

**APPENDIX F-1**

**Combined Sediment Chemistry and Grain Size**

**Prepared for**

**U.S. Army Corps of Engineers  
New England Division  
696 Virginia Road  
Concord, MA 01742-2751**

**Prepared by**

**ENSR  
2 Technology Park Drive  
Westford, MA 01886-3140**

**July, 2001**



***LONG ISLAND SOUND  
DREDGED MATERIAL DISPOSAL EIS***

**Combined Sediment Chemistry  
and Grainsize**

**July, 2001**

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## 1.0 INTRODUCTION

The U.S. Environmental Protection Agency (USEPA) Region 1, with assistance from the U.S. Army Corps of Engineers New England District (USACE-NAE), has initiated the preparation of a comprehensive Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA). The EIS will consider the potential designation of one or more dredged material disposal sites in the waters of Long Island Sound (LIS) in compliance with Section 102c of the Marine Protection Research and Sanctuaries Act (MPRSA) and 40 CFR 230.80 of EPA's regulations under Section 404 of the Clean Water Act.

To support the preparation of the EIS, sediment surveys were conducted in February 2000 to fill data gaps and complement the existing sediment data set in Long Island Sound related to these sites. Marine sediments were collected from a total of 25 stations located in four disposal sites in Long Island Sound (Figures 1-1 to 1-5) as listed below:

Disposal Site	Number of Stations per Area				Total Stations
	Historical	Active	Reference (No Impact)	Far Field	
WLIS	Eaton's Neck (1)	WLIS "I" Mound (1)	SW-REF, SOUTH (2)	500m W 500m E (2)	6
CLIS	FVP, NHAV-74 (2)	NHAV-93 (1)	CLISREF + 2500W (2)	1000m W, 2000m W (2)	7
CSDS	N/A (0)	Buoy B92 Sand 94 (2)	REF3, REF4 (2)	2000m W, 4000m W (2)	6
NLDS	NL-Relic (1)	Seawolf (1)	REF-WREF NLONREF (2)	1000m E, 2000m E (2)	6
Total					25
<b>WLIS: Western Long Island Sound</b>		<b>CSDS: Cornfield Shoals Disposal Site</b>			
<b>CLIS: Central Long Island Sound</b>		<b>NLDS: New London Disposal Site</b>			

At each station, five replicate samples and one station composite representing each of the five replicates were collected. Three replicates and the composite sample were submitted for analysis of physical and chemical parameters. The remaining two replicates were archived by storing frozen at -20°C. Sample labels were established to link the data with site information. These labels followed the format summarized below:

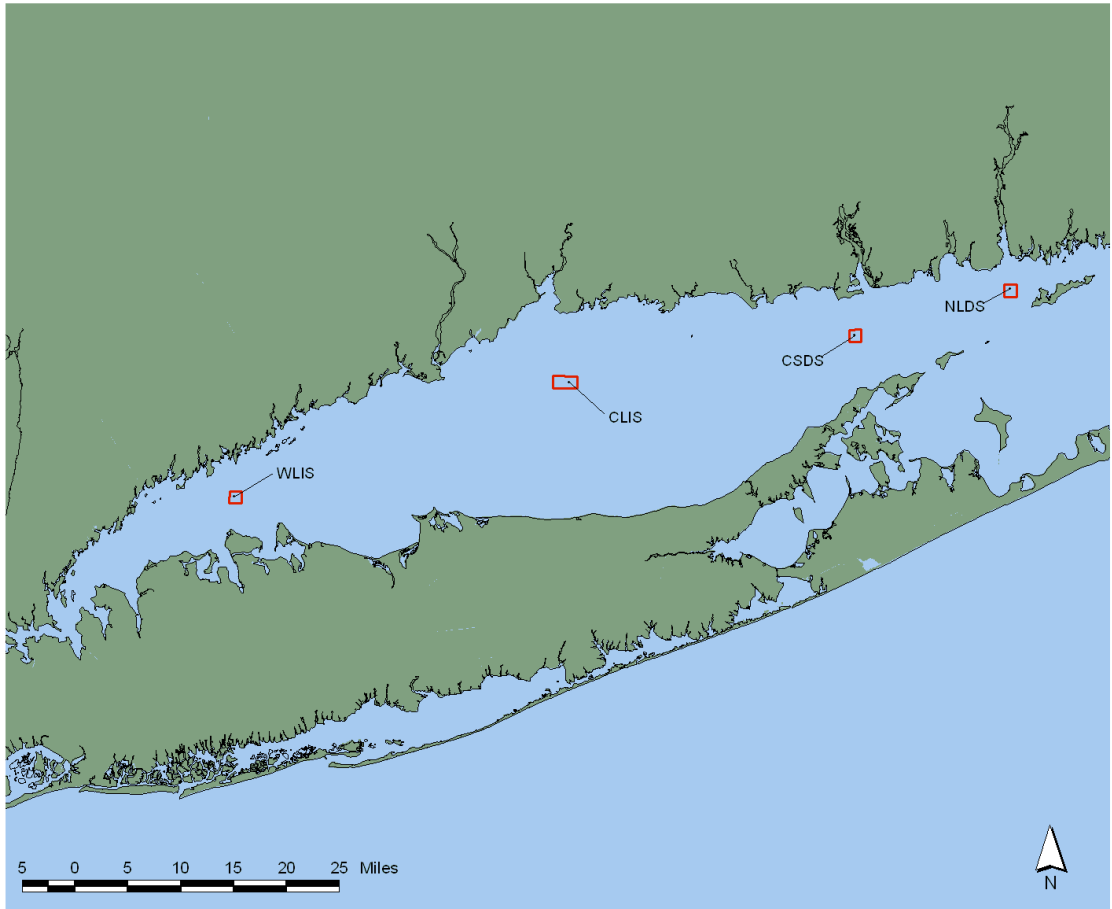
Survey Code (e.g., LIS01) was followed by the Study Area (e.g., CL for CLIS) which was followed by the Station location code (as shown below).

Study Area	Designation	Station	Station Code
WLIS	Active Site	Mound "I"	MDI
	Historical Site	Eaton's Neck (EB1)	EB1
	No Impact Site	SW-REF	SWR
	No Impact Site	SOUTH	STH
	Far Field Site	500metersW	W5H
	Far Field Site	500metersE	E5H
CLIS	Active Site	NHAV93 buoy	N93
	Historical Site	NAV74	N74
	Historical Site	FVP	FVP
	No Impact Site	2500W	25W
	No Impact Site	CLIS-REF	REF
	Far Field Site	1000metersW	1KW
	Far Field Site	2000metersW	2KW
CSDS	Active Site	Buoy B92	B92
	Active Site	Sand 94	S94
	Historical Site		
	No Impact Site	REF3	RF3
	No Impact Site	REF4	RF4
	Far Field Site	2000metersW	2KW
	Far Field Site	4000metersW	4KW
NLDS	Active Site	SeaWolf	SEA
	Historical Site	Relic	RLC
	No Impact Site	NEREF	NRF
	No Impact Site	NLON-REF	LRF
	No Impact Site	NREF-WREF	WRF
	Far Field Site	1000metersE	1KE
	Far Field Site	2000metersE	2KE
<b>Sample Type</b> – C for chemistry, B for biology, E for equipment blank, A for ambient condition blank, and <b>Grab number</b> – 1-5 (replicate) or CP (composite) were appended to the label following the station code.			

