Total TCDF	1.97		
Total PeCDF	0.542	10.5	
Total HxCDF	0.938	1.10	B
Total HpCDF	0.158		

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 1.48 - 1.58

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-MR-7-2 **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-007	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	27.08 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	38.4	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL [a]	EMPC [b]	MDL [c]	Qualifiers
2,3,7,8-TCDD	0.0531			0.0440	A
1,2,3,7,8-PeCDD	1.48			0.0266	
1,2,3,4,7,8-HxCDD	0.118			0.0836	A
1,2,3,6,7,8-HxCDD	0.163			0.0930	A
1,2,3,7,8,9-HxCDD	0.0834			0.0650	A
1,2,3,4,6,7,8-HpCDD	0.476			0.0954	A,B
OCDD	1.33			0.174	A,B
2,3,7,8-TCDF	0.188			0.0304	A
1,2,3,7,8-PeCDF	ND	0.246		0.103	
2,3,4,7,8-PeCDF	ND	0.215		0.0947	
1,2,3,4,7,8-HxCDF	0.366			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND	0.0609		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0707		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0829		0.0680	
1,2,3,4,6,7,8-HpCDF	0.0641			0.0689	A
1,2,3,4,7,8,9-HpCDF	ND	0.0228		0.0868	
OCDF	0.151			0.0902	A,B

Labeled Standard		%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	79.5	40 - 135	
	13C-1,2,3,7,8-PeCDD	75.8	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	74.7	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	77.6	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	80.0	40 - 135	
	13C-OCDD	82.0	40 - 135	
	13C-2,3,7,8-TCDF	88.4	40 - 135	
	13C-1,2,3,7,8-PeCDF	81.2	40 - 135	
	13C-2,3,4,7,8-PeCDF	83.3	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	62.1	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	58.6	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	68.2	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	74.9	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	72.3	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	75.5	40 - 135	
	13C-OCDF	76.4	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	80.1	40 - 135	

Totals			
Total TCDD	4.04		
Total PeCDD	28.2	30.3	
Total HxCDD	40.8		
Total HpCDD	0.476	1.10	B
Total TCDF	2.02		
Total PeCDF	0.500	14.0	
Total HxCDF	0.841	1.32	B
Total HpCDF	0.144	0.183	

Toxic Equivalent Quotient (TEQ) Data [e]

TEQ (Min-Max): 1.63 - 1.77

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-SIN **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-008	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	24.69 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	43.2	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.0636			0.0440	A
1,2,3,7,8-PeCDD	1.97			0.0266	
1,2,3,4,7,8-HxCDD	0.128			0.0836	A
1,2,3,6,7,8-HxCDD	0.173			0.0930	A
1,2,3,7,8,9-HxCDD	0.0754			0.0650	A
1,2,3,4,6,7,8-HpCDD	0.287			0.0954	A,B
OCDD	0.735			0.174	A,B
2,3,7,8-TCDF	0.230			0.0304	
1,2,3,7,8-PeCDF	ND	0.273		0.103	
2,3,4,7,8-PeCDF	ND	0.257		0.0947	
1,2,3,4,7,8-HxCDF	0.333			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND	0.0621		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0706		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0791		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0286		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0308		0.0868	
OCDF	0.0978			0.0902	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	84.4	40 - 135	
	13C-1,2,3,7,8-PeCDD	80.3	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	75.0	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	79.4	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	79.9	40 - 135	
	13C-OCDD	81.1	40 - 135	
	13C-2,3,7,8-TCDF	89.5	40 - 135	
	13C-1,2,3,7,8-PeCDF	79.8	40 - 135	
	13C-2,3,4,7,8-PeCDF	81.8	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	61.5	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	59.1	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	68.1	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	82.5	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	71.1	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	75.8	40 - 135	
	13C-OCDF	74.3	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	81.3	40 - 135	

Totals			
Total TCDD	6.37	6.60	
Total PeCDD	29.1	33.3	
Total HxCDD	33.8		
Total HpCDD	0.287	0.751	B
Total TCDF	2.47	2.54	
Total PeCDF	0.620	15.1	
Total HxCDF	0.650	1.24	B
Total HpCDF	ND	0.0611	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 2.13 - 2.29

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-SIN-1-2 **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-009	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	25.67 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	40.0	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0493	0.0440	
1,2,3,7,8-PeCDD	1.11			0.0266	
1,2,3,4,7,8-HxCDD	0.119			0.0836	A
1,2,3,6,7,8-HxCDD	0.126			0.0930	A
1,2,3,7,8,9-HxCDD	ND	0.0605		0.0650	
1,2,3,4,6,7,8-HpCDD	0.213			0.0954	A,B
OCDD	0.536			0.174	A,B
2,3,7,8-TCDF	0.174			0.0304	A
1,2,3,7,8-PeCDF	ND	0.104		0.103	
2,3,4,7,8-PeCDF	ND	0.0914		0.0947	
1,2,3,4,7,8-HxCDF	0.281			0.0803	A,B
1,2,3,6,7,8-HxCDF	0.0855			0.0773	A
2,3,4,6,7,8-HxCDF	ND	0.0416		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0528		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0199		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0203		0.0868	
OCDF	0.0900			0.0902	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	80.7	40 - 135	
	13C-1,2,3,7,8-PeCDD	75.3	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	77.7	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	79.0	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	80.8	40 - 135	
	13C-OCDD	84.5	40 - 135	
	13C-2,3,7,8-TCDF	91.9	40 - 135	
	13C-1,2,3,7,8-PeCDF	80.6	40 - 135	
	13C-2,3,4,7,8-PeCDF	81.6	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	64.4	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	60.2	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	70.1	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	76.5	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	71.8	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	77.7	40 - 135	
	13C-OCDF	77.3	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	81.0	40 - 135	

Totals		
Total TCDD	3.70	3.88
Total PeCDD	17.2	19.2
Total HxCDD	28.9	29.0
Total HpCDD	0.213	0.543
Total TCDF	1.76	1.89
Total PeCDF	0.657	8.51
Total HxCDF	0.771	1.07
Total HpCDF	ND	0.0262

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 1.19 - 1.31

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-BIN **EPA METHOD 8290**

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-010	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	25.94 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	39.4	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0167	0.0440	
1,2,3,7,8-PeCDD	0.679			0.0266	A
1,2,3,4,7,8-HxCDD	0.118			0.0836	A
1,2,3,6,7,8-HxCDD	0.0908			0.0930	A
1,2,3,7,8,9-HxCDD	ND	0.0429		0.0650	
1,2,3,4,6,7,8-HpCDD	0.242			0.0954	A,B
OCDD	0.693			0.174	A,B
2,3,7,8-TCDF	0.123			0.0304	A
1,2,3,7,8-PeCDF	ND	0.116		0.103	
2,3,4,7,8-PeCDF	ND	0.107		0.0947	
1,2,3,4,7,8-HxCDF	0.150			0.0803	A,B
1,2,3,6,7,8-HxCDF	ND	0.0407		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0464		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0579		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0209		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0212		0.0868	
OCDF	0.114			0.0902	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	83.7	40 - 135	
	13C-1,2,3,7,8-PeCDD	77.3	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	81.9	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	82.0	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	84.4	40 - 135	
	13C-OCDD	84.6	40 - 135	
	13C-2,3,7,8-TCDF	92.7	40 - 135	
	13C-1,2,3,7,8-PeCDF	84.2	40 - 135	
	13C-2,3,4,7,8-PeCDF	84.6	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	67.6	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	63.5	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	73.7	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	80.1	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	75.1	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	80.4	40 - 135	
	13C-OCDF	79.8	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	80.8	40 - 135	

Totals					
Total TCDD	2.39		2.53		
Total PeCDD	10.8		12.0		
Total HxCDD	13.7				
Total HpCDD	0.242		0.637		B
Total TCDF	1.43				
Total PeCDF	0.259		4.67		
Total HxCDF	0.486				B
Total HpCDF	ND	0.0210			

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.730 - 0.825

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Sample ID: 020621-BIS

EPA METHOD 8290

Client Data		Sample Data		Laboratory Data			
Name:	Environ	Matrix:	Tissue	Lab Sample:	22412-011	Date Received:	21-Jun-02
Project:	Coast Seafoods	Sample Size:	25.32 g	QC Batch No.:	3095	Date Extracted:	27-Jun-02
Date Collected:	21-Jun-02	%Lipids:	40.7	Date Analyzed DB-5:	1-Jul-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL [a]	EMPC [b]	MDL [c]	Qualifiers
2,3,7,8-TCDD	ND		0.0217	0.0440	
1,2,3,7,8-PeCDD	1.15			0.0266	
1,2,3,4,7,8-HxCDD	0.324			0.0836	A
1,2,3,6,7,8-HxCDD	0.118			0.0930	A
1,2,3,7,8,9-HxCDD	ND	0.0816		0.0650	
1,2,3,4,6,7,8-HpCDD	0.248			0.0954	A,B
OCDD	0.705			0.174	A,B
2,3,7,8-TCDF	0.193			0.0304	A
1,2,3,7,8-PeCDF	ND	0.128		0.103	
2,3,4,7,8-PeCDF	ND	0.108		0.0947	
1,2,3,4,7,8-HxCDF	0.334			0.0803	A,B
1,2,3,6,7,8-HxCDF	0.103			0.0773	A
2,3,4,6,7,8-HxCDF	ND	0.0570		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0665		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0237		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0247		0.0868	
OCDF	0.102			0.0902	A,B

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	81.5	40 - 135	
	13C-1,2,3,7,8-PeCDD	77.1	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	77.5	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	80.2	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	81.7	40 - 135	
	13C-OCDD	79.5	40 - 135	
	13C-2,3,7,8-TCDF	91.8	40 - 135	
	13C-1,2,3,7,8-PeCDF	82.8	40 - 135	
	13C-2,3,4,7,8-PeCDF	83.4	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	65.2	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	61.0	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	71.0	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	77.5	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	71.8	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	79.1	40 - 135	
	13C-OCDF	76.5	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	78.8	40 - 135	

Totals			
Total TCDD	4.38	4.58	
Total PeCDD	24.7	25.0	
Total HxCDD	37.7		
Total HpCDD	0.248	0.657	B
Total TCDF	2.69	2.72	
Total PeCDF	0.859	9.39	
Total HxCDF	1.19	1.54	B
Total HpCDF	ND	0.0569	

Toxic Equivalent Quotient (TEQ) Data [e]

TEQ (Min-Max): 1.26 - 1.36

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Method Blank **EPA METHOD 8290**

Matrix: Tissue QC Batch No.: 3095 Lab Sample: 0-MB001

Sample Size: 25 g Date Extracted: 27-Jun-02 Date Analyzed DB-5: 1-Jul-02 Date Analyzed DB-225: NA

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND	0.0295		0.0440	
1,2,3,7,8-PeCDD	ND	0.0314		0.0266	
1,2,3,4,7,8-HxCDD	ND	0.0486		0.0836	
1,2,3,6,7,8-HxCDD	ND	0.0505		0.0930	
1,2,3,7,8,9-HxCDD	ND	0.0493		0.0650	
1,2,3,4,6,7,8-HpCDD	0.0311			0.0954	A
OCDD	0.126			0.174	A
2,3,7,8-TCDF	ND	0.0217		0.0304	
1,2,3,7,8-PeCDF	ND	0.0444		0.103	
2,3,4,7,8-PeCDF	ND	0.0377		0.0947	
1,2,3,4,7,8-HxCDF	0.0427			0.0803	A
1,2,3,6,7,8-HxCDF	ND	0.0148		0.0773	
2,3,4,6,7,8-HxCDF	ND	0.0167		0.0546	
1,2,3,7,8,9-HxCDF	ND	0.0215		0.0680	
1,2,3,4,6,7,8-HpCDF	ND	0.0210		0.0689	
1,2,3,4,7,8,9-HpCDF	ND	0.0163		0.0868	
OCDF	0.0934			0.0902	A

Labeled Standard		%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	94.5	40 - 135	
	13C-1,2,3,7,8-PeCDD	85.2	40 - 135	
	13C-1,2,3,4,7,8-HxCDD	88.9	40 - 135	
	13C-1,2,3,6,7,8-HxCDD	92.4	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDD	101	40 - 135	
	13C-OCDD	87.3	40 - 135	
	13C-2,3,7,8-TCDF	101	40 - 135	
	13C-1,2,3,7,8-PeCDF	87.9	40 - 135	
	13C-2,3,4,7,8-PeCDF	88.0	40 - 135	
	13C-1,2,3,4,7,8-HxCDF	74.0	40 - 135	
	13C-1,2,3,6,7,8-HxCDF	70.9	40 - 135	
	13C-2,3,4,6,7,8-HxCDF	81.1	40 - 135	
	13C-1,2,3,7,8,9-HxCDF	89.2	40 - 135	
	13C-1,2,3,4,6,7,8-HpCDF	88.1	40 - 135	
	13C-1,2,3,4,7,8,9-HpCDF	95.3	40 - 135	
	13C-OCDF	81.6	40 - 135	
CRS	37Cl-2,3,7,8-TCDD	93.5	40 - 135	

Totals		
Total TCDD	ND	0.0295
Total PeCDD	ND	0.0314
Total HxCDD	ND	0.0495
Total HpCDD	0.0311	
Total TCDF	ND	0.0217
Total PeCDF	ND	0.0409
Total HxCDF	0.0427	
Total HpCDF	ND	0.0210

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.00460 - 0.109

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on World Health Organization Toxic Equivalent Factors (WHO-1997).

Analyst: JMH Approved By: William J. Luksemburg 02-Jul-2002 14:10

OPR Results

EPA METHOD 8290

Matrix:	Tissue	QC Batch No.:	3095	Lab Sample:	0-OPR001
Sample Size:	25 g	Date Extracted:	27-Jun-02	Date Analyzed DB-5:	1-Jul-02
				Date Analyzed DB-225:	NA

Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits
2,3,7,8-TCDD	10.0	9.89	7 - 13
1,2,3,7,8-PeCDD	50.0	51.1	35 - 65
1,2,3,4,7,8-HxCDD	50.0	51.5	35 - 65
1,2,3,6,7,8-HxCDD	50.0	50.2	35 - 65
1,2,3,7,8,9-HxCDD	50.0	53.2	35 - 65
1,2,3,4,6,7,8-HpCDD	50.0	52.1	35 - 65
OCDD	100	103	70 - 130
2,3,7,8-TCDF	10.0	9.80	7 - 13
1,2,3,7,8-PeCDF	50.0	50.3	35 - 65
2,3,4,7,8-PeCDF	50.0	51.2	35 - 65
1,2,3,4,7,8-HxCDF	50.0	51.3	35 - 65
1,2,3,6,7,8-HxCDF	50.0	51.9	35 - 65
2,3,4,6,7,8-HxCDF	50.0	50.6	35 - 65
1,2,3,7,8,9-HxCDF	50.0	51.7	35 - 65
1,2,3,4,6,7,8-HpCDF	50.0	50.0	35 - 65
1,2,3,4,7,8,9-HpCDF	50.0	51.0	35 - 65
OCDF	100	100	70 - 130

	Labeled Standard	%R	LCL-UCL
IS	13C-2,3,7,8-TCDD	89.1	40 - 135
	13C-1,2,3,7,8-PeCDD	83.8	40 - 135
	13C-1,2,3,4,7,8-HxCDD	82.2	40 - 135
	13C-1,2,3,6,7,8-HxCDD	88.0	40 - 135
	13C-1,2,3,4,6,7,8-HpCD	94.7	40 - 135
	13C-OCDD	94.8	40 - 135
	13C-2,3,7,8-TCDF	98.1	40 - 135
	13C-1,2,3,7,8-PeCDF	86.0	40 - 135
	13C-2,3,4,7,8-PeCDF	86.3	40 - 135
	13C-1,2,3,4,7,8-HxCDF	68.2	40 - 135
	13C-1,2,3,6,7,8-HxCDF	67.5	40 - 135
	13C-2,3,4,6,7,8-HxCDF	77.7	40 - 135
	13C-1,2,3,7,8,9-HxCDF	83.3	40 - 135
	13C-1,2,3,4,6,7,8-HpCD	81.9	40 - 135
	13C-1,2,3,4,7,8,9-HpCD	92.2	40 - 135
	13C-OCDF	91.8	40 - 135
CRS	37Cl-2,3,7,8-TCDD	84.9	40 - 135

Analyst: JMH

Approved By: William J. Luksemburg 02-Jul-2002 14:10

Appendix II

Semivolatile Organics, PCB aroclors and Chlorinated Pesticides Testing Laboratory Data Sheets from Caltest Analytical Laboratory (Napa, CA) for October Samples

ALTA

November 21, 2002

Alta Project I.D.: 22991

Ms. Linda Mackey
Dun & Martinek
c/o EnviroNet Consulting
3645 Westwind Blvd.
Santa Rosa, CA 95403

Dear Ms. Mackey,

Enclosed are the results for the 14 tissue samples received at Alta Analytical Laboratory on October 22, 2002 under your Project Name "Dun & Martenek". These samples were analyzed by Caltest Analytical Laboratory for metals, semivolatile organics, PCB aroclors and chlorinated pesticides. A standard turnaround time was provided for this work.

Full data packages and EDDs will be shipped early next week.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at mmaier@altalab.com. Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha Maier

Martha M. Maier
Director of HRMS Services

ACCREDITED IN ACCORDANCE WITH nelac

Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAC for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.