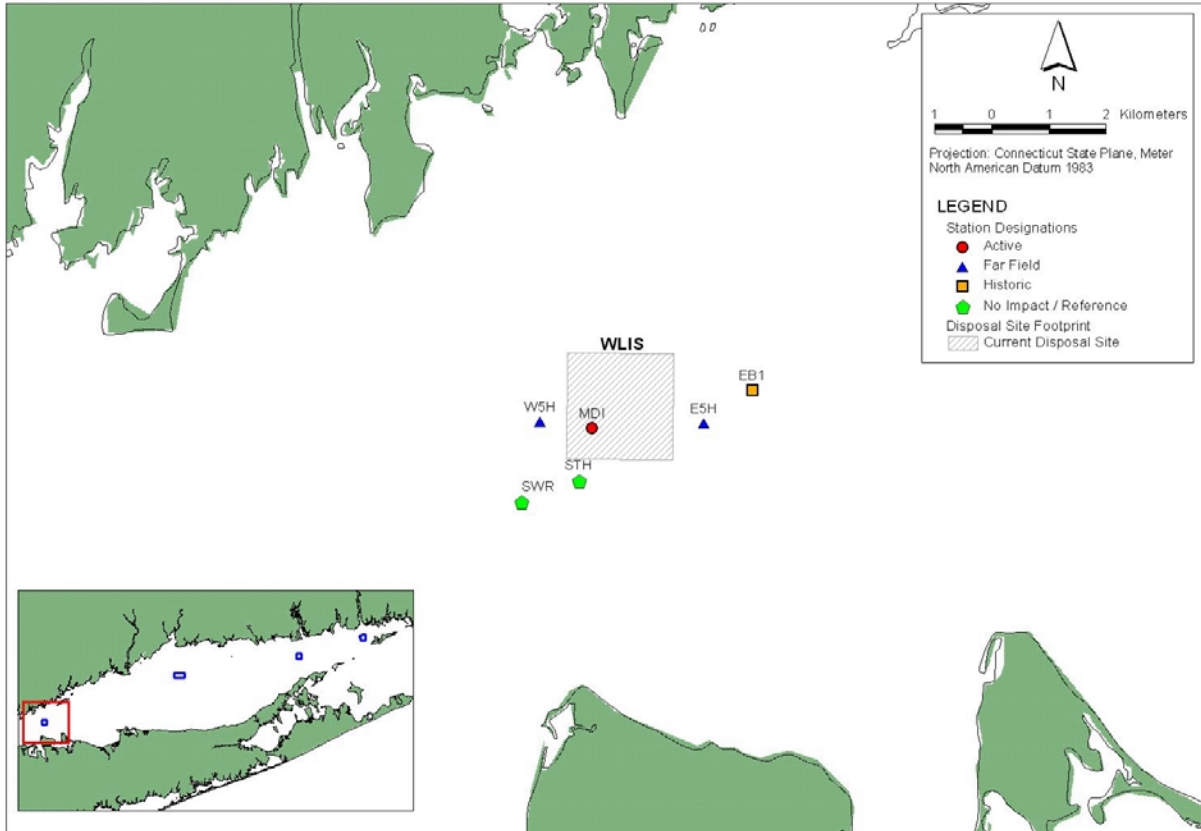
Field and lab sample label correlation's are provided in Appendix A.

This report is not intended to provide any synthesis of the program data, but rather to present the chemical and physical measurement results obtained from the February 2000 sediment survey.

**FIGURE 1-1 LONG ISLAND SOUND DISPOSAL SITES**



**FIGURE 1-2 WESTERN LONG ISLAND SOUND DISPOSAL SITE (WLIS)**



**FIGURE 1-3 CENTRAL LONG ISLAND SOUND DISPOSAL SITE (CLIS)**

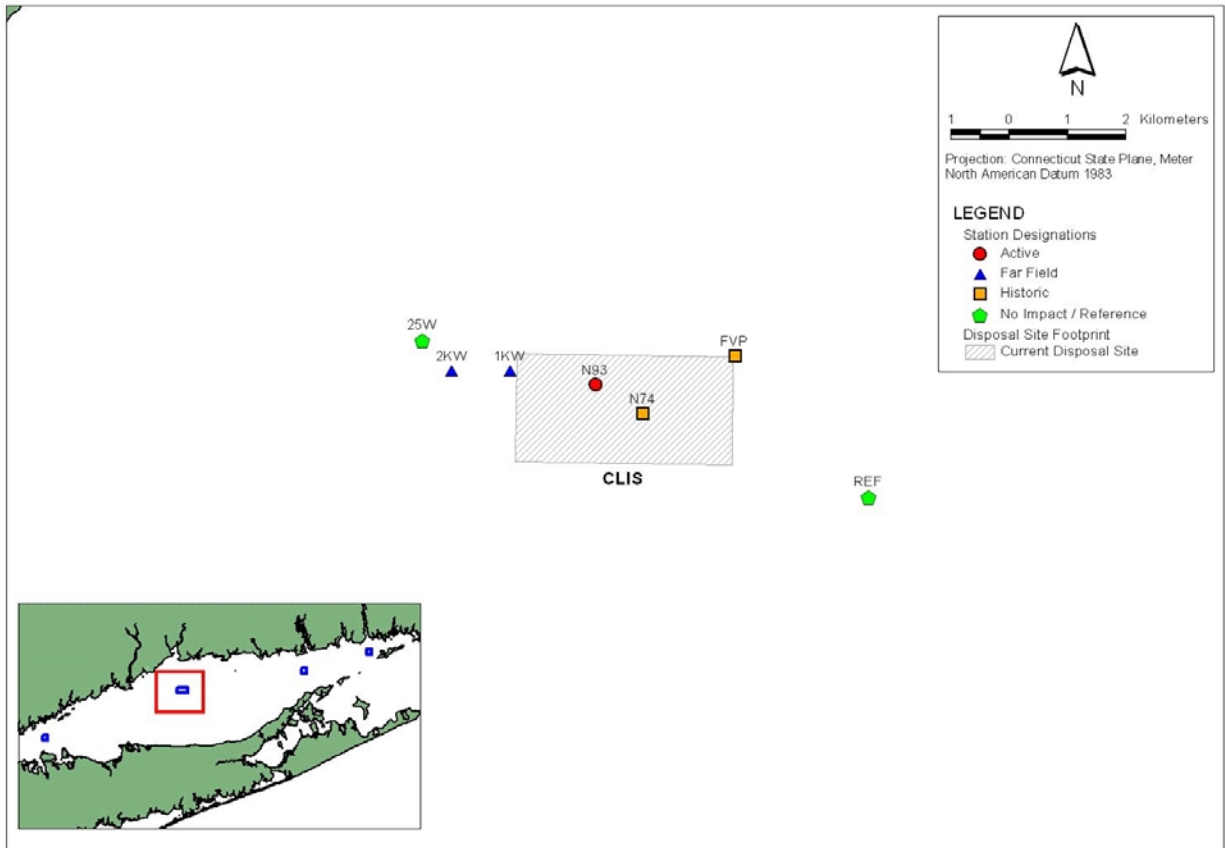


FIGURE 1-4 CORNFIELD SHOALS DISPOSAL SITE (CSDS)

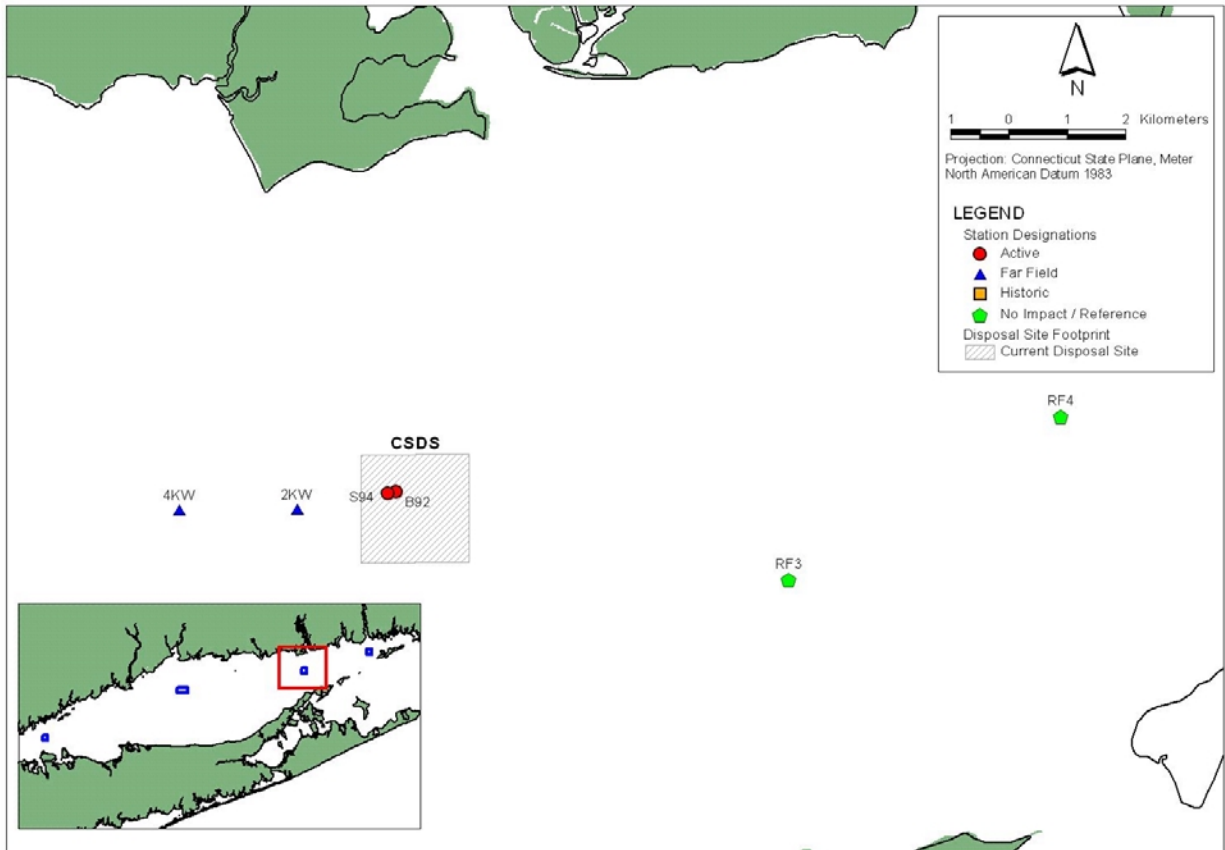
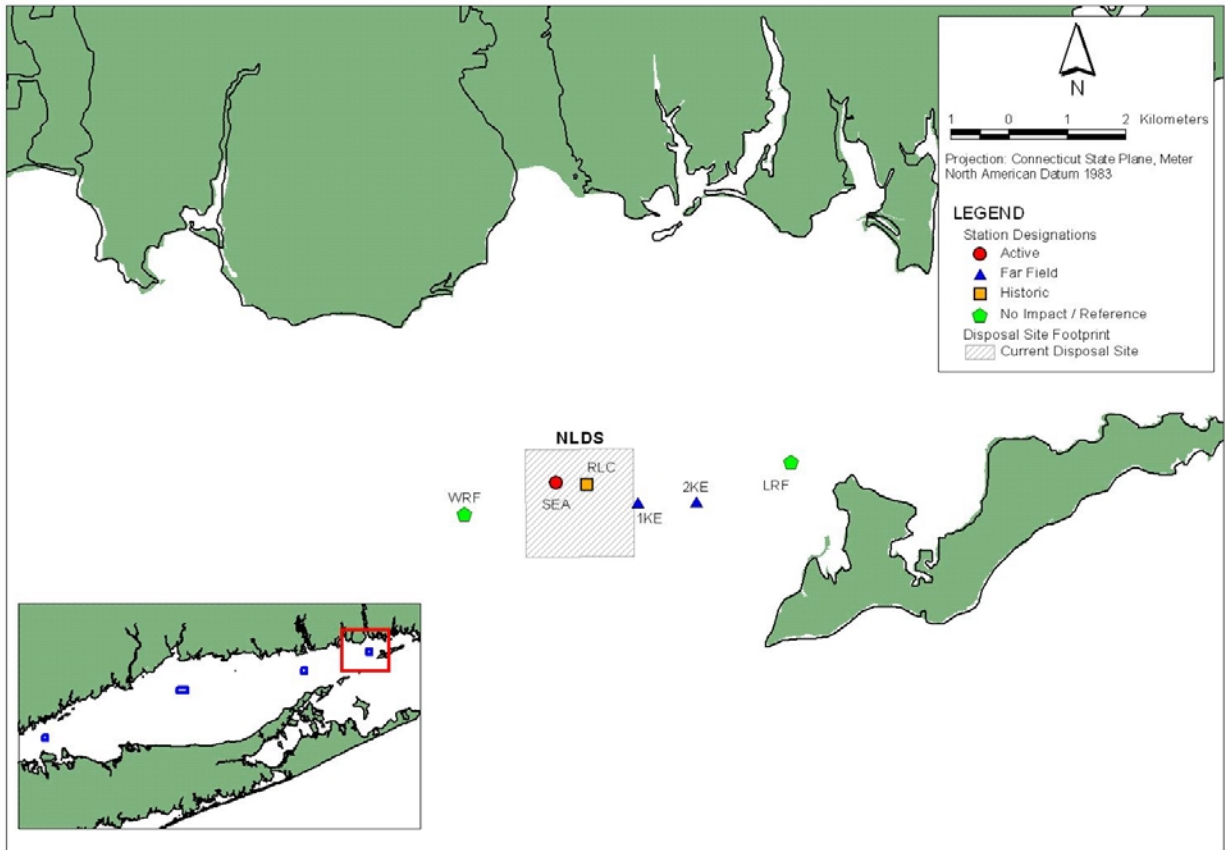


FIGURE 1-5 NEW LONDON DISPOSAL SITE (NLDS)



## 2.0 METHODS

Field collection of sediments was performed in accordance with the procedures in the Quality Assurance Project Plan for Phase 2 Part III of the Long Island Sound Study (QAPP; ENSR, 2000a). The field summary report (ENSR, 2000b) contains a detailed discussion of the field sampling effort. Sample chain-of-custody forms are included in Appendix B. The program QAPP provides detailed descriptions of the methods used to generate the sediment grainsize and chemistry results. These methods are summarized below and in Table 2-1.

### 2.1 SEDIMENT GRAINSIZE

ASTM method D422 was applied to the sediment samples for grainsize measurements and percent moisture content. Data users are advised that that percent moisture is calculated relative to the dry sediment fraction rather than the total sample. All samples scheduled for grainsize analysis were successfully completed.

### 2.2 CHEMICAL MEASUREMENTS

The chemicals analyzed encompass a wide range of analytes to meet program objectives. These parameters included dioxins/furans, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, bis(2-ethylhexyl)phthalate, metals, pesticides, tributyltin, radiochemical parameters, total organic carbon (TOC) and acid volatile sulfide/simultaneously extracted metals (AVS/SEM) as summarized in Table 2-2.

Total organic carbon measurements were prepared and analyzed using the method of Lloyd Kahn (Kahn, 1988). TBT measurements utilized NOAA (1993) methods for analysis, AVS/SEM measurements followed the method of Boothman et al. (1992), and the analysis of radionuclides uranium, cesium, and cobalt followed DOE protocols (HASL 300 series). All other measurements followed EPA protocols as summarized in Table 2-1 and fully detailed in the program QAPP (ENSR, 2000a).