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NELAP Certification 01103CA

ELAP Certification 1664

Caltest
ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

LAB ORDER No.: C100971

REPORT of ANALYTICAL RESULTS

Report Date: 12 NOV 2002
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Client: Martha Maier
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Sampled by: CIERA LUKSEMBURG

Project: 22991

Lab Number	Sample Identification	Matrix	Sampled Date/Time
C100971-1	22991-001 DM-0001	SOLID	21 OCT 02
C100971-2	22991-002 DM-0003	SOLID	21 OCT 02
C100971-3	22991-003 DM-0005	SOLID	21 OCT 02
C100971-4	22991-004 DM-0007	SOLID	21 OCT 02
C100971-5	22991-005 DM-0009	SOLID	21 OCT 02
C100971-6	22991-006 DM-0011	SOLID	21 OCT 02
C100971-7	22991-007 DM-0013	SOLID	21 OCT 02
C100971-8	22991-008 DM-0017	SOLID	21 OCT 02
C100971-9	22991-009 DM-0019	SOLID	21 OCT 02
C100971-10	22991-010 DM-0021	SOLID	21 OCT 02
C100971-11	22991-011 DM-0023	SOLID	21 OCT 02
C100971-12	22991-012 DM-0025	SOLID	21 OCT 02
C100971-13	22991-013 DM-0015a	SOLID	21 OCT 02
C100971-14	22991-014 DM-0015b	SOLID	21 OCT 02

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LAB ORDER No.: C100971

INORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-1								
SAMPLE ID: 22991-001 DM-0001								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.7	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	12.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.02	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	79.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
LAB NUMBER: C100971-2								
SAMPLE ID: 22991-002 DM-0003								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.8	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	16.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.02	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	96.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2

1) Sample Preparation on 11-01-02 using 3050B
2) Results expressed as wet weight.
3) Sample Preparation on 11-04-02 using 7471A

LAB ORDER No.: C100971

INORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-3								
SAMPLE ID: 22991-003 DM-0005								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.7	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	5.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.03	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	58.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
LAB NUMBER: C100971-4								
SAMPLE ID: 22991-004 DM-0007								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.8	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	6.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.02	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	63.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2

1) Sample Preparation on 11-01-02 using 3050B
2) Results expressed as wet weight.
3) Sample Preparation on 11-04-02 using 7471A

LAB ORDER No.: C100971

INORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-5								
SAMPLE ID: 22991-005 DM-0009								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.8	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	11.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.03	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	110.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
LAB NUMBER: C100971-6								
SAMPLE ID: 22991-006 DM-0011								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.9	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	13.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.03	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	130.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2

1) Sample Preparation on 11-01-02 using 3050B
2) Results expressed as wet weight.
3) Sample Preparation on 11-04-02 using 7471A

LAB ORDER No.: C100971

INORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-7								
SAMPLE ID: 22991-007 DM-0013								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.8	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	6.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.03	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	60.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
LAB NUMBER: C100971-8								
SAMPLE ID: 22991-008 DM-0017								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	1.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.8	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	39.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.03	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	1.8	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	110.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2

1) Sample Preparation on 11-01-02 using 3050B
2) Results expressed as wet weight.
3) Sample Preparation on 11-04-02 using 7471A

LAB ORDER No.: C100971

INORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-9								
SAMPLE ID: 22991-009 DM-0019								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	1.3	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	51.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.03	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	2.2	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	140.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
LAB NUMBER: C100971-10								
SAMPLE ID: 22991-010 DM-0021								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.7	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	17.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.02	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	78.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2

1) Sample Preparation on 11-01-02 using 3050B
2) Results expressed as wet weight.
3) Sample Preparation on 11-04-02 using 7471A

LAB ORDER No.: C100971

INORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-11								
SAMPLE ID: 22991-011 DM-0023								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.4	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.02	0.02	mg/kg	1	7471A	11.05.02	A021316MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	12.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
LAB NUMBER: C100971-12								
SAMPLE ID: 22991-012 DM-0025								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	1.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.4	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	30.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.02	0.02	mg/kg	1	7471A	11.05.02	A021317MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	110.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2

1) Sample Preparation on 11-01-02 using 3050B
2) Results expressed as wet weight.
3) Sample Preparation on 11-04-02 using 7471A

LAB ORDER No.: C100971

INORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-13								
SAMPLE ID: 22991-013 DM-0015a								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.7	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	22.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.03	0.02	mg/kg	1	7471A	11.05.02	A021317MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	0.6	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	130.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
LAB NUMBER: C100971-14								
SAMPLE ID: 22991-014 DM-0015b								
SAMPLED: 21 OCT 02								
Antimony	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Arsenic	2.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Barium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Beryllium	ND	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cadmium	0.8	0.2	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Chromium	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Cobalt	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Copper	20.	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Lead	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Mercury	0.03	0.02	mg/kg	1	7471A	11.05.02	A021317MER	2,3
Molybdenum	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Nickel	ND	1.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Selenium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Silver	ND	0.6	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Thallium	ND	2.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Vanadium	ND	0.4	mg/kg	10	6010B	11.06.02	A021313ICP	1,2
Zinc	100.	4.	mg/kg	10	6010B	11.06.02	A021313ICP	1,2

1) Sample Preparation on 11-01-02 using 3050B
2) Results expressed as wet weight.
3) Sample Preparation on 11-04-02 using 7471A

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-1							
SAMPLE ID: 22991-001 DM-0001							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
				5	11.07.02	T020311OCP	1-5
CHLORINATED PESTICIDES							
Aldrin	ND	0.045	mg/kg				
alpha-BHC	ND	0.045	mg/kg				
beta-BHC	ND	0.045	mg/kg				
gamma-BHC (Lindane)	ND	0.045	mg/kg				
delta-BHC	ND	0.045	mg/kg				
Chlordane	ND	0.090	mg/kg				
p,p'-DDD	ND	0.045	mg/kg				
p,p'-DDE	ND	0.045	mg/kg				
p,p'-DDT	ND	0.045	mg/kg				
Dieldrin	ND	0.045	mg/kg				
Endosulfan I	ND	0.045	mg/kg				
Endosulfan II	ND	0.045	mg/kg				
Endosulfan Sulfate	ND	0.045	mg/kg				
Endrin	ND	0.045	mg/kg				
Endrin Aldehyde	ND	0.045	mg/kg				
Endrin Ketone	ND	0.045	mg/kg				
Heptachlor	ND	0.045	mg/kg				
Heptachlor Epoxide	ND	0.045	mg/kg				
Methoxychlor	ND	0.045	mg/kg				
Toxaphene	ND	0.3	mg/kg				
Surrogate TCMX	100.		%				
Surrogate Decachlorobiphenyl	91.		%				
LAB NUMBER: C100971-1 (continued)							
SAMPLE ID: 22991-001 DM-0001							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
				1	11.05.02	T020311OCP	1,2,4,6
POLYCHLORINATED BIPHENYLS (PCBS)							
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.
6) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-1 (continued)							
SAMPLE ID: 22991-001 DM-0001							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	
(continued)							
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	84.		%				
Surrogate Decachlorobiphenyl	87.		%				
LAB NUMBER: C100971-1 (continued)							
SAMPLE ID: 22991-001 DM-0001							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	1,2
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				

1) Sample Preparation on 10-31-02 using EPA 3540
2) Results expressed as wet weight.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-1 (continued)
SAMPLE ID: 22991-001 DM-0001
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	17.	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	2.6	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	2.	mg/kg				
N-Nitrosodiphenylamine	ND	0.99	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	E40.	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	4.5	mg/kg				
Benzoic Acid	ND	0.99	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-1 (continued)							
SAMPLE ID: 22991-001 DM-0001							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	71.		%				
Surrogate 2-Fluorobiphenyl	88.		%				
Surrogate Terphenyl-d14	101.		%				
Surrogate 2-Fluorophenol	70.		%				
Surrogate Phenol-d6	105.		%				
Surrogate 2,4,6-Tribromophenol	58.		%				
LAB NUMBER: C100971-2							
SAMPLE ID: 22991-002 DM-0003							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				5	11.07.02	T020311OCP	1-5
Aldrin	ND	0.045	mg/kg				
alpha-BHC	ND	0.045	mg/kg				
beta-BHC	ND	0.045	mg/kg				
gamma-BHC (Lindane)	ND	0.045	mg/kg				
delta-BHC	ND	0.045	mg/kg				
Chlordane	ND	0.090	mg/kg				
p,p'-DDD	ND	0.045	mg/kg				
p,p'-DDE	ND	0.045	mg/kg				
p,p'-DDT	ND	0.045	mg/kg				
Dieldrin	ND	0.045	mg/kg				
Endosulfan I	ND	0.045	mg/kg				
Endosulfan II	ND	0.045	mg/kg				
Endosulfan Sulfate	ND	0.045	mg/kg				
Endrin	ND	0.045	mg/kg				
Endrin Aldehyde	ND	0.045	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-2 (continued)							
SAMPLE ID: 22991-002 DM-0003							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				5	11.07.02	T020311OCP	
(continued)							
Endrin Ketone	ND	0.045	mg/kg				
Heptachlor	ND	0.045	mg/kg				
Heptachlor Epoxide	ND	0.045	mg/kg				
Methoxychlor	ND	0.045	mg/kg				
Toxaphene	ND	0.3	mg/kg				
Surrogate TCMX	84.		%				
Surrogate Decachlorobiphenyl	61.		%				
LAB NUMBER: C100971-2 (continued)							
SAMPLE ID: 22991-002 DM-0003							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	1,2,3,4
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	91.		%				
Surrogate Decachlorobiphenyl	97.		%				
LAB NUMBER: C100971-2 (continued)							
SAMPLE ID: 22991-002 DM-0003							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	2,5
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample Preparation on 10-31-02 using EPA 3540

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-2 (continued)
SAMPLE ID: 22991-002 DM-0003
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	ND	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-2 (continued)
SAMPLE ID: 22991-002 DM-0003
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	0.99	mg/kg				
N-Nitrosodiphenylamine	ND	2.	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	ND	0.99	mg/kg				
Pyridine	E34.	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	0.99	mg/kg				
Benzoic Acid	ND	4.5	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	69.		%				
Surrogate 2-Fluorobiphenyl	89.		%				
Surrogate Terphenyl-d14	115.		%				
Surrogate 2-Fluorophenol	67.		%				
Surrogate Phenol-d6	105.		%				
Surrogate 2,4,6-Tribromophenol	55.		%				

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-3							
SAMPLE ID: 22991-003 DM-0005							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				5	11.07.02	T020311OCP	1-5
Aldrin	ND	0.045	mg/kg				
alpha-BHC	ND	0.045	mg/kg				
beta-BHC	ND	0.045	mg/kg				
gamma-BHC (Lindane)	ND	0.045	mg/kg				
delta-BHC	ND	0.045	mg/kg				
Chlordane	ND	0.090	mg/kg				
p,p'-DDD	ND	0.045	mg/kg				
p,p'-DDE	ND	0.045	mg/kg				
p,p'-DDT	ND	0.045	mg/kg				
Dieldrin	ND	0.045	mg/kg				
Endosulfan I	ND	0.045	mg/kg				
Endosulfan II	ND	0.045	mg/kg				
Endosulfan Sulfate	ND	0.045	mg/kg				
Endrin	ND	0.045	mg/kg				
Endrin Aldehyde	ND	0.045	mg/kg				
Endrin Ketone	ND	0.045	mg/kg				
Heptachlor	ND	0.045	mg/kg				
Heptachlor Epoxide	ND	0.045	mg/kg				
Methoxychlor	ND	0.045	mg/kg				
Toxaphene	ND	0.3	mg/kg				
Surrogate TCMX	90.		%				
Surrogate Decachlorobiphenyl	63.		%				
LAB NUMBER: C100971-3 (continued)							
SAMPLE ID: 22991-003 DM-0005							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	1,2,4,6
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.
6) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-3 (continued)							
SAMPLE ID: 22991-003 DM-0005							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	
(continued)							
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	80.		%				
Surrogate Decachlorobiphenyl	83.		%				
LAB NUMBER: C100971-3 (continued)							
SAMPLE ID: 22991-003 DM-0005							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	1,2
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				

1) Sample Preparation on 10-31-02 using EPA 3540
2) Results expressed as wet weight.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-3 (continued)
SAMPLE ID: 22991-003 DM-0005
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	ND	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	2.	mg/kg				
N-Nitrosodiphenylamine	ND	0.99	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	E42.	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	4.5	mg/kg				
Benzoic Acid	ND	0.99	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-3 (continued)							
SAMPLE ID: 22991-003 DM-0005							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	72.		%				
Surrogate 2-Fluorobiphenyl	95.		%				
Surrogate Terphenyl-d14	122.		%				
Surrogate 2-Fluorophenol	74.		%				
Surrogate Phenol-d6	107.		%				
Surrogate 2,4,6-Tribromophenol	9.		%				
LAB NUMBER: C100971-4							
SAMPLE ID: 22991-004 DM-0007							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T0203110CP	1-5
Aldrin	ND	0.018	mg/kg				
alpha-BHC	ND	0.018	mg/kg				
beta-BHC	ND	0.018	mg/kg				
gamma-BHC (Lindane)	ND	0.018	mg/kg				
delta-BHC	ND	0.018	mg/kg				
Chlordane	ND	0.036	mg/kg				
p,p'-DDD	ND	0.018	mg/kg				
p,p'-DDE	ND	0.018	mg/kg				
p,p'-DDT	ND	0.018	mg/kg				
Dieldrin	ND	0.018	mg/kg				
Endosulfan I	ND	0.018	mg/kg				
Endosulfan II	ND	0.018	mg/kg				
Endosulfan Sulfate	ND	0.018	mg/kg				
Endrin	ND	0.018	mg/kg				
Endrin Aldehyde	ND	0.018	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-4 (continued)							
SAMPLE ID: 22991-004 DM-0007							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T020311OCP	
(continued)							
Endrin Ketone	ND	0.018	mg/kg				
Heptachlor	ND	0.018	mg/kg				
Heptachlor Epoxide	ND	0.018	mg/kg				
Methoxychlor	ND	0.018	mg/kg				
Toxaphene	ND	0.12	mg/kg				
Surrogate TCMX	58.		%				
Surrogate Decachlorobiphenyl	29.		%				
LAB NUMBER: C100971-4 (continued)							
SAMPLE ID: 22991-004 DM-0007							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	1,2,3,4
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	50.		%				
Surrogate Decachlorobiphenyl	55.		%				
LAB NUMBER: C100971-4 (continued)							
SAMPLE ID: 22991-004 DM-0007							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	2,5,6
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample Preparation on 10-31-02 using EPA 3540
6) Those analytes with "B" flagged results were detected in the Method Blank.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-4 (continued)
SAMPLE ID: 22991-004 DM-0007
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B1.2	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-4 (continued)
SAMPLE ID: 22991-004 DM-0007
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	0.99	mg/kg				
N-Nitrosodiphenylamine	ND	2.	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	ND	0.99	mg/kg				
Pyridine	E26.	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	0.99	mg/kg				
Benzoic Acid	ND	4.5	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	75.		%				
Surrogate 2-Fluorobiphenyl	97.		%				
Surrogate Terphenyl-d14	108.		%				
Surrogate 2-Fluorophenol	79.		%				
Surrogate Phenol-d6	111.		%				
Surrogate 2,4,6-Tribromophenol	78.		%				

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-5							
SAMPLE ID: 22991-005 DM-0009							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
				5	11.07.02	T020311OCP	1-5
CHLORINATED PESTICIDES							
Aldrin	ND	0.045	mg/kg				
alpha-BHC	ND	0.045	mg/kg				
beta-BHC	ND	0.045	mg/kg				
gamma-BHC (Lindane)	ND	0.045	mg/kg				
delta-BHC	ND	0.045	mg/kg				
Chlordane	ND	0.090	mg/kg				
p,p'-DDD	ND	0.045	mg/kg				
p,p'-DDE	ND	0.045	mg/kg				
p,p'-DDT	ND	0.045	mg/kg				
Dieldrin	ND	0.045	mg/kg				
Endosulfan I	ND	0.045	mg/kg				
Endosulfan II	ND	0.045	mg/kg				
Endosulfan Sulfate	ND	0.045	mg/kg				
Endrin	ND	0.045	mg/kg				
Endrin Aldehyde	ND	0.045	mg/kg				
Endrin Ketone	ND	0.045	mg/kg				
Heptachlor	ND	0.045	mg/kg				
Heptachlor Epoxide	ND	0.045	mg/kg				
Methoxychlor	ND	0.045	mg/kg				
Toxaphene	ND	0.3	mg/kg				
Surrogate TCMX	92.		%				
Surrogate Decachlorobiphenyl	49.		%				
LAB NUMBER: C100971-5 (continued)							
SAMPLE ID: 22991-005 DM-0009							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
				1	11.05.02	T020311OCP	1,2,4,6
POLYCHLORINATED BIPHENYLS (PCBS)							
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.
6) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-5 (continued)							
SAMPLE ID: 22991-005 DM-0009							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	
(continued)							
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	73.		%				
Surrogate Decachlorobiphenyl	77.		%				
LAB NUMBER: C100971-5 (continued)							
SAMPLE ID: 22991-005 DM-0009							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	1,2,3
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				

1) Sample Preparation on 10-31-02 using EPA 3540
2) Results expressed as wet weight.
3) Those analytes with "B" flagged results were detected in the Method Blank.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-5 (continued)
SAMPLE ID: 22991-005 DM-0009
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B1.6	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	2.	mg/kg				
N-Nitrosodiphenylamine	ND	0.99	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	E33.	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	4.5	mg/kg				
Benzoic Acid	ND	0.99	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-5 (continued)							
SAMPLE ID: 22991-005 DM-0009							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	73.		%				
Surrogate 2-Fluorobiphenyl	96.		%				
Surrogate Terphenyl-d14	118.		%				
Surrogate 2-Fluorophenol	70.		%				
Surrogate Phenol-d6	100.		%				
Surrogate 2,4,6-Tribromophenol	68.		%				
LAB NUMBER: C100971-6							
SAMPLE ID: 22991-006 DM-0011							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				5	11.07.02	T0203110CP	1-5
Aldrin	ND	0.045	mg/kg				
alpha-BHC	ND	0.045	mg/kg				
beta-BHC	ND	0.045	mg/kg				
gamma-BHC (Lindane)	ND	0.045	mg/kg				
delta-BHC	ND	0.045	mg/kg				
Chlordane	ND	0.090	mg/kg				
p,p'-DDD	ND	0.045	mg/kg				
p,p'-DDE	ND	0.045	mg/kg				
p,p'-DDT	ND	0.045	mg/kg				
Dieldrin	ND	0.045	mg/kg				
Endosulfan I	ND	0.045	mg/kg				
Endosulfan II	ND	0.045	mg/kg				
Endosulfan Sulfate	ND	0.045	mg/kg				
Endrin	ND	0.045	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-6 (continued)							
SAMPLE ID: 22991-006 DM-0011							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				5	11.07.02	T020311OCP	
(continued)							
Endrin Aldehyde	ND	0.045	mg/kg				
Endrin Ketone	ND	0.045	mg/kg				
Heptachlor	ND	0.045	mg/kg				
Heptachlor Epoxide	ND	0.045	mg/kg				
Methoxychlor	ND	0.045	mg/kg				
Toxaphene	ND	0.3	mg/kg				
Surrogate TCMX	115.		%				
Surrogate Decachlorobiphenyl	45.		%				
LAB NUMBER: C100971-6 (continued)							
SAMPLE ID: 22991-006 DM-0011							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	1,2,3,4
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	63.		%				
Surrogate Decachlorobiphenyl	62.		%				
LAB NUMBER: C100971-6 (continued)							
SAMPLE ID: 22991-006 DM-0011							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	2,5
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample Preparation on 10-31-02 using EPA 3540

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-6 (continued)
SAMPLE ID: 22991-006 DM-0011
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	ND	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-6 (continued)
SAMPLE ID: 22991-006 DM-0011
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	0.99	mg/kg				
N-Nitrosodiphenylamine	ND	2.	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	ND	0.99	mg/kg				
Pyridine	E36.	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	0.99	mg/kg				
Benzoic Acid	ND	4.5	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	72.		%				
Surrogate 2-Fluorobiphenyl	97.		%				
Surrogate Terphenyl-d14	128.		%				
Surrogate 2-Fluorophenol	70.		%				
Surrogate Phenol-d6	98.		%				
Surrogate 2,4,6-Tribromophenol	59.		%				