Selected compounds were summed in the database as requested by EPA data users (D.Tomey, personal communication). Data users are advised that not all of the PAH compounds measured are included in the "total PAH" calculated value. The subset of compounds used in the calculation are flagged (+) in the tables. Selected PCB data have also been transformed to provide an estimate of total PCBs (as Aroclor) based on the relationship identified in NOAA Status and Trends data and EPA draft guidance (EPA, 1998; D. Tomey, personal communication). The total PCB calculation used the following formula:

$$\text{Total PCBs (as Aroclor)} = \sum 18 \text{ NOAA PCB Congeners} \times 2$$

For convenience, the 18 NOAA congeners used in the calculation are flagged with an asterisk (\*).

**TABLE 2-1 FIXED LABORATORY METHODS**

Analyte Group	Method Reference	Description
NOAA PCB Congeners	SW-846 3550B (EPA, 1986) SW-846 3660B (EPA, 1986) SW-846 3640A (EPA, 1986) NOAA, 1993 SW-846 8082 (EPA, 1986)	Extraction protocol Sulfur Cleanup GPC Cleanup Amino-Propyl Cleanup Analysis
Pesticides	SW-846 3550B (EPA, 1986) SW-846 3660B (EPA, 1986) SW-846 3640A (EPA, 1986) SW-846 8081A (EPA, 1986)	Extraction protocol Sulfur Cleanup GPC Cleanup Analysis
PAHs/bis(2-ethylhexyl)phthalate	SW-846 3550B (EPA, 1986) SW-846 3660B (EPA, 1986) SW-846 3640A (EPA, 1986) NOAA, 1993 SW-846 8270C (EPA, 1986)	Extraction protocol Sulfur Cleanup GPC Cleanup Amino-Propyl Cleanup ALK-PAH-SIM analysis
Dioxins/furans	EPA 1613 (EPA, 1994) EPA 1613 (EPA, 1994) EPA 1613 (EPA, 1994)	Extraction Cleanup Analysis
Dioxin-like PCB congeners	EPA 1668 (EPA)	Extract, Cleanup and Analysis
Tributyltin	NOAA, 1993	Extraction and Analysis
Metals (Cu, Cr, Pb, Ni, Zn, As, Be, Cd, Se, Ag)	SW-846 3051 (EPA, 1986) SW-846 6010B (EPA, 1986)	Preparation Analysis
Metals (As, Cd, Be, Ag, Pb)	SW-846 3051 (EPA, 1986) SW-846 6020 (EPA, 1986)	Preparation Analysis
Selenium	SW-846 7740 (EPA, 1986)	Analysis
Mercury	SW-846 7471A (EPA, 1986)	Analysis
TOC	Lloyd Kahn (Kahn, 1986)	Analysis
Percent Solids	SM 2540G (APHA-AWWA-WPCF, 1992)	Analysis
AVS/SEM	Boothman, et. al., 1992 SW-846 6010B (EPA, 1986)	Preparation Analysis
<sup>60</sup> Co, <sup>137</sup> Cs	HASL (DOE) 300 Series	Preparation and Analysis
Isotopic Uranium	HASL (DOE) 300 Series	Preparation and Analysis
<sup>90</sup> Sr	EPA 905.0 Modified (EPA, 1980)	Preparation and Analysis
Grainsize	ASTM D422C-98	Preparation and Analysis
Specific gravity	ASTM D854-92	Preparation and Analysis
Visual classification	ASTM D2488	Preparation and Analysis
Water content	ASTM D2216-98	Preparation and Analysis

**TABLE 2-2 LONG ISLAND SOUND STUDY SEDIMENT CHEMICAL PARAMETERS**

<b>NOAA PCB Congeners</b>	<b>Pesticides</b>	<b>Metals</b>	<b>AVS/SEM</b>
PCB 8	Aldrin	Arsenic	AVS
PCB 18	alpha-BHC	Beryllium	Cadmium
PCB 28	beta-BHC	Cadmium	Copper
PCB 44	delta-BHC	Chromium	Lead
(PCB 49) <sup>1</sup>	gamma-BHC	Copper	Silver
PCB 52	alpha-Chlordane	Nickel	Nickel
PCB 66	gamma-Chlordane	Zinc	Zinc
(PCB 87)	2,4'-DDT	Silver	
PCB 101	2,4'-DDE	Lead	
PCB 105	2,4'-DDD	Selenium	
PCB 118	4,4'-DDT	Mercury	
PCB 128	4,4'-DDE		
PCB 138	4,4'-DDD		
PCB 153	Dieldrin		
PCB 170	Endosulfan I		
PCB 180	Endosulfan II		
(PCB 183)	Endosulfan Sulfate		
(PCB 184)	Endrin		
PCB 187	Heptachlor		
PCB 195	Heptachlor epoxide		
PCB 206	Methoxychlor		
PCB 209	Toxaphene		
<b>Semivolatiles</b>	<b>Dioxin/Furans</b>	<b>Dioxin-Like PCB Congeners</b>	<b>Radiochemicals</b>
1-Methylnaphthalene	2,3,7,8-TCDD	PCB 77	<sup>60</sup> Co
1-Methylphenanthrene	1,2,3,7,8-PeCDD	PCB 114	<sup>137</sup> Cs
2-Methylnaphthalene	1,2,3,4,7,8-HxCDD	PCB 123	Isotopic Uranium
2,6-Dimethylnaphthalene	1,2,3,6,7,8-HxCDD	PCB 126	<sup>90</sup> Sr
Acenaphthene	1,2,3,7,8,9-HxCDD	PCB 156	
Acenaphthylene	1,2,3,4,6,7,8-HpCDD	PCB 157	
Anthracene	OCDD	PCB 167	
Benzo(a)anthracene	2,3,7,8-TCDF	PCB 169	
Benzo(a)pyrene	1,2,3,7,8-PeCDF	PCB 189	
Benzo(b)fluoranthene	2,3,4,7,8-PeCDF		
Benzo(e)pyrene	1,2,3,4,7,8-HxCDF		
Benzo(g,h,i)perylene	1,2,3,6,7,8-HxCDF		
Benzo(k)fluoranthene	1,2,3,7,8,9-HxCDF		
Biphenyl	2,3,4,6,7,8-HxCDF		
Chrysene	1,2,3,4,6,7,8-HpCDF		
Dibenzo(a,h)anthracene	1,2,3,4,7,8,9-HpCDF		
Fluoranthene	OCDF		
Fluorene			
Indeno(1,2,3-cd)pyrene			
Naphthalene			
Perylene			
Phenanthrene			
Pyrene			
Bis(2-ethylhexyl)phthalate			
<b>Tributyltin</b>	<b>TOC</b>		

<sup>1</sup>In addition to the NOAA 18 congeners, other congeners of concern have been included and are designated with parentheses( ).

### 3.0 DATA VALIDATION AND QUALITY

All program data were externally validated following EPA Region 1 guidelines (EPA, 1996). Data were validated following a Tier II approach which includes, at a minimum, review of the following elements:

- Chain-of-custody (COC) records
- Sample storage conditions and holding times
- Initial and continuing instrument calibrations
- Method blanks/field blanks
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Matrix triplicate results
- Laboratory control sample (LCS) results
- Standard reference material (SRM) results (where available)
- Quantitation limits/method detection limit (MDL) verification

Additionally, 25% of the dioxin and dioxin-like PCB data was subjected to a Tier III validation approach which, in addition to Tier II review elements includes detailed examination of the raw data to check for calculation, compound identification, and/or transcription errors. Based on the results of the validation, data qualifiers were applied as needed to the sample data. These qualifiers are defined as follows:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above the reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch.

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

Data validation reports for each of the parameters are included in Appendix C. Sample preparation and analysis logs are provided in Appendix D.