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-7							
SAMPLE ID: 22991-007 DM-0013							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				5	11.07.02	T020311OCP	1-5
Aldrin	ND	0.045	mg/kg				
alpha-BHC	ND	0.045	mg/kg				
beta-BHC	ND	0.045	mg/kg				
gamma-BHC (Lindane)	ND	0.045	mg/kg				
delta-BHC	ND	0.045	mg/kg				
Chlordane	ND	0.090	mg/kg				
p,p'-DDD	ND	0.045	mg/kg				
p,p'-DDE	ND	0.045	mg/kg				
p,p'-DDT	ND	0.045	mg/kg				
Dieldrin	ND	0.045	mg/kg				
Endosulfan I	ND	0.045	mg/kg				
Endosulfan II	ND	0.045	mg/kg				
Endosulfan Sulfate	ND	0.045	mg/kg				
Endrin	ND	0.045	mg/kg				
Endrin Aldehyde	ND	0.045	mg/kg				
Endrin Ketone	ND	0.045	mg/kg				
Heptachlor	ND	0.045	mg/kg				
Heptachlor Epoxide	ND	0.045	mg/kg				
Methoxychlor	ND	0.045	mg/kg				
Toxaphene	ND	0.3	mg/kg				
Surrogate TCMX	32.		%				
Surrogate Decachlorobiphenyl	23.		%				
LAB NUMBER: C100971-7 (continued)							
SAMPLE ID: 22991-007 DM-0013							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	1,2,4,6
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.
6) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-7 (continued)							
SAMPLE ID: 22991-007 DM-0013							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	
(continued)							
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	58.		%				
Surrogate Decachlorobiphenyl	61.		%				
LAB NUMBER: C100971-7 (continued)							
SAMPLE ID: 22991-007 DM-0013							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	1,2
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				

1) Sample Preparation on 10-31-02 using EPA 3540
2) Results expressed as wet weight.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-7 (continued)
SAMPLE ID: 22991-007 DM-0013
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	ND	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	2.	mg/kg				
N-Nitrosodiphenylamine	ND	0.99	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	E34.	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	4.5	mg/kg				
Benzoic Acid	ND	0.99	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-7 (continued)							
SAMPLE ID: 22991-007 DM-0013							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	53.		%				
Surrogate 2-Fluorobiphenyl	70.		%				
Surrogate Terphenyl-d14	94.		%				
Surrogate 2-Fluorophenol	48.		%				
Surrogate Phenol-d6	61.		%				
Surrogate 2,4,6-Tribromophenol	37.		%				
LAB NUMBER: C100971-8							
SAMPLE ID: 22991-008 DM-0017							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T0203110CP	1-5
Aldrin	ND	0.018	mg/kg				
alpha-BHC	ND	0.018	mg/kg				
beta-BHC	ND	0.018	mg/kg				
gamma-BHC (Lindane)	ND	0.018	mg/kg				
delta-BHC	ND	0.018	mg/kg				
Chlordane	ND	0.036	mg/kg				
p,p'-DDD	ND	0.018	mg/kg				
p,p'-DDE	ND	0.018	mg/kg				
p,p'-DDT	ND	0.018	mg/kg				
Dieldrin	ND	0.018	mg/kg				
Endosulfan I	ND	0.018	mg/kg				
Endosulfan II	ND	0.018	mg/kg				
Endosulfan Sulfate	ND	0.018	mg/kg				
Endrin	ND	0.018	mg/kg				
Endrin Aldehyde	ND	0.018	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-8 (continued)							
SAMPLE ID: 22991-008 DM-0017							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T020311OCP	
(continued)							
Endrin Ketone	ND	0.018	mg/kg				
Heptachlor	ND	0.018	mg/kg				
Heptachlor Epoxide	ND	0.018	mg/kg				
Methoxychlor	ND	0.018	mg/kg				
Toxaphene	ND	0.12	mg/kg				
Surrogate TCMX	98.		%				
Surrogate Decachlorobiphenyl	34.		%				
LAB NUMBER: C100971-8 (continued)							
SAMPLE ID: 22991-008 DM-0017							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	1,2,3,4
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	65.		%				
Surrogate Decachlorobiphenyl	64.		%				
LAB NUMBER: C100971-8 (continued)							
SAMPLE ID: 22991-008 DM-0017							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	2,5,6
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample Preparation on 10-31-02 using EPA 3540
6) Those analytes with "B" flagged results were detected in the Method Blank.

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-8 (continued)
SAMPLE ID: 22991-008 DM-0017
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B3.4	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-8 (continued)
SAMPLE ID: 22991-008 DM-0017
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	0.99	mg/kg				
N-Nitrosodiphenylamine	ND	2.	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	ND	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	0.99	mg/kg				
Benzoic Acid	ND	4.5	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	74.		%				
Surrogate 2-Fluorobiphenyl	86.		%				
Surrogate Terphenyl-d14	100.		%				
Surrogate 2-Fluorophenol	66.		%				
Surrogate Phenol-d6	86.		%				
Surrogate 2,4,6-Tribromophenol	89.		%				

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-9							
SAMPLE ID: 22991-009 DM-0019							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				5	11.07.02	T0203110CP	1-5
Aldrin	ND	0.045	mg/kg				
alpha-BHC	ND	0.045	mg/kg				
beta-BHC	ND	0.045	mg/kg				
gamma-BHC (Lindane)	ND	0.045	mg/kg				
delta-BHC	ND	0.045	mg/kg				
Chlordane	ND	0.090	mg/kg				
p,p'-DDD	ND	0.045	mg/kg				
p,p'-DDE	ND	0.045	mg/kg				
p,p'-DDT	ND	0.045	mg/kg				
Dieldrin	ND	0.045	mg/kg				
Endosulfan I	ND	0.045	mg/kg				
Endosulfan II	ND	0.045	mg/kg				
Endosulfan Sulfate	ND	0.045	mg/kg				
Endrin	ND	0.045	mg/kg				
Endrin Aldehyde	ND	0.045	mg/kg				
Endrin Ketone	ND	0.045	mg/kg				
Heptachlor	ND	0.045	mg/kg				
Heptachlor Epoxide	ND	0.045	mg/kg				
Methoxychlor	ND	0.045	mg/kg				
Toxaphene	ND	0.3	mg/kg				
Surrogate TCMX	98.		%				
Surrogate Decachlorobiphenyl	36.		%				
LAB NUMBER: C100971-9 (continued)							
SAMPLE ID: 22991-009 DM-0019							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T0203110CP	1,2,4,6
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.
6) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-9 (continued)							
SAMPLE ID: 22991-009 DM-0019							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	
(continued)							
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	72.		%				
Surrogate Decachlorobiphenyl	73.		%				
LAB NUMBER: C100971-9 (continued)							
SAMPLE ID: 22991-009 DM-0019							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	1,2,3
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				

1) Sample Preparation on 10-31-02 using EPA 3540
2) Results expressed as wet weight.
3) Those analytes with "B" flagged results were detected in the Method Blank.

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-9 (continued)
SAMPLE ID: 22991-009 DM-0019
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B10.	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	0.99	mg/kg				
N-Nitrosodiphenylamine	ND	2.	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	ND	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	0.99	mg/kg				
Benzoic Acid	ND	4.5	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-9 (continued)							
SAMPLE ID: 22991-009 DM-0019							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	76.		%				
Surrogate 2-Fluorobiphenyl	81.		%				
Surrogate Terphenyl-d14	103.		%				
Surrogate 2-Fluorophenol	69.		%				
Surrogate Phenol-d6	90.		%				
Surrogate 2,4,6-Tribromophenol	93.		%				
LAB NUMBER: C100971-10							
SAMPLE ID: 22991-010 DM-0021							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T020311OCP	1-5
Aldrin	ND	0.018	mg/kg				
alpha-BHC	ND	0.018	mg/kg				
beta-BHC	ND	0.018	mg/kg				
gamma-BHC (Lindane)	ND	0.018	mg/kg				
delta-BHC	ND	0.018	mg/kg				
Chlordane	ND	0.036	mg/kg				
p,p'-DDD	ND	0.018	mg/kg				
p,p'-DDE	ND	0.018	mg/kg				
p,p'-DDT	ND	0.018	mg/kg				
Dieldrin	ND	0.018	mg/kg				
Endosulfan I	ND	0.018	mg/kg				
Endosulfan II	ND	0.018	mg/kg				
Endosulfan Sulfate	ND	0.018	mg/kg				
Endrin	ND	0.018	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-10 (continued)							
SAMPLE ID: 22991-010 DM-0021							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T020311OCP	
(continued)							
Endrin Aldehyde	ND	0.018	mg/kg				
Endrin Ketone	ND	0.018	mg/kg				
Heptachlor	ND	0.018	mg/kg				
Heptachlor Epoxide	ND	0.018	mg/kg				
Methoxychlor	ND	0.018	mg/kg				
Toxaphene	ND	0.12	mg/kg				
Surrogate TCMX	90.		%				
Surrogate Decachlorobiphenyl	24.		%				
LAB NUMBER: C100971-10 (continued)							
SAMPLE ID: 22991-010 DM-0021							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.05.02	T020311OCP	1,2,3,4
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	92.		%				
Surrogate Decachlorobiphenyl	105.		%				
LAB NUMBER: C100971-10 (continued)							
SAMPLE ID: 22991-010 DM-0021							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	2,5,6
Acenaphthene	ND	0.99	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample Preparation on 10-31-02 using EPA 3540
6) Those analytes with "B" flagged results were detected in the Method Blank.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-10 (continued)
SAMPLE ID: 22991-010 DM-0021
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B4.8	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-10 (continued)
SAMPLE ID: 22991-010 DM-0021
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	0.99	mg/kg				
N-Nitrosodiphenylamine	ND	2.	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	ND	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	0.99	mg/kg				
Benzoic Acid	ND	4.5	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	70.		%				
Surrogate 2-Fluorobiphenyl	89.		%				
Surrogate Terphenyl-d14	113.		%				
Surrogate 2-Fluorophenol	67.		%				
Surrogate Phenol-d6	88.		%				
Surrogate 2,4,6-Tribromophenol	94.		%				

ORGANIC ANALYTICAL RESULTS

LAB ORDER No.: C100971

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-11							
SAMPLE ID: 22991-011 DM-0023							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T020311OCP	1-5
Aldrin	ND	0.018	mg/kg				
alpha-BHC	ND	0.018	mg/kg				
beta-BHC	ND	0.018	mg/kg				
gamma-BHC (Lindane)	ND	0.018	mg/kg				
delta-BHC	ND	0.018	mg/kg				
Chlordane	ND	0.036	mg/kg				
p,p'-DDD	ND	0.018	mg/kg				
p,p'-DDE	ND	0.018	mg/kg				
p,p'-DDT	ND	0.018	mg/kg				
Dieldrin	ND	0.018	mg/kg				
Endosulfan I	ND	0.018	mg/kg				
Endosulfan II	ND	0.018	mg/kg				
Endosulfan Sulfate	ND	0.018	mg/kg				
Endrin	ND	0.018	mg/kg				
Endrin Aldehyde	ND	0.018	mg/kg				
Endrin Ketone	ND	0.018	mg/kg				
Heptachlor	ND	0.018	mg/kg				
Heptachlor Epoxide	ND	0.018	mg/kg				
Methoxychlor	ND	0.018	mg/kg				
Toxaphene	ND	0.12	mg/kg				
Surrogate TCMX	98.		%				
Surrogate Decachlorobiphenyl	34.		%				
LAB NUMBER: C100971-11 (continued)							
SAMPLE ID: 22991-011 DM-0023							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.06.02	T020311OCP	1,2,4,6
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.
6) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).

ORGANIC ANALYTICAL RESULTS

LAB ORDER No.: C100971

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-11 (continued)							
SAMPLE ID: 22991-011 DM-0023							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.06.02	T0203110CP	
(continued)							
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	79.		%				
Surrogate Decachlorobiphenyl	83.		%				
LAB NUMBER: C100971-11 (continued)							
SAMPLE ID: 22991-011 DM-0023							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	1,2,3
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				

1) Sample Preparation on 10-31-02 using EPA 3540
2) Results expressed as wet weight.
3) Those analytes with "B" flagged results were detected in the Method Blank.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-11 (continued)
SAMPLE ID: 22991-011 DM-0023
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B8.6	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	2.	mg/kg				
N-Nitrosodiphenylamine	ND	0.99	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	E34.	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	4.5	mg/kg				
Benzoic Acid	ND	0.99	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

LAB ORDER No.: C100971

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-11 (continued)							
SAMPLE ID: 22991-011 DM-0023							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	74.		%				
Surrogate 2-Fluorobiphenyl	99.		%				
Surrogate Terphenyl-d14	152.		%				
Surrogate 2-Fluorophenol	60.		%				
Surrogate Phenol-d6	80.		%				
Surrogate 2,4,6-Tribromophenol	47.		%				
LAB NUMBER: C100971-12							
SAMPLE ID: 22991-012 DM-0025							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T0203110CP	1-5
Aldrin	ND	0.018	mg/kg				
alpha-BHC	ND	0.018	mg/kg				
beta-BHC	ND	0.018	mg/kg				
gamma-BHC (Lindane)	ND	0.018	mg/kg				
delta-BHC	ND	0.018	mg/kg				
Chlordane	ND	0.036	mg/kg				
p,p'-DDD	ND	0.018	mg/kg				
p,p'-DDE	ND	0.018	mg/kg				
p,p'-DDT	ND	0.018	mg/kg				
Dieldrin	ND	0.018	mg/kg				
Endosulfan I	ND	0.018	mg/kg				
Endosulfan II	ND	0.018	mg/kg				
Endosulfan Sulfate	ND	0.018	mg/kg				
Endrin	ND	0.018	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-12 (continued)							
SAMPLE ID: 22991-012 DM-0025							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T020311OCP	
(continued)							
Endrin Aldehyde	ND	0.018	mg/kg				
Endrin Ketone	ND	0.018	mg/kg				
Heptachlor	ND	0.018	mg/kg				
Heptachlor Epoxide	ND	0.018	mg/kg				
Methoxychlor	ND	0.018	mg/kg				
Toxaphene	ND	0.12	mg/kg				
Surrogate TCMX	72.		%				
Surrogate Decachlorobiphenyl	30.		%				
LAB NUMBER: C100971-12 (continued)							
SAMPLE ID: 22991-012 DM-0025							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.06.02	T020311OCP	1,2,3,4
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	64.		%				
Surrogate Decachlorobiphenyl	68.		%				
LAB NUMBER: C100971-12 (continued)							
SAMPLE ID: 22991-012 DM-0025							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	2,5,6
Acenaphthene	ND	0.99	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample Preparation on 10-31-02 using EPA 3540
6) Those analytes with "B" flagged results were detected in the Method Blank.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-12 (continued)
SAMPLE ID: 22991-012 DM-0025
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B8.2	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-12 (continued)
SAMPLE ID: 22991-012 DM-0025
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	0.99	mg/kg				
N-Nitrosodiphenylamine	ND	2.	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	ND	0.99	mg/kg				
Pyridine	E40.	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	0.99	mg/kg				
Benzoic Acid	ND	4.5	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	75.		%				
Surrogate 2-Fluorobiphenyl	96.		%				
Surrogate Terphenyl-d14	167.		%				
Surrogate 2-Fluorophenol	54.		%				
Surrogate Phenol-d6	74.		%				
Surrogate 2,4,6-Tribromophenol	27.		%				

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-13							
SAMPLE ID: 22991-013 DM-0015a							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
				2	11.07.02	T0203110CP	1-5
CHLORINATED PESTICIDES							
Aldrin	ND	0.018	mg/kg				
alpha-BHC	ND	0.018	mg/kg				
beta-BHC	ND	0.018	mg/kg				
gamma-BHC (Lindane)	ND	0.018	mg/kg				
delta-BHC	ND	0.018	mg/kg				
Chlordane	ND	0.036	mg/kg				
p,p'-DDD	ND	0.018	mg/kg				
p,p'-DDE	ND	0.018	mg/kg				
p,p'-DDT	ND	0.018	mg/kg				
Dieldrin	ND	0.018	mg/kg				
Endosulfan I	ND	0.018	mg/kg				
Endosulfan II	ND	0.018	mg/kg				
Endosulfan Sulfate	ND	0.018	mg/kg				
Endrin	ND	0.018	mg/kg				
Endrin Aldehyde	ND	0.018	mg/kg				
Endrin Ketone	ND	0.018	mg/kg				
Heptachlor	ND	0.018	mg/kg				
Heptachlor Epoxide	ND	0.018	mg/kg				
Methoxychlor	ND	0.018	mg/kg				
Toxaphene	ND	0.12	mg/kg				
Surrogate TCMX	81.		%				
Surrogate Decachlorobiphenyl	25.		%				
LAB NUMBER: C100971-13 (continued)							
SAMPLE ID: 22991-013 DM-0015a							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
				1	11.06.02	T0203110CP	1,2,4,6
POLYCHLORINATED BIPHENYLS (PCBS)							
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.
6) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-13 (continued)							
SAMPLE ID: 22991-013 DM-0015a							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.06.02	T020311OCP	
(continued)							
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	62.	0.18	%				
Surrogate Decachlorobiphenyl	64.	0.18	%				
LAB NUMBER: C100971-13 (continued)							
SAMPLE ID: 22991-013 DM-0015a							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	1,2,3
Acenaphthene	ND	0.99	mg/kg				
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				

1) Sample Preparation on 10-31-02 using EPA 3540
2) Results expressed as wet weight.
3) Those analytes with "B" flagged results were detected in the Method Blank.

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-13 (continued)
SAMPLE ID: 22991-013 DM-0015a
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B3.0	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	2.	mg/kg				
N-Nitrosodiphenylamine	ND	0.99	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	E27.	0.99	mg/kg				
Pyridine	ND	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	4.5	mg/kg				
Benzoic Acid	ND	0.99	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				

ORGANIC ANALYTICAL RESULTS

LAB ORDER No.: C100971

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-13 (continued)							
SAMPLE ID: 22991-013 DM-0015a							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	68.		%				
Surrogate 2-Fluorobiphenyl	97.		%				
Surrogate Terphenyl-d14	110.		%				
Surrogate 2-Fluorophenol	60.		%				
Surrogate Phenol-d6	82.		%				
Surrogate 2,4,6-Tribromophenol	69.		%				
LAB NUMBER: C100971-14							
SAMPLE ID: 22991-014 DM-0015b							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES				2	11.07.02	T0203110CP	1-5
Aldrin	ND	0.018	mg/kg				
alpha-BHC	ND	0.018	mg/kg				
beta-BHC	ND	0.018	mg/kg				
gamma-BHC (Lindane)	ND	0.018	mg/kg				
delta-BHC	ND	0.018	mg/kg				
Chlordane	ND	0.036	mg/kg				
p,p'-DDD	ND	0.018	mg/kg				
p,p'-DDE	ND	0.018	mg/kg				
p,p'-DDT	ND	0.018	mg/kg				
Dieldrin	ND	0.018	mg/kg				
Endosulfan I	ND	0.018	mg/kg				
Endosulfan II	ND	0.018	mg/kg				
Endosulfan Sulfate	ND	0.018	mg/kg				
Endrin	ND	0.018	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample diluted due to a high concentration of non-target analyte(s), resulting in increased reporting limits.

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: C100971-14 (continued)							
SAMPLE ID: 22991-014 DM-0015b							
SAMPLED: 21 OCT 02							
METHOD: EPA 8081A							
CHLORINATED PESTICIDES (continued)				2	11.07.02	T020311OCP	
Endrin Aldehyde	ND	0.018	mg/kg				
Endrin Ketone	ND	0.018	mg/kg				
Heptachlor	ND	0.018	mg/kg				
Heptachlor Epoxide	ND	0.018	mg/kg				
Methoxychlor	ND	0.018	mg/kg				
Toxaphene	ND	0.12	mg/kg				
Surrogate TCMX	63.		%				
Surrogate Decachlorobiphenyl	23.		%				
LAB NUMBER: C100971-14 (continued)							
SAMPLE ID: 22991-014 DM-0015b							
SAMPLED: 21 OCT 02							
METHOD: EPA 8082							
POLYCHLORINATED BIPHENYLS (PCBS)				1	11.06.02	T020311OCP	1,2,3,4
PCB 1016	ND	0.18	mg/kg				
PCB 1221	ND	0.18	mg/kg				
PCB 1232	ND	0.18	mg/kg				
PCB 1242	ND	0.18	mg/kg				
PCB 1248	ND	0.18	mg/kg				
PCB 1254	ND	0.18	mg/kg				
PCB 1260	ND	0.18	mg/kg				
Surrogate TCMX	67.		%				
Surrogate Decachlorobiphenyl	72.		%				
LAB NUMBER: C100971-14 (continued)							
SAMPLE ID: 22991-014 DM-0015b							
SAMPLED: 21 OCT 02							
METHOD: EPA 8270							
SEMIVOLATILE ORGANIC COMPOUNDS				1	11.10.02	S020095BNA	2,5,6
Acenaphthene	ND	0.99	mg/kg				

1) Sample Preparation on 11-03-02 using EPA 3540
2) Results expressed as wet weight.
3) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).
4) Due to limited sample volume, Reporting Limits are higher than usual.
5) Sample Preparation on 10-31-02 using EPA 3540
6) Those analytes with "B" flagged results were detected in the Method Blank.

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-14 (continued)
SAMPLE ID: 22991-014 DM-0015b
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
Acenaphthylene	ND	0.99	mg/kg				
Aniline	ND	0.99	mg/kg				
Anthracene	ND	0.99	mg/kg				
Benzidine	ND	2.1	mg/kg				
Benzo(a)anthracene	ND	0.99	mg/kg				
Benzo(b)fluoranthene	ND	0.99	mg/kg				
Benzo(k)fluoranthene	ND	0.99	mg/kg				
Benzo(ghi)perylene	ND	0.99	mg/kg				
Benzo(a)pyrene	ND	0.99	mg/kg				
Benzylbutylphthalate	ND	0.99	mg/kg				
4-Bromophenyl phenyl ether	ND	0.99	mg/kg				
Carbazole	ND	0.99	mg/kg				
4-Chloroaniline	ND	0.99	mg/kg				
bis(2-chloroethoxy)methane	ND	0.99	mg/kg				
bis(2-chloroethyl)ether	ND	0.99	mg/kg				
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg				
2-Chloronaphthalene	ND	0.99	mg/kg				
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg				
Chrysene	ND	0.99	mg/kg				
Dibenzo(a,h)anthracene	ND	0.99	mg/kg				
Dibenzofuran	ND	0.99	mg/kg				
1,2-Dichlorobenzene	ND	0.99	mg/kg				
1,3-Dichlorobenzene	ND	0.99	mg/kg				
1,4-Dichlorobenzene	ND	0.99	mg/kg				
3,3-Dichlorobenzidine	ND	0.99	mg/kg				
Diethyl phthalate	ND	0.99	mg/kg				
Dimethyl phthalate	ND	0.99	mg/kg				
Di-n-butylphthalate	B2.9	0.99	mg/kg				
2,4-Dinitrotoluene	ND	0.99	mg/kg				
2,6-Dinitrotoluene	ND	0.99	mg/kg				
Di-n-octylphthalate	ND	0.99	mg/kg				
1,2-Diphenylhydrazine	ND	0.99	mg/kg				
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg				
Fluoranthene	ND	0.99	mg/kg				
Fluorene	ND	0.99	mg/kg				
Hexachlorobenzene	ND	0.99	mg/kg				
Hexachlorobutadiene	ND	0.99	mg/kg				
Hexachlorocyclopentadiene	ND	0.99	mg/kg				
Hexachloroethane	ND	0.99	mg/kg				
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg				
Isophorone	ND	0.99	mg/kg				

LAB ORDER No.: C100971

ORGANIC ANALYTICAL RESULTS

LAB NUMBER: C100971-14 (continued)
SAMPLE ID: 22991-014 DM-0015b
SAMPLED: 21 OCT 02
METHOD: EPA 8270

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				1	11.10.02	S020095BNA	
2-Methylnaphthalene	ND	0.99	mg/kg				
Naphthalene	ND	0.99	mg/kg				
2-Nitroaniline	ND	0.99	mg/kg				
3-Nitroaniline	ND	0.99	mg/kg				
4-Nitroaniline	ND	0.99	mg/kg				
Nitrobenzene	ND	0.99	mg/kg				
N-Nitrosodimethylamine	ND	0.99	mg/kg				
N-Nitrosodiphenylamine	ND	2.	mg/kg				
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg				
Phenanthrene	ND	0.99	mg/kg				
Pyrene	ND	0.99	mg/kg				
Pyridine	E25.	0.99	mg/kg				
1,2,4-Trichlorobenzene	ND	0.99	mg/kg				
Benzoic Acid	ND	4.5	mg/kg				
Benzyl Alcohol	ND	0.99	mg/kg				
4-Chloro-3-methylphenol	ND	0.99	mg/kg				
2-Chlorophenol	ND	0.99	mg/kg				
2,4-Dichlorophenol	ND	0.99	mg/kg				
2,4-Dimethylphenol	ND	0.99	mg/kg				
2,4-Dinitrophenol	ND	0.99	mg/kg				
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg				
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg				
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg				
2-Nitrophenol	ND	0.99	mg/kg				
4-Nitrophenol	ND	0.99	mg/kg				
Phenol	ND	0.99	mg/kg				
Pentachlorophenol	ND	0.99	mg/kg				
2,4,5-Trichlorophenol	ND	0.99	mg/kg				
2,4,6-Trichlorophenol	ND	0.99	mg/kg				
Surrogate Nitrobenzene-d5	72.		%				
Surrogate 2-Fluorobiphenyl	100.		%				
Surrogate Terphenyl-d14	120.		%				
Surrogate 2-Fluorophenol	60.		%				
Surrogate Phenol-d6	87.		%				
Surrogate 2,4,6-Tribromophenol	66.		%				

NELAP Certification 01103CA

ELAP Certification 1664

Caltest
ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

LAB ORDER No.: C100971

SUPPLEMENTAL QUALITY CONTROL (QC) DATA REPORT

Report Date: 12 NOV 2002
Received Date: 31 OCT 2002

Client: Martha Maier
Alta Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762

Project: 22991

QC Batch ID	Method	Matrix
A021313ICP	6010B	SOLID
A021316MER	7471A	SOLID
A021317MER	7471A	SOLID
S020095BNA	8270	SOLID
T0203110CP	8082	SOLID
T0203110CP	8081A	SOLID

William Svoboda
Project Manager

CAHorn
Christine Horn
Laboratory Director

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Results are specific to the sample as submitted and only to the parameters reported.
All analyses performed by EPA Methods or Standard Methods (SM) 18th Ed. except where noted.
Results of 'ND' mean not detected at or above the listed Reporting Limit (R.L.).
Analyte Spike Amounts reported as 'NS' mean not spiked and will not have recoveries reported.
'RPD' means Relative Percent Difference and RPD Acceptance Criteria is stated as a maximum.
'NC' means not calculated for RPD or Spike Recoveries.

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LAB ORDER No.: C100971

METHOD BLANK ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	ANALYZED	NOTES
QC BATCH: A021313ICP					
Antimony	ND	2.	mg/kg	11.06.02	
Arsenic	ND	1.	mg/kg	11.06.02	
Barium	ND	1.	mg/kg	11.06.02	
Beryllium	ND	0.2	mg/kg	11.06.02	
Cadmium	ND	0.2	mg/kg	11.06.02	
Chromium	ND	1.	mg/kg	11.06.02	
Cobalt	ND	0.4	mg/kg	11.06.02	
Copper	ND	1.	mg/kg	11.06.02	
Lead	ND	1.	mg/kg	11.06.02	
Molybdenum	ND	1.	mg/kg	11.06.02	
Nickel	ND	1.	mg/kg	11.06.02	
Selenium	ND	2.	mg/kg	11.06.02	
Silver	ND	0.6	mg/kg	11.06.02	
Thallium	ND	2.	mg/kg	11.06.02	
Vanadium	ND	0.4	mg/kg	11.06.02	
Zinc	ND	4.	mg/kg	11.06.02	
QC BATCH: A021316MER					
Mercury	ND	0.02	mg/kg	11.05.02	
QC BATCH: A021317MER					
Mercury	ND	0.02	mg/kg	11.05.02	
QC BATCH: S020095BNA					
SEMIVOLATILE ORGANIC COMPOUNDS				11.08.02	
Acenaphthene	ND	0.99	mg/kg		
Acenaphthylene	ND	0.99	mg/kg		
Aniline	ND	0.99	mg/kg		
Anthracene	ND	0.99	mg/kg		
Benzidine	ND	2.1	mg/kg		
Benzo(a)anthracene	ND	0.99	mg/kg		
Benzo(b)fluoranthene	ND	0.99	mg/kg		
Benzo(k)fluoranthene	ND	0.99	mg/kg		
Benzo(ghi)perylene	ND	0.99	mg/kg		
Benzo(a)pyrene	ND	0.99	mg/kg		
Benzylbutylphthalate	ND	0.99	mg/kg		
4-Bromophenyl phenyl ether	ND	0.99	mg/kg		
Carbazole	ND	0.99	mg/kg		
4-Chloroaniline	ND	0.99	mg/kg		
bis(2-chloroethoxy)methane	ND	0.99	mg/kg		

METHOD BLANK ANALYTICAL RESULTS

LAB ORDER No.: C100971

ANALYTE	RESULT	R.L.	UNITS	ANALYZED	NOTES
QC BATCH: S020095BNA (continued)					
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				11.08.02	
bis(2-chloroethyl)ether	ND	0.99	mg/kg		
bis(2-chloroisopropyl)ether	ND	0.99	mg/kg		
2-Chloronaphthalene	ND	0.99	mg/kg		
4-Chlorophenyl phenyl ether	ND	0.99	mg/kg		
Chrysene	ND	0.99	mg/kg		
Dibenzo(a,h)anthracene	ND	0.99	mg/kg		
Dibenzofuran	ND	0.99	mg/kg		
1,2-Dichlorobenzene	ND	0.99	mg/kg		
1,3-Dichlorobenzene	ND	0.99	mg/kg		
1,4-Dichlorobenzene	ND	0.99	mg/kg		
3,3-Dichlorobenzidine	ND	0.99	mg/kg		
Diethyl phthalate	ND	0.99	mg/kg		
Dimethyl phthalate	ND	0.99	mg/kg		
Di-n-butylphthalate	1.35	0.99	mg/kg		
2,4-Dinitrotoluene	ND	0.99	mg/kg		
2,6-Dinitrotoluene	ND	0.99	mg/kg		
Di-n-octylphthalate	ND	0.99	mg/kg		
1,2-Diphenylhydrazine	ND	0.99	mg/kg		
bis(2-Ethylhexyl)phthalate	ND	0.99	mg/kg		
Fluoranthene	ND	0.99	mg/kg		
Fluorene	ND	0.99	mg/kg		
Hexachlorobenzene	ND	0.99	mg/kg		
Hexachlorobutadiene	ND	0.99	mg/kg		
Hexachlorocyclopentadiene	ND	0.99	mg/kg		
Hexachloroethane	ND	0.99	mg/kg		
Indeno(1,2,3-cd)pyrene	ND	0.99	mg/kg		
Isophorone	ND	0.99	mg/kg		
2-Methylnaphthalene	ND	0.99	mg/kg		
Naphthalene	ND	0.99	mg/kg		
2-Nitroaniline	ND	0.99	mg/kg		
3-Nitroaniline	ND	0.99	mg/kg		
4-Nitroaniline	ND	0.99	mg/kg		
Nitrobenzene	ND	0.99	mg/kg		
N-Nitrosodimethylamine	ND	2.	mg/kg		
N-Nitrosodiphenylamine	ND	0.99	mg/kg		
N-Nitrosodi-n-propylamine	ND	0.99	mg/kg		
Phenanthrene	ND	0.99	mg/kg		
Pyrene	ND	0.99	mg/kg		
Pyridine	ND	0.99	mg/kg		
1,2,4-Trichlorobenzene	ND	4.5	mg/kg		
Benzoic Acid	ND	0.99	mg/kg		
Benzyl Alcohol	ND	0.99	mg/kg		
4-Chloro-3-methylphenol	ND	0.99	mg/kg		
2-Chlorophenol					

LAB ORDER No.: C100971

METHOD BLANK ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	ANALYZED	NOTES
QC BATCH: S020095BNA (continued)					
SEMIVOLATILE ORGANIC COMPOUNDS (continued)				11.08.02	
2,4-Dichlorophenol	ND	0.99	mg/kg		
2,4-Dimethylphenol	ND	0.99	mg/kg		
2,4-Dinitrophenol	ND	0.99	mg/kg		
2-Methyl-4,6-dinitrophenol	ND	0.99	mg/kg		
2-Methylphenol (o-Cresol)	ND	0.99	mg/kg		
3-/4-Methylphenol (m/p-Cresol)	ND	0.99	mg/kg		
2-Nitrophenol	ND	0.99	mg/kg		
4-Nitrophenol	ND	0.99	mg/kg		
Phenol	ND	0.99	mg/kg		
Pentachlorophenol	ND	0.99	mg/kg		
2,4,5-Trichlorophenol	ND	0.99	mg/kg		
2,4,6-Trichlorophenol	ND	0.99	mg/kg		
Diesel #2	ND	3.3	mg/kg		
Surrogate Nitrobenzene-d5	62.		%		
Surrogate 2-Fluorobiphenyl	73.		%		
Surrogate Terphenyl-d14	60.		%		
Surrogate 2-Fluorophenol	64.		%		
Surrogate Phenol-d6	84.		%		
Surrogate 2,4,6-Tribromophenol	67.		%		
QC BATCH: T0203110CP					
CHLORINATED PESTICIDES				11.05.02	1
Aldrin	ND	0.003	mg/kg		
alpha-BHC	ND	0.003	mg/kg		
beta-BHC	ND	0.003	mg/kg		
gamma-BHC (Lindane)	ND	0.003	mg/kg		
delta-BHC	ND	0.003	mg/kg		
Chlordane	ND	0.006	mg/kg		
p,p'-DDD	ND	0.003	mg/kg		
p,p'-DDE	ND	0.003	mg/kg		
p,p'-DDT	ND	0.003	mg/kg		
Dieldrin	ND	0.003	mg/kg		
Endosulfan I	ND	0.003	mg/kg		
Endosulfan II	ND	0.003	mg/kg		
Endosulfan Sulfate	ND	0.003	mg/kg		
Endrin	ND	0.003	mg/kg		
Endrin Aldehyde	ND	0.003	mg/kg		
Endrin Ketone	ND	0.003	mg/kg		
Heptachlor	ND	0.003	mg/kg		
Heptachlor Epoxide	ND	0.003	mg/kg		

1) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).

LAB ORDER No.: C100971

METHOD BLANK ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	ANALYZED	NOTES
QC BATCH: T0203110CP (continued)					
CHLORINATED PESTICIDES (continued)				11.05.02	
Methoxychlor	ND	0.003	mg/kg		
Toxaphene	ND	0.02	mg/kg		
Surrogate TCMX	108.		%		
Surrogate Decachlorobiphenyl	108.		%		
POLYCHLORINATED BIPHENYLS (PCBS)				11.05.02	
PCB 1016	ND	0.02	mg/kg		
PCB 1221	ND	0.02	mg/kg		
PCB 1232	ND	0.02	mg/kg		
PCB 1242	ND	0.02	mg/kg		
PCB 1248	ND	0.02	mg/kg		
PCB 1254	ND	0.02	mg/kg		
PCB 1260	ND	0.02	mg/kg		
Surrogate TCMX	83.		%		
Surrogate Decachlorobiphenyl	84.		%		

LAB ORDER No.: C100971

LABORATORY CONTROL SAMPLE ANALYTICAL RESULTS

ANALYTE	SPIKE AMOUNT	SPIKE\DUP RESULT	SPK\DUP %REC	ACCEPTANCE %REC \RPD	REL% DIFF	ANALYZED	NOTES
QC BATCH: A021313ICP							
Antimony	20.0	17.3\	86\	75-125\35		11.06.02	
Arsenic	20.0	17.3\	86\	75-125\35		11.06.02	
Barium	100.	87.5\	88\	75-125\35		11.06.02	
Beryllium	20.0	17.5\	88\	75-125\35		11.06.02	
Cadmium	10.0	8.74\	87\	75-125\35		11.06.02	
Chromium	20.0	17.7\	88\	75-125\35		11.06.02	
Cobalt	20.0	17.1\	86\	75-125\35		11.06.02	
Copper	20.0	16.5\	82\	75-125\35		11.06.02	
Lead	100.	86.3\	86\	75-125\35		11.06.02	
Molybdenum	20.0	17.0\	85\	75-125\35		11.06.02	
Nickel	20.0	17.2\	86\	75-125\35		11.06.02	
Selenium	20.0	17.1\	86\	75-125\35		11.06.02	
Silver	20.	16.7\	84\	75-125\35		11.06.02	
Thallium	100.	83.1\	83\	75-125\35		11.06.02	
Vanadium	20.0	17.5\	88\	75-125\35		11.06.02	
Zinc	100.	86.6\	87\	75-125\35		11.06.02	
QC BATCH: A021316MER							
Mercury	0.100	0.101\	101\	75-125\35		11.05.02	
QC BATCH: A021317MER							
Mercury	0.100	0.0960\	96\	75-125\35		11.05.02	
QC BATCH: S020095BNA							
SEMIVOLATILE ORGANIC COMPOUNDS						11.08.02	
Acenaphthene	3.33	2.50\	75\	35-135\40			
1,4-Dichlorobenzene	3.33	2.56\	77\	35-110\35			
2,4-Dinitrotoluene	3.33	2.42\	73\	30-130\35			
N-Nitrosodi-n-propylamine	3.33	3.00\	90\	30-130\20			
Pyrene	3.33	2.61\	78\	30-130\35			
1,2,4-Trichlorobenzene	3.33	3.10\	93\	30-110\45			
4-Chloro-3-methylphenol	6.67	4.84\	73\	35-125\35			
2-Chlorophenol	6.67	5.38\	81\	20-110\35			
4-Nitrophenol	6.67	3.56\	53\	25-120\45			
Phenol	6.67	4.50\	67\	20-120\40			
Pentachlorophenol	6.67	4.68\	70\	20-140\40			
Surrogate Nitrobenzene-d5	3.33	2.66\	80\	20-120\			
Surrogate 2-Fluorobiphenyl	3.33	2.82\	85\	30-130\			
Surrogate Terphenyl-d14	3.33	2.28\	68\	30-130\			

LABORATORY CONTROL SAMPLE ANALYTICAL RESULTS

LAB ORDER No.: C100971

ANALYTE	SPIKE AMOUNT	SPIKE\DUP RESULT	SPK\DUP %REC	ACCEPTANCE %REC \RPD	REL% DIFF	ANALYZED	NOTES
QC BATCH: S020095BNA (continued)							
SEMIVOLATILE ORGANIC COMPOUNDS (continued)						11.08.02	
Surrogate 2-Fluorophenol	6.67	4.87\	73\	20-120\			
Surrogate Phenol-d6	6.67	5.78\	87\	20-120\			
Surrogate 2,4,6-Tribromophenol	6.67	5.77\	87\	30-140\			
QC BATCH: T0203110CP							
CHLORINATED PESTICIDES						11.05.02	1
Aldrin	0.0133	0.0118\	89\	19-134\35			
gamma-BHC (Lindane)	0.0133	0.0116\	87\	29-123\19			
p,p'-DDT	0.0133	0.0131\	98\	23-156\23			
Dieldrin	0.0133	0.0132\	99\	36-133\17			
Endrin	0.0133	0.0133\	100\	32-143\18			
Heptachlor	0.0133	0.0150\	112\	16-155\20			
Surrogate TCMX	0.0133	0.0112\	84\	10-119\			
Surrogate Decachlorobiphenyl	0.0133	0.0115\	86\	47-149\			
POLYCHLORINATED BIPHENYLS (PCBS)						11.05.02	
PCB 1260	0.0667	0.0766\	115\	50-120\			
Surrogate TCMX	0.0133	0.0138\	104\	10-119\			
Surrogate Decachlorobiphenyl	0.0133	0.0150\	113\	47-149\			

1) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).