### 3.1 FIELD SAMPLING ACCURACY/EQUIPMENT BLANK RESULTS

During the field effort two types of field blanks were collected and designated as either an ambient or an equipment blank. Two ambient and three equipment blanks were collected after sampling the historic station for the following three disposal sites CSDS, WLIS and CLIS as follows:

Site	Blank Type	Blank ID	Time/Date Collected
Western Long Island Sound (WLIS)	Ambient	WLIS EB1	1330/19 Feb 00
	Equipment	WLIS EB1	1515/19 Feb 00
Central Long Island Sound (CLIS)	Equipment	CLIS FVP	0945/20 Feb 00
Cornfield Shoals Dump Site (CSDS)	Equipment	CSDS CSB92	0930/18 Feb 00
	Ambient	CSDS CSB92	0800/18 Feb 00

Ambient Blank Collection. When ambient blanks were collected, sampling was generally completed between grabs 3 and 4 at the station. After the sample bottles were prepared and the gear was washed down the field crew would standby a few minutes and then begin the transfer of water from 4-liter bottles (lab provided) directly to the individual sample bottles destined for the lab. This effort was conducted on-deck approximately 10-15 feet away from the grab sampler.

Equipment Blank Collection. When equipment blanks were collected at a site, sampling was conducted after the historic station was fully completed (i.e., all sample bottles filled and the sampler, personnel and surrounding area fully decontaminated). Water from the 4-liter bottles (lab provided) was poured through the actual bucket chamber of the Ted-Young Sampler and collected in a large stainless steel container which was used for handling/compositing the sediments. The water was then decanted from this steel reservoir directly into the individual sampling bottles destined for the laboratories. Plastic sheeting was draped over the Ted-Young sampler for approximately 1-hour prior to the collection of the equipment rinseate blank at CSB92 to keep the decontaminated sampler out of the elements (rain/sleet) until the field crew were ready to perform the sampling routine. The sheet was removed during the sampling effort but while covered, the access doors to the top of the sampler bucket were sealed. The stainless steel reservoir was covered by a stainless steel lid. There is no record of plastic sheeting used in any other instance, although weather conditions were adverse for most of the sampling week.

The equipment and ambient condition blank results generally verify that samples were collected without contamination. Table 3-1 summarizes the findings. In some cases, analytes of interest were detected, but at concentrations far below the levels observed in the field samples. In a few other cases, compounds were detected at low concentrations but the corresponding sediment concentrations were also very low. In these cases the data were qualified "EB" to indicate that the contaminant signal may be an artifact of the sampling process.

The solid wt/wt concentration units provided in Table 3-1 were derived by taking the aqueous rinseate concentration, applying the analyte weight per liter rinseate to the sediment weight collected for processing (corrected for percent moisture) for each parameter type according to the following example:

$$\text{Benzo(ghi)perylene at CSDS: } \frac{18 \text{ ng/L} * 4\text{-L (rinseate volume total)} * 60\% \text{ solids}}{200 \text{ g (sub-sample mass collected shipboard for analysis)}} = 0.6 \text{ ng/g}$$

As a conservative approach, the total analyte weight rinsed from the grab surface (collected in 4-L containers) is assumed to have been incorporated in its entirety into the sample storage jar. Also for conservative measures, in cases where more than one jar was collected for a parameter or set of parameters, the contaminant is assumed to have been incorporated into the first of the two jars so as not to dilute the possible contaminant signal. 200 g sub-samples were collected for metal, PAH, and PCB analysis; 400 g sub-samples were collected for dioxin/furan and radiochemical measurements.

Sediments were collected from undisturbed sediment grab samplers without contacting the grab surface. This approach will overestimate the amount of contamination that could possibly be contributed to the sediment samples, but nonetheless serves as a point of comparison for data usability discussions.

For comparative purposes, the program sediment minimum, maximum and mean values are included in Table 3-1. With few exceptions, all analytes detected in the program equipment blanks are far below the minimum concentrations measured. Bis(2-ethylhexyl)phthalate (or phthalate) was detected in the equipment blanks near the lowest reporting limit for the compound, but none of the project samples were measured above reporting limits. A few dioxin and furan compounds were detected in the equipment blanks at less than program minimum values, but based on action limits, selected data have been EB qualified to indicate possible contamination contributions.

### **3.2 FIXED LABORATORY DATA VALIDATION FINDINGS**

All samples scheduled for analysis were successfully completed with one exception: The sample split from LIS01NL1KEC3 designated for dioxin and dioxin-like PCB analyses was lost and so data are not available. On occasion, data validation chemists rejected PCB data based on poor standard reference material (SRM) or surrogate internal standards (SIS) results. Also rejected were Cd data based upon interference check failures. Data users are advised that the PCB congener data were rejected due to low or unrecovered SRM measurements or poor SIS results and only "nondetect" PCB results have been

rejected. Furthermore, the rejected Cd results correspond to sandy sediment areas, primarily in the CSDS area, where the low Cd concentration values could not be resolved from the interference signal. In general, these incidents accounted for a small percentage of the measurements made. Percent completion for the program was 98 and within the program objective of 95 percent or better (completeness = [# of valid measurements or samples/# of measurements or samples planned]\*100).

One aspect of the QC program required that MDLs be verified with each sample batch analyzed by the laboratory. In many cases the observed concentrations were far higher than annual MDL studies conducted by the laboratory and no further action was taken. If the sample results were within six times the laboratory's MDL result then the MDL verification data were evaluated. Occasionally, MDL and reporting limits were raised based on the batch specific MDL study. These specific cases are fully detailed in the validation reports provided in the Appendix.

The following discussion is intended to summarize the program data validation findings for the sediment chemical and physical measurements. Every element of the validation review is not covered in this summary. This discussion is intended to review only the most critical or common findings related to each parameter group. Discussions are often in terms of sample delivery groups (SDGs) which represent sample sets processed and analyzed in a single batch. Readers are referred to Appendix C Program Validation Memos for further detail.

### **3.2.1 Grain size and TOC**

A modified Tier I review was applied to the grainsize data; no discrepancies were noted and the quality requirements specified in the QAPP were met. A Tier II review was applied to the TOC data and all QAPP specifications were met except for the precision associated with few duplicate injections. Four of 100 samples exceeded the duplicate precision specification and these failures are considered minor.

### **3.2.2 Inorganic Parameters**

Inorganic parameters were subjected to Tier II validation exercises and the data package elements summarized previously were reviewed with one exception. In the case of AVS/SEM, while matrix spike exercises were performed on all inorganic parameters, only Zn and Ni data were reviewed critically because this classical approach to laboratory performance assessment does not apply to the AVS and SEM method. All inorganic data were considered useable for decision-making with the exception of selected Cd values as discussed below.

#### **3.2.2.1 Metals**

The most frequent validation actions were associated with the following:

- False As and Cd positives identified in Inteference check standards
- Mercury and selenium matrix spike results
- Serial dilution accuracy checks

The most critical of these findings was the potential for cadmium false positives which approached sediment concentrations in sandy sediment areas (primarily in the Cornfield Shoals Disposal Site area) where low sediment values could not be resolved from the possible intereference signal. In these cases, cadmium data are considered unuseable for decision making and have been rejected. This affects about 27 of the 1300 metal measurements made. All other metals data are useable for decisionmaking.

Further details are provided in the following sections.

#### Interference check failures

Common methodology to verify the absence of common spectral ICP interference effects requires that interference check standards be prepared containing high concentrations of known interfering species (interferants). Two standards are used; one is designed to identify false positives, the other to verify analyte accuracy in the presence of potential interferants.