LAB ORDER No.: C100971

MATRIX SPIKE ANALYTICAL RESULTS

ANALYTE	ORIGINAL RESULT	SPIKE AMOUNT	SPIKE\DUP RESULT	SPK\DUP %REC	ACCEPTANCE %REC \RPD	REL% DIFF	ANALYZED	NOTES
QC BATCH: A021313ICP QC SAMPLE LAB NUMBER: C100971-14								
Antimony QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	ND	20.0	17.3\16.9	86\84	75-125\35	2.3	11.06.02	
Arsenic QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	2.18	20.0	20.4\19.5	91\86	75-125\35	4.5	11.06.02	
Barium QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	ND	100.	94.4\90.3	94\90	75-125\35	4.4	11.06.02	
Beryllium QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	ND	20.0	18.5\17.7	92\88	75-125\35	4.4	11.06.02	
Cadmium QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	0.818	10.0	9.88\9.55	91\87	75-125\35	3.4	11.06.02	
Chromium QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	ND	20.0	18.7\18.0	94\90	75-125\35	3.8	11.06.02	
Cobalt QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	ND	20.0	18.3\17.5	92\88	75-125\35	4.5	11.06.02	
Copper QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	19.8	20.0	38.7\36.6	94\84	75-125\35	5.6	11.06.02	
Lead QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	ND	100.	91.1\88.3	91\88	75-125\35	3.1	11.06.02	
Molybdenum QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14	ND	20.0	18.1\17.5	90\88	75-125\35	3.4	11.06.02	
Nickel	ND	20.0	18.1\17.5	90\88	75-125\35	3.4	11.06.02	

MATRIX SPIKE ANALYTICAL RESULTS

ANALYTE	ORIGINAL RESULT	SPIKE AMOUNT	SPIKE\DUP RESULT	SPK\DUP %REC	ACCEPTANCE %REC \RPD	REL% DIFF	ANALYZED	NOTES
QC BATCH: A021313ICP (continued)								
QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14								
Selenium	ND	20.0	19.0\19.1	95\96	75-125\35	0.5	11.06.02	
QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14								
Silver	ND	20.	16.9\17.3	84\86	75-125\35	2.3	11.06.02	
QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14								
Thallium	ND	100.	89.2\85.3	89\85	75-125\35	4.5	11.06.02	
QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14								
Vanadium	ND	20.0	18.6\17.8	93\89	75-125\35	4.4	11.06.02	
QC BATCH: A021313ICP (continued) QC SAMPLE LAB NUMBER: C100971-14								
Zinc	103.	100.	190.\182.	87\79	75-125\35	4.3	11.06.02	
QC BATCH: A021316MER QC SAMPLE LAB NUMBER: C100889-2								
Mercury	0.0349	0.100	0.128\0.119	93\84	75-125\35	7.3	11.05.02	
QC BATCH: A021317MER QC SAMPLE LAB NUMBER: C100971-12								
Mercury	0.0237	0.100	0.112\0.110	88\86	75-125\35	1.8	11.05.02	
QC BATCH: S020095BNA QC SAMPLE LAB NUMBER: C100971-10								
SEMIVOLATILE ORGANIC COMPOUNDS							11.10.02	
Acenaphthene	ND	9.99	8.11\7.91	81\79	35-135\40	2.5		
1,4-Dichlorobenzene	ND	9.99	8.91\9.06	89\91	35-110\35	1.7		
2,4-Dinitrotoluene	ND	9.99	6.88\6.75	69\68	30-130\35	1.9		
N-Nitrosodi-n-propylamine	ND	9.99	9.74\9.78	97\98	10-155\30	0.4		
Pyrene	ND	9.99	14.7\15.1	147\151	20-150\40	2.7		
1,2,4-Trichlorobenzene	ND	9.99	10.1\9.77	101\98	30-120\40	3.3		
4-Chloro-3-methylphenol	ND	20.0	15.8\16.0	79\80	20-120\30	1.3		

MATRIX SPIKE ANALYTICAL RESULTS

ANALYTE	ORIGINAL RESULT	SPIKE AMOUNT	SPIKE\DUP RESULT	SPK\DUP %REC	ACCEPTANCE %REC \RPD	REL% DIFF	ANALYZED	NOTES
QC BATCH: S020095BNA (continued)								
QC SAMPLE LAB NUMBER: C100971-10								
							11.10.02	
SEMIVOLATILE ORGANIC COMPOUNDS (continued)								
2-Chlorophenol	ND	20.0	17.6\18.2	88\91	30-110\25	3.4		
4-Nitrophenol	ND	20.0	7.44\7.79	37\39	20-140\35	4.6		
Phenol	ND	20.0	16.3\16.8	82\84	35-125\20	3.0		
Pentachlorophenol	ND	20.0	2.98\3.32	15\17	20-140\40	11.		
Surrogate Nitrobenzene-d5	70.%	9.99	7.56\8.06	76\81	20-120\			
Surrogate 2-Fluorobiphenyl	89.%	9.99	8.83\8.89	88\89	30-130\			
Surrogate Terphenyl-d14	113.%	9.99	12.4\12.7	124\127	10-140\			
Surrogate 2-Fluorophenol	67.%	20.0	12.3\14.6	62\73	20-120\			
Surrogate Phenol-d6	88.%	20.0	14.2\15.8	71\79	20-120\			
Surrogate 2,4,6-Tribromophenol	94.%	20.0	10.4\12.9	52\64	20-140\			
QC BATCH: T0203110CP								
QC SAMPLE LAB NUMBER: C100971-3								
							11.07.02	1,2
CHLORINATED PESTICIDES								
Aldrin	ND.	0.04	0.0427\0.0412	107\103	10-181\39	3.6		
gamma-BHC (Lindane)	ND	0.04	0.0286\0.0272	71\68	15-165\54	5.0		
p,p'-DDT	ND	0.04	0.0385\0.0331	96\83	10-202\70	15.		
Dieldrin	ND	0.04	0.0336\0.033	84\82	33-169\36	1.8		
Endrin	ND	0.04	ND\ND	NC\NC	10-195\29	NC		
Heptachlor	ND	0.04	0.187\0.143	466\358	10-209\32	27.		
Surrogate TCMX	90.%	0.04	0.0296\0.0275	74\69	19-140\			
Surrogate Decachlorobiphenyl	63.%	0.04	0.0342\0.0331	85\83	40-138\			
QC BATCH: T0203110CP (continued)								
QC SAMPLE LAB NUMBER: C100971-10								
							11.05.02	3,4
POLYCHLORINATED BIPHENYLS (PCBS)								
PCB 1260	ND	0.200	0.161\0.168	80\84	30-155\35	4.3		
Surrogate TCMX	92.%	0.04	0.0344\0.0317	86\79	19-140\			
Surrogate Decachlorobiphenyl	105.%	0.04	0.0346\0.0322	86\80	40-138\			

1) This sample was analyzed following Florisil column cleanup (EPA Method 3620B).
2) Matrix spike recovery(ies) and RPD outside control limit. Sample result accepted based on LCS and Method Blank.
3) The sample was analyzed following sulfuric acid cleanup (EPA Method 3665).
4) Due to limited sample volume, Reporting Limits are higher than usual.

C700911

ALTA

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project ID: _____ Temp _____ °C
Storage Secured: Yes ☐ No ☐
Storage ID: _____

Project I.D.: 22991 P.O. #: _____ Sampler: Ciera Luksemburg (Printed Name) C Luksemburg (Signature)

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Ciera Luksemburg C Luksemburg	10/30/02	2:30pm			
Relinquished by: (Signature and Printed Name) FED EX	10/31/02	0940		10/31/02	0940
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

See "Sample Log-in Checklist" for additional sample information

SHIP TO: ~~CalTest~~ Alta Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 933-1640 • Fax (916) 933-0940
www.altalab.com

ATTN: ~~Bill Svoboda~~

Method of Shipment: FedEx

Shipment ID: _____

Circle or Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	EPA1613 2378-TCDD	EPA1613 2378-TCDD/TCDF	EPA8290 PCDD/PCDF	EPA8290 2378-TCDD	EPA8290 2378-TCDD/TCDF	EPA8280 PCDD/PCDF	EPA8280 2378-TCDD	EPA8280 2378-TCDD/TCDF	EPA1668 PCDD/PCDF	TOTALS	COPLANAR PCBs	SELECTED CONGENERS	PAH	Container(s) TAT	Qty	Type	Matrix	BPT*
-1 22991-001	10/21		DM-0001														2				
-2 22991-002	10/21		DM-0003																		
-3 22991-003	10/21		DM-0005																		
-4 22991-004	10/21		DM-0007																		
-5 22991-005	10/21		DM-0009																		
-6 22991-006	10/21		DM-0011																		
-7 22991-007	10/21		DM-0013																		
-8 22991-008	10/21		DM-0017																		
-9 22991-009	10/21		DM-0019																		
-10 22991-010	10/21		DM-0021																		

STANDARD TAT = 21 DAYS.
Surcharge may be applied for less than 21 days.

TAT (Analytical Turnaround Times): 1 = 7 days, 2 = 14 days, 3 = 21 days, 4 = 28 days

Special Instructions/Comments: CAM 17 + Mercury, PAH's, Phenolic Compounds, Arolchlor PCB's, Chlorinated Pesticides, & TPH

SEND DOCUMENTATION AND RESULTS TO:

Name: Martha Maier
Company: Alta Analytical
Address: 1104 Windfield Way
City: EDH State: CA Zip: 95762
Phone: (916) 933-1640 Fax: (916) 933-0940
Email: _____

Container Types: A = 1 Liter Amber, G = Glass Jar, P = PUF, T = MM5 Train, O = Other _____

***Bottle Preservative Type:** T = Thiosulfate, O = Other _____

Matrix Types: DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, O = Other _____

WHITE - ORIGINAL YELLOW - ARCHIVE PINK - COPY

Cal O pp

#21

C100971

ALTA

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project ID: _____ Temp: _____ °C
Storage Secured: _____
Storage ID: _____ Yes ☐ No ☐

Project I.D.: 22991 P.O. #: _____ Sampler: Ciera Luksemburg (Printed Name) C Luksemberg (Signature)

Relinquished by: (Signature and Printed Name)	Date	Time	Received by: (Signature and Printed Name)	Date	Time
C Luksemburg Ciera Luksemburg	10/30/02	2:30pm			
FED EX	10/31/02	0940	[signature]	10/31/02	0940
Relinquished by: (Signature and Printed Name)	Date	Time	Received by: (Signature and Printed Name)	Date	Time

See "Sample Log-in Checklist" for additional sample information

SHIP TO: ~~CalTest~~ Alta Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 933-1640 • Fax (916) 933-0940
www.altalab.com

ATTN: Bill Svoboda

Method of Shipment: Fed Ex

Shipment ID: _____

Circle or Add Analysis(es) Requested

STANDARD TAT = 21 DAYS. Surcharge may be applied for less than 21 days.

TAT (Analytical Turnaround Times): 1 = 7 days, 2 = 14 days, 3 = 21 days, 4 = 28 days

Sample ID	Date	Time	Location/Sample Description	EPA1613 2378-TCDD	EPA1613 2378-TCDD/TCDF	EPA1613 PCDD/PCDF	EPA8290 2378-TCDD	EPA8290 2378-TCDD/TCDF	EPA8290 PCDD/PCDF	EPA8280 2378-TCDD	EPA8280 2378-TCDD/TCDF	EPA8280 PCDD/PCDF	EPA1668 TOTALS	EPA1668 COPLANAR PCBs	EPA1668 SELECTED CONGENERS	EPA1668 PAH	Container(s) TAT	Container(s) Qty	Container(s) Type	Matrix	BPT*
-11 22991-011	10/21		DM-0023														2				
-12 22991-012	10/21		DM-0025																		
-13 22991-013	10/21		DM-0015a																		
-14 22991-014	10/21		DM-0015b																	~~SS~~ SVOA	

Special Instructions/Comments: CAM 17 + Mercury, PAH's, Phenolic Compounds, Arokhlor PCB's, Chlorinated Pesticides, & TPH

SEND DOCUMENTATION AND RESULTS TO:

Name: Martha Maier
Company: Alta Analytical
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Fax: _____
Email: _____

Container Types: A = 1-Liter Amber, G = Glass Jar, P = PUF, T = MM5 Train, O = Other _____

***Bottle Preservative Type:** T = Thiosulfate, O = Other _____

Matrix Types: DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, O = Other _____

WHITE - ORIGINAL YELLOW - ARCHIVE PINK - COPY

#21

Appendix III

**Dioxin Testing Laboratory Data Sheets
from Alta Analytical Laboratory (El Dorado Hills, CA)
with Dioxin TEQ (1997), Dioxin Profile,
and Total Dioxin Calculation Sheets
for October Samples**

ALTA

November 11, 2002

Alta Project I.D.: 22991

Ms. Linda Mackey
Dun & Martinek
c/o EnviroNet Consulting
3645 Westwind Blvd.
Santa Rosa, CA 95403

Dear Ms. Mackey,

Enclosed are the results for the 14 tissue samples received at Alta Analytical Laboratory on October 22, 2002 under your Project Name "Dun & Martenek". These samples were extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at mmaier@altalab.com. Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier
Director of HRMS Services

ACCREDITED IN ACCORDANCE WITH nelac

Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAC for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.

Alta Analytical Laboratory Inc.
1104 Windfield Way
El Dorado Hills, CA 95762
FAX (916) 673-0106
(916) 933-1640

Section I: Sample Inventory Report

Date Received: **10/22/2002**

Alta Lab. ID	Client Sample ID
22991-001	DM-0001
22991-002	DM-0003
22991-003	DM-0005
22991-004	DM-0007
22991-005	DM-0009
22991-006	DM-0011
22991-007	DM-0013
22991-008	DM-0017
22991-009	DM-0019
22991-010	DM-0021
22991-011	DM-0023
22991-012	DM-0025
22991-013	DM-0015A
22991-014	DM-0015B

SECTION II

EPA METHOD 1613

Method Blank

Matrix: Tissue | QC Batch No.: 3455 | Lab Sample: 0-MB001

Sample Size: 25 g | Date Extracted: 29-Oct-02 | Date Analyzed DB-5: 5-Nov-02 | Date Analyzed DB-225: NA

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND	0.0933		0.0952	
1,2,3,7,8-PeCDD	ND	0.0852		0.331	
1,2,3,4,7,8-HxCDD	ND	0.122		0.344	
1,2,3,6,7,8-HxCDD	ND	0.114		0.593	
1,2,3,7,8,9-HxCDD	ND	0.117		0.335	
1,2,3,4,6,7,8-HpCDD	ND	0.0914		2.27	
OCDD	0.183			9.72	A
2,3,7,8-TCDF	ND	0.100		0.0565	
1,2,3,7,8-PeCDF	ND	0.108		0.125	
2,3,4,7,8-PeCDF	ND	0.0910		0.163	
1,2,3,4,7,8-HxCDF	0.0911			0.116	A
1,2,3,6,7,8-HxCDF	0.0722			0.141	A
2,3,4,6,7,8-HxCDF	ND	0.0500		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0684		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0505		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0554		0.188	
OCDF	0.154			0.265	A

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	82.7	25 - 164	
	13C-1,2,3,7,8-PeCDD	99.4	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	84.2	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	91.2	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	103	23 - 140	
	13C-OCDD	99.3	17 - 157	
	13C-2,3,7,8-TCDF	86.3	24 - 169	
	13C-1,2,3,7,8-PeCDF	99.6	24 - 185	
	13C-2,3,4,7,8-PeCDF	103	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	78.0	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	79.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	92.9	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	95.4	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	103	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	108	26 - 138	
	13C-OCDF	102	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	79.9	35 - 197	

Totals

Total TCDD	ND	0.0933
Total PeCDD	ND	0.0852
Total HxCDD	ND	0.117
Total HpCDD	ND	0.0914
Total TCDF	ND	0.100
Total PeCDF	ND	0.0989
Total HxCDF	0.163	
Total HpCDF	ND	0.0528

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.0167 - 0.263

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Approved By: Martha M. Maier 11-Nov-2002 13:04

Analyst: JMH

OPR Results — **EPA METHOD 1613**

Matrix:	Tissue	QC Batch No.:	3455	Lab Sample:	0-OPR001
Sample Size:	25 g	Date Extracted:	29-Oct-02	Date Analyzed DB-5:	1-Nov-02
				Date Analyzed DB-225:	NA

Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits
2,3,7,8-TCDD	10.0	9.62	6.7 - 15.8
1,2,3,7,8-PeCDD	50.0	53.3	35 - 71
1,2,3,4,7,8-HxCDD	50.0	54.7	35 - 82
1,2,3,6,7,8-HxCDD	50.0	55.3	38 - 67
1,2,3,7,8,9-HxCDD	50.0	57.7	32 - 81
1,2,3,4,6,7,8-HpCDD	50.0	57.2	35 - 70
OCDD	100	112	78 - 144
2,3,7,8-TCDF	10.0	10.3	7.5 - 15.8
1,2,3,7,8-PeCDF	50.0	55.0	40 - 67
2,3,4,7,8-PeCDF	50.0	55.5	34 - 80
1,2,3,4,7,8-HxCDF	50.0	55.9	36 - 67
1,2,3,6,7,8-HxCDF	50.0	57.5	42 - 65
2,3,4,6,7,8-HxCDF	50.0	55.9	35 - 78
1,2,3,7,8,9-HxCDF	50.0	56.4	39 - 65
1,2,3,4,6,7,8-HpCDF	50.0	57.2	41 - 61
1,2,3,4,7,8,9-HpCDF	50.0	56.1	39 - 69
OCDF	100	112	63 - 170

	Labeled Standard	%R	LCL-UCL
IS	13C-2,3,7,8-TCDD	71.4	20 - 175
	13C-1,2,3,7,8-PeCDD	77.0	21 - 227
	13C-1,2,3,4,7,8-HxCDD	76.4	21 - 193
	13C-1,2,3,6,7,8-HxCDD	79.0	25 - 163
	13C-1,2,3,4,6,7,8-HpCD	88.4	26 - 166
	13C-OCDD	91.5	26 - 397
	13C-2,3,7,8-TCDF	73.6	22 - 152
	13C-1,2,3,7,8-PeCDF	77.4	21 - 192
	13C-2,3,4,7,8-PeCDF	80.2	13 - 328
	13C-1,2,3,4,7,8-HxCDF	62.2	19 - 202
	13C-1,2,3,6,7,8-HxCDF	67.9	21 - 159
	13C-2,3,4,6,7,8-HxCDF	73.4	22 - 176
	13C-1,2,3,7,8,9-HxCDF	77.6	17 - 205
	13C-1,2,3,4,6,7,8-HpCD	79.1	21 - 158
	13C-1,2,3,4,7,8,9-HpCD	89.4	20 - 186
	13C-OCDF	91.6	26 - 397
CRS	37Cl-2,3,7,8-TCDD	86.5	31 - 191

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0001 **EPA METHOD 1613**

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-001	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	25.28 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	2.12	Date Analyzed DB-5:	1-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.0996			0.0952	A
1,2,3,7,8-PeCDD	ND		0.111	0.331	
1,2,3,4,7,8-HxCDD	ND		0.0545	0.344	
1,2,3,6,7,8-HxCDD	0.136			0.593	A
1,2,3,7,8,9-HxCDD	0.0756			0.335	A
1,2,3,4,6,7,8-HpCDD	0.261			2.27	A
OCDD	0.793			9.72	A,B
2,3,7,8-TCDF	0.303			0.0565	
1,2,3,7,8-PeCDF	ND	0.0867		0.125	
2,3,4,7,8-PeCDF	ND	0.0730		0.163	
1,2,3,4,7,8-HxCDF	0.0556			0.116	A,B
1,2,3,6,7,8-HxCDF	0.0402			0.141	A,B
2,3,4,6,7,8-HxCDF	ND		0.0429	0.189	
1,2,3,7,8,9-HxCDF	ND	0.0184		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0417		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0458		0.188	
OCDF	0.112			0.265	A,B
Totals					
Total TCDD	0.853		1.07		
Total PeCDD	0.644		0.755		
Total HxCDD	0.962		1.11		
Total HpCDD	0.638				
Total TCDF	1.93				D
Total PeCDF	0.347		1.12		
Total HxCDF	0.228		0.337		B
Total HpCDF	ND	0.0435			

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	68.5	25 - 164	
	13C-1,2,3,7,8-PeCDD	75.3	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	77.2	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	77.3	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	88.1	23 - 140	
	13C-OCDD	89.8	17 - 157	
	13C-2,3,7,8-TCDF	72.9	24 - 169	
	13C-1,2,3,7,8-PeCDF	78.4	24 - 185	
	13C-2,3,4,7,8-PeCDF	82.5	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	66.3	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	68.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	75.4	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	80.1	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	86.6	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	85.7	26 - 138	
	13C-OCDF	81.0	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	62.9	35 - 197	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.164 - 0.273

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

EPA 2

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0003

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-002	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	26.53 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	2.21	Date Analyzed DB-5:	1-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0736	0.0952	
1,2,3,7,8-PeCDD	ND		0.0954	0.331	
1,2,3,4,7,8-HxCDD	ND		0.0623	0.344	
1,2,3,6,7,8-HxCDD	0.155			0.593	A
1,2,3,7,8,9-HxCDD	0.0862			0.335	A
1,2,3,4,6,7,8-HpCDD	0.332			2.27	A
OCDD	0.771			9.72	A,B
2,3,7,8-TCDF	0.296			0.0565	
1,2,3,7,8-PeCDF	ND	0.0822		0.125	
2,3,4,7,8-PeCDF	0.0892			0.163	A
1,2,3,4,7,8-HxCDF	ND	0.0301		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0282		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0322		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0418		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0377		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0424		0.188	
OCDF	0.112			0.265	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	78.3	25 - 164	
	13C-1,2,3,7,8-PeCDD	85.9	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	79.3	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	82.1	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	91.2	23 - 140	
	13C-OCDD	93.2	17 - 157	
	13C-2,3,7,8-TCDF	84.3	24 - 169	
	13C-1,2,3,7,8-PeCDF	85.8	24 - 185	
	13C-2,3,4,7,8-PeCDF	91.7	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	65.9	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	66.4	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	75.1	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	81.8	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	87.2	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	89.0	26 - 138	
	13C-OCDF	90.6	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	76.1	35 - 197	

Totals					
Total TCDD	1.14		1.21		
Total PeCDD	0.515		0.842		
Total HxCDD	1.66		1.72		
Total HpCDD	0.849				
Total TCDF	2.40		2.49		D
Total PeCDF	0.759		1.64		
Total HxCDF	0.254		0.456		B
Total HpCDF	ND	0.0398			

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.103 - 0.248

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0005

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-003	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	25.09 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	2.38	Date Analyzed DB-5:	1-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.0987			0.0952	A
1,2,3,7,8-PeCDD	ND		0.0900	0.331	
1,2,3,4,7,8-HxCDD	ND	0.0537		0.344	
1,2,3,6,7,8-HxCDD	0.118			0.593	A
1,2,3,7,8,9-HxCDD	ND	0.0531		0.335	
1,2,3,4,6,7,8-HpCDD	ND		0.188	2.27	
OCDD	0.706			9.72	A,B
2,3,7,8-TCDF	0.286			0.0565	
1,2,3,7,8-PeCDF	ND	0.0877		0.125	
2,3,4,7,8-PeCDF	ND	0.0703		0.163	
1,2,3,4,7,8-HxCDF	ND	0.0246		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0220		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0266		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0345		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0323		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0364		0.188	
OCDF	ND		0.0936	0.265	

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	73.9	25 - 164	
	13C-1,2,3,7,8-PeCDD	80.8	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	75.6	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	81.4	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	88.9	23 - 140	
	13C-OCDD	89.2	17 - 157	
	13C-2,3,7,8-TCDF	80.8	24 - 169	
	13C-1,2,3,7,8-PeCDF	85.9	24 - 185	
	13C-2,3,4,7,8-PeCDF	89.0	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	65.1	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	65.8	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	73.7	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	78.7	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	87.2	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	84.7	26 - 138	
	13C-OCDF	84.5	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	73.6	35 - 197	

Totals					
Total TCDD	1.42				
Total PeCDD	0.393		0.817		
Total HxCDD	0.966				
Total HpCDD	0.371		0.559		
Total TCDF	1.74		2.02		D
Total PeCDF	0.472		1.29		
Total HxCDF	0.146		0.235		B
Total HpCDF	ND	0.0341			

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.140 - 0.248

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0007 **EPA METHOD 1613**

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-004	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	24.96 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	2.16	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0606	0.0952	
1,2,3,7,8-PeCDD	0.0699			0.331	A
1,2,3,4,7,8-HxCDD	ND	0.0461		0.344	
1,2,3,6,7,8-HxCDD	0.0852			0.593	A
1,2,3,7,8,9-HxCDD	ND	0.0475		0.335	
1,2,3,4,6,7,8-HpCDD	0.272			2.27	A
OCDD	1.06			9.72	A,B
2,3,7,8-TCDF	0.216			0.0565	
1,2,3,7,8-PeCDF	ND	0.0781		0.125	
2,3,4,7,8-PeCDF	ND	0.0624		0.163	
1,2,3,4,7,8-HxCDF	ND	0.0293		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0252		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0321		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0414		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0410		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0360		0.188	
OCDF	0.157			0.265	A,B
Totals					
Total TCDD	0.624		0.742		
Total PeCDD	0.488				
Total HxCDD	0.889				
Total HpCDD	0.797				
Total TCDF	1.27		1.38		D
Total PeCDF	0.271		0.831		
Total HxCDF	0.0947		0.212		B
Total HpCDF	ND		0.0493		

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	70.0	25 - 164	
	13C-1,2,3,7,8-PeCDD	80.3	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	77.2	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	79.0	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	89.4	23 - 140	
	13C-OCDD	88.7	17 - 157	
	13C-2,3,7,8-TCDF	70.2	24 - 169	
	13C-1,2,3,7,8-PeCDF	75.4	24 - 185	
	13C-2,3,4,7,8-PeCDF	81.7	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	63.3	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	67.4	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	72.6	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	78.3	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	81.6	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	88.6	26 - 138	
	13C-OCDF	89.6	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	68.3	35 - 197	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.0691 - 0.188

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0009

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-005	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	24.95 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	2.57	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0747	0.0952	
1,2,3,7,8-PeCDD	0.114			0.331	A
1,2,3,4,7,8-HxCDD	ND		0.0433	0.344	
1,2,3,6,7,8-HxCDD	0.165			0.593	A
1,2,3,7,8,9-HxCDD	0.0793			0.335	A
1,2,3,4,6,7,8-HpCDD	0.334			2.27	A
OCDD	0.726			9.72	A,B
2,3,7,8-TCDF	0.274			0.0565	
1,2,3,7,8-PeCDF	ND	0.0711		0.125	
2,3,4,7,8-PeCDF	ND	0.0584		0.163	
1,2,3,4,7,8-HxCDF	ND	0.0283		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0259		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0319		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0381		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0400		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0407		0.188	
OCDF	ND		0.0921	0.265	
Totals					
Total TCDD	1.43		1.66		
Total PeCDD	0.888		1.30		
Total HxCDD	1.69		1.86		
Total HpCDD	0.893				
Total TCDF	2.56		2.63		D
Total PeCDF	0.754		1.77		D
Total HxCDF	0.496				B
Total HpCDF	ND	0.0403			

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	75.8	25 - 164	
	13C-1,2,3,7,8-PeCDD	84.3	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	77.3	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	80.6	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	90.1	23 - 140	
	13C-OCDD	89.8	17 - 157	
	13C-2,3,7,8-TCDF	78.5	24 - 169	
	13C-1,2,3,7,8-PeCDF	82.7	24 - 185	
	13C-2,3,4,7,8-PeCDF	88.4	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	64.4	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	66.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	72.5	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	79.5	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	83.1	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	87.8	26 - 138	
	13C-OCDF	90.7	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	71.2	35 - 197	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.113 - 0.238

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

Sample ID: DM-0011

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-006	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	25.37 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	1.93	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0703	0.0952	
1,2,3,7,8-PeCDD	0.105			0.331	A
1,2,3,4,7,8-HxCDD	ND	0.0480		0.344	
1,2,3,6,7,8-HxCDD	0.153			0.593	A
1,2,3,7,8,9-HxCDD	0.0620			0.335	A
1,2,3,4,6,7,8-HpCDD	0.316			2.27	A
OCDD	0.830			9.72	A,B
2,3,7,8-TCDF	0.226			0.0565	
1,2,3,7,8-PeCDF	ND	0.0773		0.125	
2,3,4,7,8-PeCDF	0.0784			0.163	A
1,2,3,4,7,8-HxCDF	ND	0.0291		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0289		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0342		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0422		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0304		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0344		0.188	
OCDF	0.106			0.265	A,B
Totals					
Total TCDD	0.243		1.08		
Total PeCDD	0.957		1.02		
Total HxCDD	1.41				
Total HpCDD	0.890				
Total TCDF	1.51		1.70		D
Total PeCDF	0.671		1.57		
Total HxCDF	0.426				B
Total HpCDF	ND	0.0322			

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	68.3	25 - 164	
	13C-1,2,3,7,8-PeCDD	78.4	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	73.7	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	76.4	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	86.9	23 - 140	
	13C-OCDD	90.8	17 - 157	
	13C-2,3,7,8-TCDF	71.4	24 - 169	
	13C-1,2,3,7,8-PeCDF	76.8	24 - 185	
	13C-2,3,4,7,8-PeCDF	81.7	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	61.2	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	62.0	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	69.3	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	76.0	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	82.7	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	82.6	26 - 138	
	13C-OCDF	87.3	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	61.6	35 - 197	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.140 - 0.233

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0013

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-007	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	24.72 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	2.31	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.0742			0.0952	A
1,2,3,7,8-PeCDD	ND		0.108	0.331	
1,2,3,4,7,8-HxCDD	ND	0.0604		0.344	
1,2,3,6,7,8-HxCDD	0.129			0.593	A
1,2,3,7,8,9-HxCDD	ND	0.0615		0.335	
1,2,3,4,6,7,8-HpCDD	0.293			2.27	A
OCDD	1.02			9.72	A,B
2,3,7,8-TCDF	0.249			0.0565	
1,2,3,7,8-PeCDF	ND	0.0943		0.125	
2,3,4,7,8-PeCDF	ND	0.0798		0.163	
1,2,3,4,7,8-HxCDF	ND	0.0297		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0278		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0341		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0454		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0546		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0624		0.188	
OCDF	0.130			0.265	A,B

Totals					
Total TCDD	1.06		1.12		
Total PeCDD	0.747		1.10		
Total HxCDD	0.609		1.21		
Total HpCDD	0.835				
Total TCDF	1.95				D
Total PeCDF	0.458		1.59		
Total HxCDF	0.205		0.332		B
Total HpCDF	ND	0.0581			

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	78.4	25 - 164	
	13C-1,2,3,7,8-PeCDD	86.1	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	81.3	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	83.5	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	90.0	23 - 140	
	13C-OCDD	89.8	17 - 157	
	13C-2,3,7,8-TCDF	83.7	24 - 169	
	13C-1,2,3,7,8-PeCDF	88.9	24 - 185	
	13C-2,3,4,7,8-PeCDF	92.3	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	68.2	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	68.8	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	75.4	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	81.5	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	87.1	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	86.0	26 - 138	
	13C-OCDF	81.7	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	74.5	35 - 197	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.116 - 0.242

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

Sample ID: DM-0017

EPA METHOD 1613

Client Data

Name:	Dun & Martinek
Project:	Dun & Martenek
Date Collected:	21-Oct-02
Time Collected:	NA

Sample Data

Matrix:	Tissue
Sample Size:	24.88 g
%Lipids:	0.611

Laboratory Data

Lab Sample:	22991-008	Date Received:	22-Oct-02
QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.148			0.0952	A
1,2,3,7,8-PeCDD	ND	0.0598		0.331	
1,2,3,4,7,8-HxCDD	ND	0.0886		0.344	
1,2,3,6,7,8-HxCDD	ND	0.0905		0.593	
1,2,3,7,8,9-HxCDD	ND	0.0892		0.335	
1,2,3,4,6,7,8-HpCDD	0.204			2.27	A
OCDD	0.754			9.72	A,B
2,3,7,8-TCDF	ND		0.133	0.0565	
1,2,3,7,8-PeCDF	ND	0.0612		0.125	
2,3,4,7,8-PeCDF	ND	0.0513		0.163	
1,2,3,4,7,8-HxCDF	ND	0.0245		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0241		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0343		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0490		0.0996	
1,2,3,4,6,7,8-HpCDF	0.0286			0.167	A
1,2,3,4,7,8,9-HpCDF	ND	0.0154		0.188	
OCDF	0.102			0.265	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	78.4	25 - 164	
	13C-1,2,3,7,8-PeCDD	87.5	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	82.7	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	84.3	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	97.0	23 - 140	
	13C-OCDD	93.5	17 - 157	
	13C-2,3,7,8-TCDF	85.1	24 - 169	
	13C-1,2,3,7,8-PeCDF	87.6	24 - 185	
	13C-2,3,4,7,8-PeCDF	93.6	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	67.6	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	69.0	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	75.8	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	83.0	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	90.1	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	94.0	26 - 138	
	13C-OCDF	95.3	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	65.3	35 - 197	

Totals			
Total TCDD	0.356		
Total PeCDD	0.221	0.337	
Total HxCDD	0.651		
Total HpCDD	0.534		
Total TCDF	0.256	0.599	D
Total PeCDF	0.237	0.730	
Total HxCDF	0.182		B
Total HpCDF	0.0657		

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.151 - 0.263

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0019

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-009	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	25.91 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	1.32	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0582	0.0952	
1,2,3,7,8-PeCDD	0.105			0.331	A
1,2,3,4,7,8-HxCDD	0.0722			0.344	A
1,2,3,6,7,8-HxCDD	ND		0.172	0.593	
1,2,3,7,8,9-HxCDD	ND		0.0717	0.335	
1,2,3,4,6,7,8-HpCDD	0.482			2.27	A
OCDD	1.46			9.72	A,B
2,3,7,8-TCDF	0.172			0.0565	A
1,2,3,7,8-PeCDF	ND	0.0576		0.125	
2,3,4,7,8-PeCDF	0.0814			0.163	A
1,2,3,4,7,8-HxCDF	ND	0.0232		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0227		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0261		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0351		0.0996	
1,2,3,4,6,7,8-HpCDF	0.0506			0.167	A
1,2,3,4,7,8,9-HpCDF	ND	0.0230		0.188	
OCDF	0.125			0.265	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	72.9	25 - 164	
	13C-1,2,3,7,8-PeCDD	78.1	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	76.7	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	78.4	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	89.1	23 - 140	
	13C-OCDD	91.6	17 - 157	
	13C-2,3,7,8-TCDF	77.3	24 - 169	
	13C-1,2,3,7,8-PeCDF	80.4	24 - 185	
	13C-2,3,4,7,8-PeCDF	83.8	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	63.9	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	63.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	72.4	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	78.2	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	86.3	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	87.0	26 - 138	
	13C-OCDF	87.3	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	69.7	35 - 197	

Totals				
Total TCDD	0.480	0.598		
Total PeCDD	0.885	1.23		
Total HxCDD	1.97	2.21		
Total HpCDD	0.482	1.23		
Total TCDF	1.42	1.47		D
Total PeCDF	0.798	1.73		D
Total HxCDF	0.481			B
Total HpCDF	0.123			

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.125 - 0.221

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0021

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-010	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	25 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	1.44	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND	0.0436		0.0952	
1,2,3,7,8-PeCDD	0.0956			0.331	A
1,2,3,4,7,8-HxCDD	0.140			0.344	A
1,2,3,6,7,8-HxCDD	0.139			0.593	A
1,2,3,7,8,9-HxCDD	0.0763			0.335	A
1,2,3,4,6,7,8-HpCDD	0.319			2.27	A
OCDD	1.18			9.72	A,B
2,3,7,8-TCDF	0.184			0.0565	A
1,2,3,7,8-PeCDF	ND	0.0447		0.125	
2,3,4,7,8-PeCDF	0.0608			0.163	A
1,2,3,4,7,8-HxCDF	ND	0.0338		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0312		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0380		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0512		0.0996	
1,2,3,4,6,7,8-HpCDF	0.0644			0.167	A
1,2,3,4,7,8,9-HpCDF	ND	0.0258		0.188	
OCDF	0.142			0.265	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	72.5	25 - 164	
	13C-1,2,3,7,8-PeCDD	80.3	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	79.9	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	82.0	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	89.5	23 - 140	
	13C-OCDD	89.9	17 - 157	
	13C-2,3,7,8-TCDF	74.2	24 - 169	
	13C-1,2,3,7,8-PeCDF	77.6	24 - 185	
	13C-2,3,4,7,8-PeCDF	80.4	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	64.8	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	70.1	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	75.2	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	79.9	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	89.0	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	87.0	26 - 138	
	13C-OCDF	79.2	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	70.1	35 - 197	

Totals			
Total TCDD	0.456	0.568	
Total PeCDD	0.894	0.943	
Total HxCDD	1.28		
Total HpCDD	0.865		
Total TCDF	1.03	1.22	D
Total PeCDF	0.455	1.29	
Total HxCDF	0.309		B
Total HpCDF	0.119		