Small As and Cd false signals created by these check standards were observed throughout most of the analytical batches. Because the sediment arsenic content was much higher than the false signal observed from this standard, the results are considered useable for decision making. In sandy areas (e.g. Cornfield Shoals) cadmium concentrations were quite low and were approximately equal to the false signals observed by the check standard. In these cases, the cadmium results have been rejected and are designated R in the database. Most of the remaining As and Cd data have been J qualified to indicate that they are estimates on this basis.

#### Matrix spikes

Mercury and Se matrix spike recoveries were outside of the program QAPP specifications in all sample SDGs. Mercury recoveries were low and the matrix spike results from all but one Se analytical batch were also low. Mercury and Se Data are J qualified as estimates based on these matrix spike results.

#### Serial Dilutions

Another common practice to understand analytical interferences is to analyze samples with and without dilution. Differences greater than 15% are J qualified as estimates. Most zinc results were outside of this specification at 1-15% above the criteria, Be and Pb also exceeded the 15% mark in three of the five SDGs and As, Cd, and Cr were outside specifications in one of five SDGs.

### Triplicate Precision

Generally one metal per analytical batch exceeded the triplicate precision criteria of 20%. None were excessive, the most serious was Zn in one batch at 39 percent; others exceeded the criteria by only 2-7%. Overall the precision with which the metals measurements were made are considered to be excellent.

### Method Detection Limit Verifications

Most sediment metal concentrations were far above laboratory method detection limits and evaluation of MDL verifications was largely unnecessary. For metals determined near the MDL, laboratory MDL studies were either at or below the lab's reported annual MDL study results and no further action was taken. In two cases, SDG mercury reporting limits were raised based on the batch specific findings. Mercury data generated below the verified reporting limit have been JM qualified.

### AVS/SEM

The most frequent AVS/SEM validation actions were associated with the following:

- Samples analyzed outside of QAPP specified holding times
- Analytes detected in method blanks
- MDL verifications exceeded annual QAPP MDL requirements

All AVS/SEM data are J-qualified as estimates because all samples were analyzed outside of specified holding times. The method specified holding time has been set at 14 days which agrees with the findings of Lasorsa and Casas (1996) who found that sulfide levels are best maintained when samples are analyzed within 2 weeks after collection. As a result of contractual constraints, these project AVS/SEM samples were analyzed ca. 8 months after collection. Boothman (personal communication) has conducted a holding time study at the 10 and 100  $\mu\text{M/g}$  level and found no significant difference between values obtained within the 14-day period and the study duration limit of 28 days. The Boothman findings provide some assurance that data generated beyond the method holding time of 14 days may still be accurate (D. Tomey, Personal Communication).

Contamination above reporting limits was observed for the analytes Ag, Cd, Cu, Ni, and Zn. In these cases, an action limit 5 times the contamination found was calculated and any data less than the limit has been U qualified as not detected. Matrix spiking exercises, while applied to the AVS/SEM testing, are not appropriate since the addition of metal "spikes" to sulfide containing matrices will result in the formation of insoluble sulfides. For this reason, non-compliant measurements reported by the lab (AVS, SEM Ag) do not reflect method inaccuracies and validation action has not been taken.

MDL verification studies resulted in raising quantitation limits for Ag, Cd, Ni and Pb in selected SDGs. Data reported below these raised reporting limits have been JM qualified.

### **3.2.3 Organic Parameters**

As previously described, organic parameter data were also subjected to Tier II validation reviews, although a Tier III validation was applied to the first dioxin/furan and dioxin-like PCB data package. With the exception of selected PCB data, all organic data are considered useable for decision making purposes. Occasionally, PCB SRM data indicated a severe low bias or surrogate spike recoveries exceeded limits and the corresponding data have been rejected. These data were replaced with an R qualifier in the database.

Surrogate standard recovery corrections are often disallowed in analytical programs and the program QAPP specified that project samples not be corrected in this manner. Readers are advised however that SRM samples have been handled uniquely in order to generate data comparable to corresponding certified results. The National Institute of Standards and Technology (NIST) that prepared the project reference material quantified organic contaminants using the method of internal standards. Conversely, program samples have been analyzed using the method of external standard quantification. In order to better assess the accuracy of program SRM results, laboratories have recovery corrected these results using a surrogate internal standard.

#### **3.2.3.1 PAH/Bis2ethylhexylphthalate.**

The most frequent PAH or Bis2ethylhexylphthalate validation actions were associated with the following:

- Method blank contamination
- Triplicate precision
- SRM recovery failures

#### **Method Blanks**

Bis2ethylhexylphthalate (phthalate) is a common contaminant due to its use and widespread presence in plastic products. Virtually all method and equipment blanks contained measurable phthalate. An action level 10 times the blank contaminant level was established and all phthalate values less than the (batch specific) action level were U qualified as undetected in the samples. Most program phthalate data were near the QAPP specified reporting limit of 100 ug/kg. In four cases, the newly established limits were much higher as summarized below:

Site	Station	Reported Phthalate Value
CLIS	FVP (C1)	390 U
NLDS	SEA (CP)	330 U
WLIS	MDI (C3)	800 U
WLIS	MDI (C1)	830 U

### Triplicate Precision

Several compounds exceeded the QAPP triplicate precision criterion of 30 % (RSD) in two SDGs. In the SDG representing samples from Western Long Island Sound stations (MD1, EBI, SWR, STH, and W5H), the precision associated with thirteen compounds were > 100%. In the second SDG that included samples from New London Dump Site (stations RLC, LRF, WRF, 1KE, and 2KE), the precision related to fifteen compounds ranged from 40 to 80%. Affected data have been J qualified.

### SRMs

Selected compounds were outside of the project specifications and were U/J qualified based on the apparent bias. Napthalene was outside of the project specifications in all SDGs. Benzo(k)pyrene did not meet specifications in 3 of 5 batches, fluoranthene and pyrene did not in 2 batches.

#### **3.2.3.2 PCBs/Pesticides**

The most frequent PCB and pesticide validation actions were associated with the following:

- Method blank contamination
- Instrument calibration standard precision
- Triplicate precision issues
- SRM recovery failures

The most critical of these findings were related to SRM recoveries. The recovery of four PCB congeners was very low and in these cases, the related data below detection have been rejected as unusable as discussed below.

### Method Blanks

Method Blanks associated with all SDGs were clean with two exceptions: Methoxychlor was detected in the method blanks of two SDGs. Methoxychlor data have been U qualified based on these findings.

### Calibration Criteria

Two columns were used in the analysis of PCBs and pesticides and while all response factors were acceptable, selected standards exceeded RSD limits set for either initial or continuing calibrations for one or the other columns. In these cases, positive results quantified from non-compliant columns have been J qualified as estimates. Results below detection have been accepted unqualified. Various PCB congener and pesticide data associated with each of the four disposal sites are J qualified based on these findings.

### Triplicate Precision

Approximately 20 percent of the PCB/pesticides data did not meet the QAPP specified precision criteria. Most of these were associated with New London Dump Site stations. Data are J qualified in these cases.

### SRM Results

Selected PCB data have been rejected based on very low SRM recovery results of low bias. PCB 195 data reported below quantitation limits have been rejected and qualified R in many of the Central Long Island Sound and Cornfield Shoals stations, and at a few New London Dump Site stations. On this basis, PCB 153 and 206 data below reporting limits have been rejected from selected Central Long Island Sound stations and non detect PCB 183 data have been rejected from selected Western Long Island Sound stations. In all, 121 of the 2200 NOAA PCB congener data generated have been rejected.

### **3.2.3.3 Dioxin/Furans**

Dioxin and furan data validation efforts uncovered very few data issues and most were considered minor. The most frequent dioxin and furan validation actions were associated with the following:

- Method blank contamination
- Compound quantitation Interferences
- High matrix spike recoveries

### Method Blanks

Several compounds were detected in the method blanks within two batches but the measured concentrations were just above instrument detection limits and the action levels developed were below the QAPP specified MDLs for these compounds. These data have been B qualified to indicate that compounds were detected in the blank solutions.

### Matrix Spikes

Most MS/MSD results met QAPP specifications. Selected compound recoveries were outside of the criteria of 50-120% by a small amount (121-130%). In these cases the samples used for the spiking exercise were J qualified. The compound 1,2,3,4,6,7,8-HpCDD measured in one SDG was recovered at 204 percent (Western Long Island Sound station MD1) but overall the results are considered very good.

### Quantitation Interferences

Ion suppression was observed in three SDGs associated with one compound. In these cases, the individual sample data has been "I" qualified to indicate this condition.

#### **3.2.3.4 Dioxin-Like PCBs**

The most frequent dioxin-like PCB validation actions were associated with the following:

- Method blank contamination
- Surrogate internal standard issues

Selected compounds were detected in method blanks but at very low concentrations. These data are B qualified to indicate possible blank contributions to the sample signal. Occasionally, surrogate internal standard recoveries were out of the specified recovery range of 40-135%. The detected results associated with 2 field samples (Western Long Island Sound station E5H (3F) and Cornfield Shoals station 2KW (CP)) and one matrix spike sample (Western Long Island Sound station E5H (1F)) have been J qualified. Non-detected results have been rejected; of the 800 dioxin-like PCB measurements made, 11 data points have been rejected.

#### **3.2.3.5 Tributyltin**

The most frequent TBT validation actions were associated with the following:

- Surrogate internal standard issues
- MDL verification issues

### Surrogate Internal Recoveries

Three surrogate internal standards (SIS) were added to each sample prepared for TBT analysis. In many cases one of the three SIS results were outside of QAPP specifications for recovery and in a few cases, two of the three SIS recoveries were outside of the specified limits. Associated samples are considered estimates and have been J qualified on this basis.

### MDL Verification

The TBT reporting limit was raised in 2 SDGs following MDL verification study results. Sample results that fall below the newly established reporting limit have been JM qualified and correspond to selected stations within the Cornfield Shoals and New London Dump Sites.

### **3.2.3.6 Radioisotopes**

Radioisotope data validation efforts uncovered very few data issues and most were considered minor. No issues were uncovered related to gamma spectroscopy results. The most frequent actions were associated with the following:

- Method blanks (Uranium)
- Detector issues (Strontium)

### Method blanks

$U^{234}$  and  $U^{238}$  were detected in blanks on several occasions but in most cases the resultant action limits were below the QAPP MDL specification of 1 pCi/g and these are considered very minor issues. Corresponding data below the action limit have been U qualified.

### Detector Accuracy

The analytical detector used to analyze a sample from Central Long Island Sound (station REF) did not meet daily check specifications and the associated  $Sr^{90}$  data point has been UJ flagged.

**TABLE 3-1 PROGRAM ANALYTES DETECTED IN THE EQUIPMENT BLANKS**

Site	Blank ID	Parameter	Estimated Blank Contribution		Program Values Observed			
			Value	Units	min	max	mean	
WLIS	WLIS EB1 ACB	Cu	0.004 J	ppm (mg/Kg)	1.9	219	31.47	
		Pb	0.003 UJ	ppm (mg/Kg)	2	81	23.65	
		Ni	0.004	ppm (mg/Kg)	2.8	30.3	13.89	
		Bis(2-ethylhexyl)phthalate	4	ppb (ug/Kg)	40 U	830 UJ	NA	
		Sr90	0.01	pCi/g	0.59 U	7.7	0.25	
	WLIS EB1 EQB	Cu	0.02	ppm (mg/Kg)	1.9	219	31.47	
		Ni	0.01	ppm (mg/Kg)	2.8	30.3	13.89	
		Bis(2-ethylhexyl)phthalate	31	ppb (ug/Kg)	40 U	830 UJ	NA	
CLIS	CLIS FVP EQB	Cu	0.02	ppm (mg/Kg)	1.9	219	31.47	
		Pb	0.09	ppm (mg/Kg)	2	81	23.65	
		Ni	0.01	ppm (mg/Kg)	2.8	30.3	13.89	
		Bis(2-ethylhexyl)phthalate	43	ppb (ug/Kg)	40 U	830 UJ	NA	
CSDS	CSDS CSB92 ACB <sup>1</sup>	Cu	0.03	ppm (mg/Kg)	1.9	219	31.47	
		Ni	0.004	ppm (mg/Kg)	2.8	30.3	13.89	
		Bis(2-ethylhexyl)phthalate	5	ppb (ug/Kg)	40 U	830 UJ	NA	
		Benzo(a)anthracene	0.9	ppb (ug/Kg)	4 U	700	79.79	
		Chrysene	0.6	ppb (ug/Kg)	4 U	780	84.69	
		Benzo(b)fluoranthene	0.7	ppb (ug/Kg)	4 U	780	80.7	
		Benzo(k)fluoranthene	0.5	ppb (ug/Kg)	4 U	700	73.35	
		Benzo(a)pyrene	0.6	ppb (ug/Kg)	4 U	830	92.43	
		Indeno(1,2,3-cd)pyrene	0.6	ppb (ug/Kg)	4 U	660	69.02	
		Dibenzo(a,h)anthracene	0.6	ppb (ug/Kg)	4 U	120	17.28	
		Benzo(ghi)perylene	0.6	ppb (ug/Kg)	4 U	530	62.14	
		1,2,3,4,6,7,8-HpCDF	0.06	pptr (ng/Kg)	0.18 U	260	31.65	
		1,2,3,4,6,7,8-HpCDD	0.20	pptr (ng/Kg)	0.79	280	81.26	
		OCDF	0.11	pptr (ng/Kg)	0.35	300	74.09	
		OCDD	1.40	pptr (ng/Kg)	7.3	2600	830.66	
		CSDS CSB92 EQB <sup>2</sup>	Cu	0.02	ppm (mg/Kg)	1.9	219	31.47
			Pb	0.01	ppm (mg/Kg)	2	81	23.65
			Ni	0.09	ppm (mg/Kg)	2.8	30.3	13.89
			Bis(2-ethylhexyl)phthalate	40	ppb (ug/Kg)	40 U	830 UJ	NA

<sup>1</sup>Non Target Analytes were also quantified in the blank as Total HpCDF (0.13 pptr) and Total HpCDD (0.80 pptr).

<sup>2</sup>Non Target Analytes were also quantified in the blank as total TCDF (0.26 pptr), Total HxCDF(0.06 pptr), and Total HxCDD (0.06 pptr).

N/A: Phthalate was not detected above reporting limits; mean program values are not calculated.

## 4.0 RESULTS

Data summaries are provided in the tables that follow. Grainsize, TOC, PAHs, PCB congeners, bis(2-ethylhexyl)phthalate, metals, dioxins/furans, pesticides, tributyltin, and radiochemical parameters are provided in Table 4-1. The metals data have also been normalized to aluminum and iron (Table 4-2) so that changes in metal concentrations can be examined independent of those attributable to mineralogy differences.

One common model used to assess bioavailable metals in anoxic sediments involves examination of sulfide mineralogy (an effective metal-binding mineral) with respect to simultaneously extracted metals (Di Toro et al. 1992). If acid extractable sulfide exists in concentrations greater than toxic metals extracted under the same conditions, data users can be confident that the metals will form highly insoluble sulfide species and be unavailable to the resident biology. For this comparison, these data are provided in molar units (Table 4-1).

Selected parameters have been further summarized in graphical form to aid data users. Figures 4-1 and 4-2 present the composite grainsize and TOC results obtained from the February survey. Detailed grainsize information including particle size curves and specific gravity data are provided in Appendix E.