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.137 - 0.199

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0023

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-011	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	24.61 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	0.618	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND	0.0429		0.0952	
1,2,3,7,8-PeCDD	ND	0.0502		0.331	
1,2,3,4,7,8-HxCDD	ND	0.0531		0.344	
1,2,3,6,7,8-HxCDD	0.116			0.593	A
1,2,3,7,8,9-HxCDD	ND	0.0549		0.335	
1,2,3,4,6,7,8-HpCDD	0.539			2.27	A
OCDD	2.01			9.72	A,B
2,3,7,8-TCDF	ND		0.106	0.0565	
1,2,3,7,8-PeCDF	ND	0.0790		0.125	
2,3,4,7,8-PeCDF	ND	0.0634		0.163	
1,2,3,4,7,8-HxCDF	ND		0.0400	0.116	
1,2,3,6,7,8-HxCDF	ND	0.0195		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0243		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0320		0.0996	
1,2,3,4,6,7,8-HpCDF	0.0885			0.167	A
1,2,3,4,7,8,9-HpCDF	ND	0.0315		0.188	
OCDF	0.220			0.265	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	75.3	25 - 164	
	13C-1,2,3,7,8-PeCDD	85.8	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	81.8	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	82.5	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	91.3	23 - 140	
	13C-OCDD	95.9	17 - 157	
	13C-2,3,7,8-TCDF	79.8	24 - 169	
	13C-1,2,3,7,8-PeCDF	85.7	24 - 185	
	13C-2,3,4,7,8-PeCDF	90.6	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	67.6	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	67.5	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	75.5	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	79.8	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	92.4	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	90.5	26 - 138	
	13C-OCDF	95.0	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	69.3	35 - 197	

Totals				
Total TCDD	0.0860			
Total PeCDD	0.161			
Total HxCDD	0.988	1.15		
Total HpCDD	1.45			
Total TCDF	0.160	0.346		D
Total PeCDF	0.165	0.612		
Total HxCDF	0.218	0.298		B
Total HpCDF	0.263			

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.0201 - 0.157

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID:	DM-0025					EPA METHOD 1613
Client Data		**Sample Data**		**Laboratory Data**		
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-012	Date Received: 22-Oct-02
Project:	Dun & Martenek	Sample Size:	25.96 g	QC Batch No.:	3455	Date Extracted: 29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	0.697	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225: NA
Time Collected:	NA					

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND	0.0548		0.0952	
1,2,3,7,8-PeCDD	ND	0.0501		0.331	
1,2,3,4,7,8-HxCDD	ND	0.0625		0.344	
1,2,3,6,7,8-HxCDD	0.150			0.593	A
1,2,3,7,8,9-HxCDD	ND	0.0630		0.335	
1,2,3,4,6,7,8-HpCDD	0.388			2.27	A
OCDD	1.58			9.72	A,B
2,3,7,8-TCDF	0.125			0.0565	A
1,2,3,7,8-PeCDF	ND	0.105		0.125	
2,3,4,7,8-PeCDF	ND	0.0902		0.163	
1,2,3,4,7,8-HxCDF	ND	0.0226		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0211		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0270		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0326		0.0996	
1,2,3,4,6,7,8-HpCDF	0.0750			0.167	A
1,2,3,4,7,8,9-HpCDF	ND	0.0330		0.188	
OCDF	ND		0.163	0.265	

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	70.4	25 - 164	
	13C-1,2,3,7,8-PeCDD	79.3	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	76.0	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	78.8	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	88.1	23 - 140	
	13C-OCDD	89.7	17 - 157	
	13C-2,3,7,8-TCDF	76.9	24 - 169	
	13C-1,2,3,7,8-PeCDF	81.7	24 - 185	
	13C-2,3,4,7,8-PeCDF	84.9	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	61.9	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	62.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	70.6	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	77.1	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	91.6	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	85.4	26 - 138	
	13C-OCDF	82.0	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	65.1	35 - 197	

Totals			
Total TCDD	0.0863		
Total PeCDD	0.651		
Total HxCDD	1.58	1.67	
Total HpCDD	1.09		
Total TCDF	0.492		D
Total PeCDF	0.372	0.940	
Total HxCDF	0.348		B
Total HpCDF	0.0750	0.154	

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.0337 - 0.187

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID:	DM-0015A					EPA METHOD 1613
Client Data		**Sample Data**		**Laboratory Data**		
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-013	Date Received: 22-Oct-02
Project:	Dun & Martenek	Sample Size:	25.03 g	QC Batch No.:	3455	Date Extracted: 29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	1.41	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225: NA
Time Collected:	NA					

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	0.0780			0.0952	A
1,2,3,7,8-PeCDD	0.0952			0.331	A
1,2,3,4,7,8-HxCDD	ND		0.0331	0.344	
1,2,3,6,7,8-HxCDD	0.121			0.593	A
1,2,3,7,8,9-HxCDD	0.0581			0.335	A
1,2,3,4,6,7,8-HpCDD	0.281			2.27	A
OCDD	0.623			9.72	A,B
2,3,7,8-TCDF	0.190			0.0565	A
1,2,3,7,8-PeCDF	ND	0.0874		0.125	
2,3,4,7,8-PeCDF	ND		0.0612	0.163	
1,2,3,4,7,8-HxCDF	ND	0.0222		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0221		0.141	
2,3,4,6,7,8-HxCDF	ND	0.0253		0.189	
1,2,3,7,8,9-HxCDF	ND	0.0332		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0272		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0312		0.188	
OCDF	0.0975			0.265	A,B

Labeled Standard		%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	70.2	25 - 164	
	13C-1,2,3,7,8-PeCDD	77.4	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	74.8	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	78.2	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	88.5	23 - 140	
	13C-OCDD	93.2	17 - 157	
	13C-2,3,7,8-TCDF	74.1	24 - 169	
	13C-1,2,3,7,8-PeCDF	78.9	24 - 185	
	13C-2,3,4,7,8-PeCDF	83.4	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	61.8	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	70.6	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	76.4	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	87.4	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	86.2	26 - 138	
	13C-OCDF	93.1	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	66.0	35 - 197	

Totals					
Total TCDD	0.875		0.920		
Total PeCDD	0.990		1.05		
Total HxCDD	1.25		1.28		
Total HpCDD	0.728				
Total TCDF	1.34		1.52		D
Total PeCDF	0.567		1.66		
Total HxCDF	0.349				B
Total HpCDF	ND	0.0290			

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.166 - 0.215

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

ALTA

Sample ID: DM-0015B

EPA METHOD 1613

Client Data		Sample Data		Laboratory Data			
Name:	Dun & Martinek	Matrix:	Tissue	Lab Sample:	22991-014	Date Received:	22-Oct-02
Project:	Dun & Martenek	Sample Size:	25.48 g	QC Batch No.:	3455	Date Extracted:	29-Oct-02
Date Collected:	21-Oct-02	%Lipids:	1.60	Date Analyzed DB-5:	2-Nov-02	Date Analyzed DB-225:	NA
Time Collected:	NA						

Analyte	Conc. (pg/g)	DL[a]	EMPC[b]	MDL[c]	Qualifiers
2,3,7,8-TCDD	ND		0.0917	0.0952	
1,2,3,7,8-PeCDD	ND		0.0967	0.331	
1,2,3,4,7,8-HxCDD	ND	0.0543		0.344	
1,2,3,6,7,8-HxCDD	0.160			0.593	A
1,2,3,7,8,9-HxCDD	0.0921			0.335	A
1,2,3,4,6,7,8-HpCDD	0.376			2.27	A
OCDD	0.864			9.72	A,B
2,3,7,8-TCDF	0.226			0.0565	
1,2,3,7,8-PeCDF	ND	0.0862		0.125	
2,3,4,7,8-PeCDF	0.0818			0.163	A
1,2,3,4,7,8-HxCDF	ND	0.0178		0.116	
1,2,3,6,7,8-HxCDF	ND	0.0166		0.141	
2,3,4,6,7,8-HxCDF	0.0508			0.189	A
1,2,3,7,8,9-HxCDF	ND	0.0299		0.0996	
1,2,3,4,6,7,8-HpCDF	ND	0.0271		0.167	
1,2,3,4,7,8,9-HpCDF	ND	0.0445		0.188	
OCDF	0.155			0.265	A,B

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	72.4	25 - 164	
	13C-1,2,3,7,8-PeCDD	80.0	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	76.3	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	76.5	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	90.7	23 - 140	
	13C-OCDD	89.7	17 - 157	
	13C-2,3,7,8-TCDF	78.0	24 - 169	
	13C-1,2,3,7,8-PeCDF	81.9	24 - 185	
	13C-2,3,4,7,8-PeCDF	86.5	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	62.8	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	62.8	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	70.8	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	77.3	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	88.0	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	87.5	26 - 138	
	13C-OCDF	90.9	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	74.0	35 - 197	

Totals					
Total TCDD	0.930		1.11		
Total PeCDD	1.13		1.22		
Total HxCDD	1.47				
Total HpCDD	0.911				
Total TCDF	1.79		1.85		D
Total PeCDF	0.610		1.80		
Total HxCDF	0.450				B
Total HpCDF	ND	0.0349			

Toxic Equivalent Quotient (TEQ) Data[e]

TEQ (Min-Max): 0.0986 - 0.256

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Analyst: JMH

Approved By: Martha M. Maier 11-Nov-2002 13:04

Appendix III - Dioxin Calculation Sheets

Summary of Sampling Locations and Dioxin TEQ* Results Calculated Using World Health Organization Toxic Equivalent Factors (WHO-1997) from Composite Oyster and Mussel Tissues Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	TEQ[1]	TEQ[2]	TEQ[3]
DM-003	Coast Seafood, East Bay Bed 6-2	Tissue	10/21/2002	Longline	1	2.21	Kumamoto Oyster	0.102	0.198	0.295
DM-001	Coast Seafood, East Bay Bed 1-2	Tissue	10/21/2002	Longline	2	2.12	Pacific Diloid Oyster	0.163	0.245	0.328
DM-0015a	North Bay Shellfish Company Bed	Tissue	10/21/2002	Longline	3	1.41	Pacific Diloid Oyster	0.213	0.238	0.262
DM-0015b	North Bay Shellfish Company Bed	Tissue	10/21/2002	Longline	3	1.60	Pacific Diloid Oyster	0.098	0.200	0.303
DM-0021	North Bay Shellfish Company Wet Storage Oyster	Tissue	10/21/2002	Rack & Bag	4	1.44	Pacific Diloid Oyster	0.184	0.215	0.245
DM-0023	North Bay Shellfish Company Mussel	Tissue	10/21/2002	Rack & Bag	4	0.62	Mussel	0.018	0.102	0.180
DM-0025	North Bay Shellfish Company Oyster	Tissue	10/21/2002	Rack & Bag	4	0.70	Olympia Oyster	0.032	0.122	0.211
DM-0017	Coast Seafood, Mad River Bed 7-1	Tissue	10/21/2002	Bottom	5	0.61	Pacific Diloid Oyster	0.150	0.221	0.292
DM-0019	Coast Seafood, Mad River Bed 7-2	Tissue	10/21/2002	Longline	6	1.32	Pacific Diloid Oyster	0.176	0.224	0.272
DM-0013	Coast Seafood, Sand Island North Bed	Tissue	10/21/2002	Longline	7	2.31	Pacific Diloid Oyster	0.115	0.205	0.295
DM-0011	Coast Seafood, Sand Island North Bed 1-2	Tissue	10/21/2002	Longline	8	1.93	Kumamoto Oyster	0.192	0.238	0.285
DM-005	Coast Seafood, Bird Island North Bed	Tissue	10/21/2002	Longline	9	2.38	Pacific Diloid Oyster	0.139	0.216	0.293
DM-007	Coast Seafood, Bird Island South Bed	Tissue	10/21/2002	Longline	10	2.16	Pacific Diloid Oyster	0.103	0.162	0.222
DM-009	Coast Seafood, Bird Island South Bed	Tissue	10/21/2002	Longline	10	2.57	Kumamoto Oyster	0.169	0.232	0.294

TEQ^1 TEQ value calculated with non detect values as 0
TEQ^2 TEQ value calculated with non detect values as 1/2 of detection limit (DL) value or 1/2 of Estimate Maximum Possible Concentration (EMPC) value
TEQ^3 TEQ value calculated with non detect values as detection limit (DL) value or Estimate Maximum Possible Concentration (EMPC) value

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Oyster Mean = 0.21 95th Percentile = 0.240

Appendix III - Dioxin Calculation Sheets
Dioxin Profile Calculation Sheet for Composite Oyster Tissues
Collected from Commercial Beds in Humboldt Bay, California
Percent of Total Dioxin (for uses with Figure 3)

	DM-003	DM-001	DM-0015a	DM-0015b	DM-0021	DM-0025	DM-0017	DM-0019	DM-0013	DM-0011	DM-005	DM-007	DM-009	
Analyte Acronym	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	Conc. (pg/g) ND = 1/2DL	% of Total Dioxins
2,3,7,8-TCDD	0.037	0.100	0.078	0.046	0.022	0.027	0.148	0.029	0.074	0.035	0.099	0.030	0.037	2.745
1,2,3,7,8-PeCDD	0.048	0.056	0.095	0.048	0.096	0.025	0.030	0.105	0.054	0.105	0.045	0.070	0.114	3.206
1,2,3,4,7,8-HxCDD	0.031	0.027	0.017	0.027	0.140	0.031	0.044	0.072	0.030	0.024	0.027	0.023	0.022	1.857
1,2,3,6,7,8-HxCDD	0.155	0.136	0.121	0.160	0.139	0.150	0.045	0.086	0.129	0.153	0.118	0.085	0.165	5.916
1,2,3,7,8,9-HxCDD	0.086	0.076	0.058	0.092	0.076	0.032	0.045	0.036	0.031	0.062	0.027	0.024	0.079	2.603
1,2,3,4,6,7,8-HpCDD	0.332	0.261	0.281	0.376	0.319	0.388	0.204	0.482	0.293	0.316	0.094	0.272	0.334	14.234
OCDD	0.771	0.793	0.623	0.864	1.180	1.580	0.754	1.460	1.020	0.830	0.706	1.060	0.726	44.543
2,3,7,8-TCDF	0.296	0.303	0.190	0.226	0.184	0.125	0.067	0.172	0.249	0.226	0.286	0.216	0.274	10.134
1,2,3,7,8-PeCDF	0.041	0.043	0.044	0.043	0.022	0.053	0.031	0.029	0.047	0.039	0.044	0.039	0.036	1.836
2,3,4,7,8-PeCDF	0.089	0.037	0.031	0.082	0.061	0.045	0.026	0.081	0.040	0.078	0.035	0.031	0.029	2.395
1,2,3,4,7,8-HxCDF	0.015	0.056	0.011	0.009	0.017	0.011	0.012	0.012	0.015	0.015	0.012	0.015	0.014	0.768
1,2,3,6,7,8-HxCDF	0.014	0.040	0.011	0.008	0.016	0.011	0.012	0.011	0.014	0.014	0.011	0.013	0.013	0.677
2,3,4,6,7,8-HxCDF	0.016	0.021	0.013	0.051	0.019	0.014	0.017	0.013	0.017	0.017	0.013	0.016	0.016	0.876
1,2,3,7,8,9-HxCDF	0.021	0.009	0.017	0.015	0.026	0.016	0.025	0.018	0.023	0.021	0.017	0.021	0.019	0.887
1,2,3,4,6,7,8-HpCDF	0.019	0.021	0.014	0.014	0.064	0.075	0.029	0.051	0.027	0.015	0.016	0.021	0.020	1.385
1,2,3,4,7,8,9-HpCDF	0.021	0.023	0.016	0.022	0.013	0.017	0.008	0.012	0.031	0.017	0.018	0.018	0.020	0.848
OCDF	0.112	0.112	0.098	0.155	0.142	0.082	0.102	0.125	0.130	0.106	0.047	0.157	0.046	5.089
Total	2.104	2.113	1.715	2.238	2.535	2.680	1.597	2.793	2.224	2.074	1.615	2.110	1.965	27.764

Appendix III - Dioxin Calculation Sheets
Dioxin Profile Calculation Sheet for Composite Oyster and Mussel Tissues
Collected from Commercial Beds in Humboldt Bay, California
Total Dioxin Calculation (for uses with Figure 4)

June Oyster Samples	020621-EBAY-6-2	020621-EBAY-1-2	020621-NBSC	020621-NBSC-02	020621-MR-7-1	020621-MR-7-2	020621-SIN	020621-SIN-1-2	020621-BIN	020621-BIS	Total / n=10
Total TCDD	2.50	4.70	11.00	6.80	3.50	4.00	6.60	3.80	2.50	4.50	4.99
Total PeCDD	13.00	22.00	61.00	36.00	22.00	30.00	33.00	19.00	12.00	25.00	27.30
Total HxCDD	18.00	27.00	63.00	40.00	30.00	40.00	33.00	29.00	13.00	37.00	33.00
Total HpCDD	0.20	0.70	1.50	1.00	1.20	1.10	0.75	0.54	0.63	0.65	0.83
OCDD	0.43	0.87	1.30	1.20	1.60	1.30	0.73	0.53	0.69	0.70	0.94
Total TCDF	0.95	2.10	4.10	2.40	1.90	2.00	2.50	1.80	1.40	2.70	2.19
Total PeCDF	6.50	9.90	28.00	24.00	10.00	14.00	15.00	8.50	4.60	9.30	12.98
Total HxCDF	0.46	0.83	2.30	1.30	1.10	1.30	1.20	1.00	0.48	1.50	1.15
Total HpCDF	0.03	0.04	0.07	0.57	0.15	0.18	0.06	0.03	0.02	0.06	0.12
OCDF	0.10	0.14	0.11	0.12	0.16	0.15	0.10	0.09	0.11	0.10	0.12
Total Dioxins	42.17	68.28	172.38	113.39	71.61	94.03	92.94	64.29	35.43	81.51	

October Oyster Samples	DM-003	DM-001	DM-0015a	DM-0015b	DM-0021	DM-0025	DM-0017	DM-0019	DM-0013	DM-0011	DM-005
Total TCDD	1.21	1.07	0.92	1.11	0.57	0.09	0.36	0.60	1.12	1.08	1.42
Total PeCDD	0.84	0.76	1.05	1.22	0.94	0.65	0.34	1.23	1.10	1.02	0.82
Total HxCDD	1.72	1.11	1.28	1.47	1.28	1.67	0.65	2.21	1.21	1.41	0.97
Total HpCDD	0.85	0.64	0.73	0.91	0.87	1.09	0.53	1.23	0.84	0.89	0.56
OCDD	0.77	0.79	0.62	0.86	1.18	1.58	0.75	1.46	1.02	0.83	0.71
Total TCDF	2.49	1.93	1.52	1.85	1.22	0.49	0.60	1.47	1.95	1.70	2.02
Total PeCDF	1.64	1.12	1.66	1.80	1.29	0.94	0.73	1.73	1.59	1.57	1.29
Total HxCDF	0.46	0.34	0.35	0.45	0.31	0.35	0.18	0.48	0.33	0.43	0.24
Total HpCDF	0.04	0.04	0.03	0.03	0.12	0.15	0.07	0.12	0.06	0.03	0.03
OCDF	0.11	0.11	0.10	0.16	0.14	0.16	0.10	0.13	0.13	0.11	0.09
Total Dioxins	10.13	7.91	8.26	6.45	7.92	7.17	4.31	10.66	9.35	9.06	8.14

October Oyster Samples	DM-007	DM-009	Total / n=13
Total TCDD	0.74	1.66	0.92
Total PeCDD	0.49	1.30	0.90
Total HxCDD	0.89	1.86	1.36
Total HpCDD	0.80	0.89	0.83
OCDD	1.06	0.73	0.95
Total TCDF	1.38	2.63	1.63
Total PeCDF	0.83	1.77	1.38
Total HxCDF	0.21	0.50	0.35
Total HpCDF	0.05	0.04	0.06
OCDF	0.16	0.09	0.12
Total Dioxins	6.61	11.47	

June Sampling Event
min = 35.43
max = 172.38
mean = 83.60

October Samplig Event
min = 4.31
max = 11.47
mean = 8.27

June Mussel Sample	020621-NBSCM
Total TCDD	2.40
Total PeCDD	20.00
Total HxCDD	39.00
Total HpCDD	2.70
OCDD	4.80
Total TCDF	0.69
Total PeCDF	19.00
Total HxCDF	1.10
Total HpCDF	0.67
OCDF	0.41
Total Dioxins	90.77

October Mussel Sample	DM-0023
Total TCDD	0.09
Total PeCDD	0.16
Total HxCDD	1.15
Total HpCDD	1.45
OCDD	2.01
Total TCDF	0.35
Total PeCDF	0.61
Total HxCDF	0.30
Total HpCDF	0.26
OCDF	0.22
Total Dioxins	6.60

Total dioxin concentrations = the sum of all tetra- through octa-chlorinated dioxin and furan congeners

The maximum reported values for each cogener group were used to calcular the total dioxin values. The EMPC (estimated maximum possibile concentration) was used when this value was higher than the reported concentration value; the detection limit value for non detects were also used.

Appendix III - Dioxin Calculation Sheets
Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0003
Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0003	Coast Seafood, East Bay Bed 6-2	Tissue	10/21/2002	Longline	1	2.2	Kumamoto Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.037	0.037	0.074	0.074
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.000	0.000	0.048	0.048	0.095	0.095
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.031	0.003	0.062	0.006
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.155	0.016	0.155	0.016	0.155	0.016
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.086	0.009	0.086	0.009	0.086	0.009
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.332	0.003	0.332	0.003	0.332	0.003
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	0.771	0.000	0.771	0.000	0.771	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.296	0.030	0.296	0.030	0.296	0.030
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.041	0.002	0.082	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.089	0.045	0.089	0.045	0.089	0.045
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.015	0.002	0.030	0.003
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.014	0.001	0.028	0.003
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.016	0.002	0.032	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.021	0.002	0.042	0.004
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.019	0.000	0.038	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.021	0.000	0.042	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.112	0.000	0.112	0.000	0.112	0.000
Total TEQ				**0.102**		**0.198**		**0.295**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0001

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0001	Coast Seafood, East Bay Bed 1-2	Tissue	10/21/2002	Longline	2	2.1	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.100	0.100	0.100	0.100	0.100	0.100
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.000	0.000	0.056	0.056	0.111	0.111
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.027	0.003	0.055	0.005
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.136	0.014	0.136	0.014	0.136	0.014
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.076	0.008	0.076	0.008	0.076	0.008
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.261	0.003	0.261	0.003	0.261	0.003
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	0.793	0.000	0.793	0.000	0.793	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.303	0.030	0.303	0.030	0.303	0.030
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.043	0.002	0.087	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.037	0.018	0.073	0.037
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.056	0.006	0.056	0.006	0.056	0.006
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.040	0.004	0.040	0.004	0.040	0.004
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.021	0.002	0.043	0.004
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.009	0.001	0.018	0.002
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.021	0.000	0.042	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.023	0.000	0.046	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.112	0.000	0.112	0.000	0.112	0.000
Total TEQ				**0.163**		**0.245**		**0.328**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0015a

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0015a	North Bay Shellfish Company Bed	Tissue	10/21/2002	Longline	3	1.4	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.078	0.078	0.078	0.078	0.078	0.078
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.095	0.095	0.095	0.095	0.095	0.095
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.017	0.002	0.033	0.003
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.121	0.012	0.121	0.012	0.121	0.012
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.058	0.006	0.058	0.006	0.058	0.006
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.281	0.003	0.281	0.003	0.281	0.003
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	0.623	0.000	0.623	0.000	0.623	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.190	0.019	0.190	0.019	0.190	0.019
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.044	0.002	0.087	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.031	0.015	0.061	0.031
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.011	0.001	0.022	0.002
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.011	0.001	0.022	0.002
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.013	0.001	0.025	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.017	0.002	0.033	0.003
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.014	0.000	0.027	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.016	0.000	0.031	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.098	0.000	0.098	0.000	0.098	0.000
Total TEQ				**0.213**		**0.238**		**0.262**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets
Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0015b
Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0015b	North Bay Shellfish Company Bed	Tissue	10/21/2002	Longline	3	1.6	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.046	0.046	0.092	0.092
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.000	0.000	0.048	0.048	0.097	0.097
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.027	0.003	0.054	0.005
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.160	0.016	0.160	0.016	0.160	0.016
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.092	0.009	0.092	0.009	0.092	0.009
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.376	0.004	0.376	0.004	0.376	0.004
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	0.864	0.000	0.864	0.000	0.864	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.226	0.023	0.226	0.023	0.226	0.023
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.043	0.002	0.086	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.082	0.041	0.082	0.041	0.082	0.041
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.009	0.001	0.018	0.002
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.008	0.001	0.017	0.002
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.051	0.005	0.051	0.005	0.051	0.005
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.015	0.001	0.030	0.003
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.014	0.000	0.027	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.022	0.000	0.045	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.155	0.000	0.155	0.000	0.155	0.000
Total TEQ				**0.098**		**0.200**		**0.303**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets
Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0021
Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0021	North Bay Shellfish Company Wet Storage Oyster	Tissue	10/21/2002	Rack & Bag	4	1.4	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.022	0.022	0.044	0.044
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.096	0.096	0.096	0.096	0.096	0.096
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.140	0.014	0.140	0.014	0.140	0.014
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.139	0.014	0.139	0.014	0.139	0.014
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.076	0.008	0.076	0.008	0.076	0.008
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.319	0.003	0.319	0.003	0.319	0.003
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	1.180	0.000	1.180	0.000	1.180	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.184	0.018	0.184	0.018	0.184	0.018
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.022	0.001	0.045	0.002
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.061	0.030	0.061	0.030	0.061	0.030
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.017	0.002	0.034	0.003
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.016	0.002	0.031	0.003
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.019	0.002	0.038	0.004
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.026	0.003	0.051	0.005
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.064	0.001	0.064	0.001	0.064	0.001
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.013	0.000	0.026	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.142	0.000	0.142	0.000	0.142	0.000
Total TEQ				**0.184**		**0.215**		**0.245**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets
Dioxin TEQ* Results from Composite Mussel Tissue Sample DM-0023
Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0023	North Bay Shellfish Company Mussel	Tissue	10/21/2002	Rack & Bag	4	0.6	Mussel	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.021	0.021	0.043	0.043
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.000	0.000	0.025	0.025	0.050	0.050
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.027	0.003	0.053	0.005
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.116	0.012	0.116	0.012	0.116	0.012
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.055	0.005	0.055	0.005
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.539	0.005	0.539	0.005	0.539	0.005
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	2.010	0.000	2.010	0.000	2.010	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.000	0.000	0.053	0.005	0.106	0.011
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.040	0.002	0.079	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.032	0.016	0.063	0.032
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.020	0.002	0.040	0.004
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.010	0.001	0.020	0.002
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.012	0.001	0.024	0.002
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.016	0.002	0.032	0.003
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.089	0.001	0.089	0.001	0.089	0.001
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.016	0.000	0.032	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.220	0.000	0.220	0.000	0.220	0.000
Total TEQ				**0.018**		**0.102**		**0.180**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0025

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0025	North Bay Shellfish Company Oyster	Tissue	10/21/2002	Rack & Bag	4	0.7	Olympia Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.027	0.027	0.055	0.055
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.000	0.000	0.025	0.025	0.050	0.050
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.031	0.003	0.063	0.006
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.150	0.015	0.150	0.015	0.150	0.015
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.032	0.003	0.063	0.006
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.388	0.004	0.388	0.004	0.388	0.004
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	1.580	0.000	1.580	0.000	1.580	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.125	0.013	0.125	0.013	0.125	0.013
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.053	0.003	0.105	0.005
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.045	0.023	0.090	0.045
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.011	0.001	0.023	0.002
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.011	0.001	0.021	0.002
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.014	0.001	0.027	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.016	0.002	0.033	0.003
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.075	0.001	0.075	0.001	0.075	0.001
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.017	0.000	0.033	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.000	0.000	0.082	0.000	0.163	0.000
Total TEQ				**0.032**		**0.122**		**0.211**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0017

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0017	Coast Seafood, Mad River Bed 7-1	Tissue	10/21/2002	Bottom	5	0.6	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.148	0.148	0.148	0.148	0.148	0.148
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.000	0.000	0.030	0.030	0.060	0.060
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.044	0.004	0.089	0.009
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.045	0.005	0.091	0.009
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.045	0.004	0.089	0.009
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.204	0.002	0.204	0.002	0.204	0.002
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	0.754	0.000	0.754	0.000	0.754	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.000	0.000	0.067	0.007	0.133	0.013
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.031	0.002	0.061	0.003
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.026	0.013	0.051	0.026
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.012	0.001	0.025	0.002
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.012	0.001	0.024	0.002
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.017	0.002	0.034	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.025	0.002	0.049	0.005
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.029	0.000	0.029	0.000	0.029	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.008	0.000	0.015	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.102	0.000	0.102	0.000	0.102	0.000
Total TEQ				**0.150**		**0.221**		**0.292**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0019

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0019	Coast Seafood, Mad River Bed 7-2	Tissue	10/21/2002	Longline	6	1.3	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.029	0.029	0.058	0.058
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.105	0.105	0.105	0.105	0.105	0.105
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.072	0.007	0.072	0.007	0.072	0.007
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.086	0.009	0.172	0.017
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.036	0.004	0.072	0.007
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.482	0.005	0.482	0.005	0.482	0.005
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	1.460	0.000	1.460	0.000	1.460	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.172	0.017	0.172	0.017	0.172	0.017
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.029	0.001	0.058	0.003
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.081	0.041	0.081	0.041	0.081	0.041
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.012	0.001	0.023	0.002
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.011	0.001	0.023	0.002
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.013	0.001	0.026	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.018	0.002	0.035	0.004
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.051	0.001	0.051	0.001	0.051	0.001
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.012	0.000	0.023	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.125	0.000	0.125	0.000	0.125	0.000
Total TEQ				**0.176**		**0.224**		**0.272**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0013

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0013	Coast Seafood, Sand Island North Bed	Tissue	10/21/2002	Longline	7	2.3	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.074	0.074	0.074	0.074	0.074	0.074
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.000	0.000	0.054	0.054	0.108	0.108
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.030	0.003	0.060	0.006
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.129	0.013	0.129	0.013	0.129	0.013
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.031	0.003	0.062	0.006
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.293	0.003	0.293	0.003	0.293	0.003
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	1.020	0.000	1.020	0.000	1.020	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.249	0.025	0.249	0.025	0.249	0.025
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.047	0.002	0.094	0.005
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.040	0.020	0.080	0.040
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.015	0.001	0.030	0.003
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.014	0.001	0.028	0.003
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.017	0.002	0.034	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.023	0.002	0.045	0.005
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.027	0.000	0.055	0.001
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.031	0.000	0.062	0.001
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.130	0.000	0.130	0.000	0.130	0.000
Total TEQ				**0.115**		**0.205**		**0.295**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0011

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0011	Coast Seafood, Sand Island North Bed 1-2	Tissue	10/21/2002	Longline	8	1.9	Kumamoto Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.035	0.035	0.070	0.070
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.105	0.105	0.105	0.105	0.105	0.105
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.024	0.002	0.048	0.005
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.153	0.015	0.153	0.015	0.153	0.015
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.062	0.006	0.062	0.006	0.062	0.006
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.316	0.003	0.316	0.003	0.316	0.003
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	0.830	0.000	0.830	0.000	0.830	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.226	0.023	0.226	0.023	0.226	0.023
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.039	0.002	0.077	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.078	0.039	0.078	0.039	0.078	0.039
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.015	0.001	0.029	0.003
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.014	0.001	0.029	0.003
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.017	0.002	0.034	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.021	0.002	0.042	0.004
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.015	0.000	0.030	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.017	0.000	0.034	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.106	0.000	0.106	0.000	0.106	0.000
Total TEQ				**0.192**		**0.238**		**0.285**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-005

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0005	Coast Seafood, Bird Island North Bed	Tissue	10/21/2002	Longline	9	2.4	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.099	0.099	0.099	0.099	0.099	0.099
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.000	0.000	0.045	0.045	0.090	0.090
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.027	0.003	0.054	0.005
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.118	0.012	0.118	0.012	0.118	0.012
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.027	0.003	0.053	0.005
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.000	0.000	0.094	0.001	0.188	0.002
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	0.706	0.000	0.706	0.000	0.706	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.286	0.029	0.286	0.029	0.286	0.029
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.044	0.002	0.088	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.035	0.018	0.070	0.035
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.012	0.001	0.025	0.002
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.011	0.001	0.022	0.002
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.013	0.001	0.027	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.017	0.002	0.035	0.003
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.016	0.000	0.032	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.018	0.000	0.036	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.000	0.000	0.047	0.000	0.094	0.000
Total TEQ				**0.139**		**0.216**		**0.293**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets
Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0007
Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0007	Coast Seafood, Bird Island South Bed	Tissue	10/21/2002	Longline	10	2.2	Pacific Diloid Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.030	0.030	0.061	0.061
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.070	0.070	0.070	0.070	0.070	0.070
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.023	0.002	0.046	0.005
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.085	0.009	0.085	0.009	0.085	0.009
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.024	0.002	0.048	0.005
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.272	0.003	0.272	0.003	0.272	0.003
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	1.060	0.000	1.060	0.000	1.060	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.216	0.022	0.216	0.022	0.216	0.022
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.039	0.002	0.078	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.031	0.016	0.062	0.031
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.015	0.001	0.029	0.003
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.013	0.001	0.025	0.003
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.016	0.002	0.032	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.021	0.002	0.041	0.004
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.021	0.000	0.041	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.018	0.000	0.036	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.157	0.000	0.157	0.000	0.157	0.000
Total TEQ				**0.103**		**0.162**		**0.222**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix III - Dioxin Calculation Sheets

Dioxin TEQ* Results from Composite Oyster Tissue Sample DM-0009

Collected from Commercial Beds in Humboldt Bay, California

SAMPLE NAME	SAMPLE LOCATION	TYPE	DATE COLLECTED	BED TYPE	LOCATION	% LIPIDS	SAMPLE TYPE	
DM-0009	Coast Seafood, Bird Island South Bed	Tissue	10/21/2002	Longline	10	2.6	Kumamoto Oyster	
Analyte Acronym	Analyte Name	Toxicity Equiv. Factor 1997	Conc. (pg/g) ND = 0	TEQ	Conc. (pg/g) ND = 1/2DL	TEQ	Conc. (pg/g) ND = DL	TEQ
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	0.000	0.000	0.037	0.037	0.075	0.075
1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1	0.114	0.114	0.114	0.114	0.114	0.114
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.000	0.000	0.022	0.002	0.043	0.004
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.165	0.017	0.165	0.017	0.165	0.017
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.079	0.008	0.079	0.008	0.079	0.008
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.334	0.003	0.334	0.003	0.334	0.003
OCDD	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0001	0.726	0.000	0.726	0.000	0.726	0.000
2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	0.1	0.274	0.027	0.274	0.027	0.274	0.027
1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.000	0.000	0.036	0.002	0.071	0.004
2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	0.5	0.000	0.000	0.029	0.015	0.058	0.029
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.014	0.001	0.028	0.003
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.013	0.001	0.026	0.003
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.000	0.000	0.016	0.002	0.032	0.003
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.000	0.000	0.019	0.002	0.038	0.004
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.000	0.000	0.020	0.000	0.040	0.000
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.000	0.000	0.020	0.000	0.041	0.000
OCDF	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.0001	0.000	0.000	0.046	0.000	0.092	0.000
Total TEQ				**0.169**		**0.232**		**0.294**

When mixtures of these compounds are present in an environmental sample a Toxicity Equivalent or TEQ is calculated to express the toxicity of the mixture. The TEQ is defined as the sum of the products of each congener concentration multiplied by its Toxicity Equivalent Factor or TEF for all congeners in a mixture expressed as if the toxicity were due entirely to 1,3,7,8-TCDD (Dioxin). The percentage of the TEQ that is actually contributed by 2,3,7.,8-TCDD should be clearly shown with the TEQ. It is determined by multiplying the congener concentrations in the mixture by their TEFs and summing the TEF concentrations.

Appendix IV

Spreadsheet Risk Assessment Calculation for the Screening-Level Shellfish Consumption Scenario

Hypothetical Exposure to Dioxin Through Consumption of Humbolt Bay Shellfish
Comsumption of Shellfish
Adult

CDI = CD * IR * Afo * FI * CL * CF * 1/BW
Risk = CDI * CSF
HI = CDI / RfDo

July Results

Chemical	Cd Shellfish Concentration (pg/g)	IR Shellfish Ingestion Rate (g/day)	Afo Oral Absorption Rate (unitless)	FI Fraction Ingested from the the source (unitless)	CL Cooking Loss (unitless)	CF Converstion Factor (mg/pg)	BW Body Weight (kg)	CDI Chronic Daily Intake During Lifetime (mg/kg-day)	CSF Cancer Slope Factor (mg/kg-day)-1	Risk Theoritical Cancer Risk During Lifetime	RfDo Oral Referance Dose (mg/kg-day)	HI Theoritical Non-Cancer Hazard Index
Oyster, 95th Dioxin TEQ	3.4	0.15	0.54	1	1	1.0E-09	70	3.93E-12	1.30E+05	5.11E-07	1.0E-08	0.00039
Oyster, Mean Dioxin TEQ	1.8	0.15	0.54	1	1	1.0E-09	70	2.08E-12	1.30E+05	2.71E-07	1.0E-08	0.00021
Mussel Dioxin TEQ	1	0.07	0.54	1	1	1.0E-09	70	5.40E-13	1.30E+05	7.02E-08	1.0E-08	0.00005

October Results

Chemical	Cd Shellfish Concentration (pg/g)	IR Shellfish Ingestion Rate (g/day)	Afo Oral Absorption Rate (unitless)	FI Fraction Ingested from the the source (unitless)	CL Cooking Loss (unitless)	CF Converstion Factor (mg/pg)	BW Body Weight (kg)	CDI Chronic Daily Intake During Lifetime (mg/kg-day)	CSF Cancer Slope Factor (mg/kg-day)-1	Risk Theoritical Cancer Risk During Lifetime	RfDo Oral Referance Dose (mg/kg-day)	HI Theoritical Non-Cancer Hazard Index
Oyster, 95th Dioxin TEQ	0.24	0.15	0.54	1	1	1.0E-09	70	2.78E-13	1.30E+05	3.61E-08	1.0E-08	0.00003
Oyster, Mean Dioxin TEQ	0.21	0.15	0.54	1	1	1.0E-09	70	2.43E-13	1.30E+05	3.16E-08	1.0E-08	0.00002
Mussel Dioxin TEQ	0.1	0.07	0.54	1	1	1.0E-09	70	5.40E-14	1.30E+05	7.02E-09	1.0E-08	0.000005