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS 1KW LIS01CL1KWC1 N Far Field	CLIS 1KW LIS01CL1KWC3 N Far Field	CLIS 1KW LIS01CL1KWC5 N Far Field	CLIS 1KW LIS01CL1KWCP SC Far Field	CLIS 25W LIS01CL25WC1 N Reference	CLIS 25W LIS01CL25WC3 N Reference	
Analyte Group - Analyte Name	Units						
% Fines	%	73.00	90.00	92.00	88.00	94.00	93.00
% Water	%	122.39	130.51	156.35	147.21	92.36	95.58
% TOC	%	1.9	1.9	1.95	1.95	1.9	2.3
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	16000	14000	12600	13500	16200	17200
arsenic	ppm dry	7.4 J	6.5 J	6.6 J	6.2 J	6.9 J	6.7 J
beryllium	ppm dry	0.63	0.57	0.63	0.52	0.65 J	0.59 J
cadmium	ppm dry	0.25 J	0.19 J	0.14 J	0.2 J	0.16 J	0.17 J
chromium	ppm dry	68.4	61.2	58.7	54.4	56.2 J	53.7 J
copper	ppm dry	57	52.2	45.6	49.3	55.0	53.7
iron	ppm dry	26400	24900	23100	23500	28600	29100
lead	ppm dry	38.2 J	34.3 J	27.2 J	33 J	32.9 J	32.8 J
mercury	ppm dry	0.13 J	0.12 J	0.13 J	0.11 J	0.14 J	0.16 J
nickel	ppm dry	24.4	22.9	21.1	20	24.6	23.3
selenium	ppm dry	0.28 J	0.24 J	0.33 J	0.25 J	0.43 J	0.37 J
silver	ppm dry	0.81	0.71	0.59	0.62	0.73	0.75
zinc	ppm dry	118 J	108 J	98.5 J	99.6 J	121	119
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	5.59E+00 J	1.41E+00 J	1.04E+00 J	7.00E-01 J	7.47E-01 J	4.47E-01 J
SEM cadmium	umol/g dry	2.94E-03 UJ	3.20E-03 UJ	2.49E-03 UJ	2.85E-03 UJ	1.25E-02 J	2.67E-03 JM
SEM copper	umol/g dry	4.56E-01 EBJ	4.47E-01 EBJ	4.82E-01 EBJ	4.31E-01 EBJ	5.65E-01 EBJ	4.74E-01 EBJ
SEM lead	umol/g dry	1.83E-01 EBJ	1.64E-01 EBJ	1.58E-01 EBJ	1.43E-01 EBJ	1.61E-01 UJ	1.40E-01 EBJ
SEM nickel	umol/g dry	8.69E-02 UJ	8.86E-02 UJ	1.07E-01 UJ	1.01E-01 UJ	1.09E-01 UJ	1.43E-01 EBJ
SEM silver	umol/g dry	4.08E-03 UJ	3.15E-03 UJ	5.01E-03 UJ	4.54E-03 UJ	4.82E-03 UJ	3.62E-03 UJ
SEM zinc	umol/g dry	1.33E+00 J	1.32E+00 J	1.31E+00 J	1.04E+00 J	1.22E+00 J	1.06E+00 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	35 U	36 U	35 U	35 U	26 U	26 U
1-methylphenanthrene	ppb dry	10	8	7	12	13	9
2,6-dimethylnaphthalene	ppb dry	29 U	30 U	29 U	29 U	28 U	28 U
2-methylnaphthalene	ppb dry	31 U	32 U	31 U	31 U	30 U	30 U
acenaphthene+	ppb dry	34 U	35 U	34 U	34 U	30 U	30 U
acenaphthylene+	ppb dry	20	15	15	24	28	25
anthracene+	ppb dry	26	20	32	32	25	24

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS 1KW LIS01CL1KWC1 N Far Field	CLIS 1KW LIS01CL1KWC3 N Far Field	CLIS 1KW LIS01CL1KWC5 N Far Field	CLIS 1KW LIS01CL1KWCP SC Far Field	CLIS 25W LIS01CL25WC1 N Reference	CLIS 25W LIS01CL25WC3 N Reference	
Analyte Group - Analyte Name	Units						
benzo(a)anthracene+	72	62	55	83	56	56	
benzo(a)pyrene+	83	69	61	96	83 J	86 J	
benzo(b)fluoranthene+	75	59	55	93	77	82	
benzo(e)pyrene	59	48	43	71	56	59	
benzo(g,h,i)perylene+	56	37	42	65	69 J	81	
benzo(k)fluoranthene+	63	63	58	85	65 J	63 J	
biphenyl	31 U	32 U	31 U	31 U	27 U	27 U	
chrysene+	82	71	67	97	64	63	
dibenz[a,h]anthracene+	8 JM	7 JM	7 JM	10 JM	12	12	
fluoranthene+	110	96	78	130	78 J	77 J	
fluorene+	42 U	42 U	42 U	42 U	23 U	23 U	
indeno[1,2,3-cd]pyrene+	58	50	45	73	69 J	72	
naphthalene+	15	21 J	14 J	15 J	16 JM	19 JM	
perylene	21	17	16	26	21	23	
phenanthrene+	45	43	32	60	48	44	
pyrene+	130	100	83	140	86 J	88 J	
Total PAH <sup>1</sup>	843	713	644	1003	776	792	
<b>BIS(2-ETHYLHEXYL)PHthalate, ppb dry (ug/kg)</b>							
bis(2-ethylhexyl)phthalate	70 U	99 U	88 U	89 U	76 UJ	120 U	
<b>PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 8*	15.8 U	16.1 U	15.9 U	15.9 U	0.7 U	0.7 U	
bz 18*	4.8 U	4.9 U	4.9 U	4.9 U	2.6 U	2.7 U	
bz 28*	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	
bz 44*	4.7 U	4.8 U	4.7 U	4.7 U	0.7 U	0.7 U	
bz 49	1.1 JM	4.2 U	4.2 U	4.2 U	1.7 J	0.7 U	
bz 52*	6.3 U	6.4 U	6.3 U	6.3 U	0.7 U	0.7 U	
bz 66*	6.7 U	6.8 U	6.8 U	6.8 U	0.7 U	0.7 U	
bz 87	6.6 U	6.7 U	6.7 U	6.7 U	0.7 U	0.7 U	
bz 101*	12.9 U	13.2 U	13.0 U	1.5 JM	0.7 U	0.7 U	
bz 105*	3.5 U	3.6 U	3.5 U	3.5 U	0.7 U	0.7 U	
bz 118*	6.7 U	6.8 U	6.8 U	1.5 JM	0.7 U	0.7 U	
bz 128*	2.6 U	2.6 U	2.6 U	2.6 U	3.2 U	3.3 U	
bz 138*	6.3 UJ	6.4 UJ	6.3 UJ	1.4 JM	0.7 UJ	1.0 J	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation		CLIS 1KW LIS01CL1KWC1 N Far Field	CLIS 1KW LIS01CL1KWC3 N Far Field	CLIS 1KW LIS01CL1KWC5 N Far Field	CLIS 1KW LIS01CL1KWCP SC Far Field	CLIS 25W LIS01CL25WC1 N Reference	CLIS 25W LIS01CL25WC3 N Reference
Analyte Group - Analyte Name	Units						
bz 153*	ppb dry	5.3 UJ	5.4 U	5.3 U	1.3 JM	1.2 J	R
bz 170*	ppb dry	2.0 UJ	2.0 U	2.0 U	2.0 U	11.2 UJ	11.3 UJ
bz 180*	ppb dry	4.6 U	4.7 U	4.6 U	3.2 J	0.7 U	2.4
bz 183	ppb dry	3.0 U	3.0 U	3.0 U	3.0 U	6.5 U	6.5 U
bz 184	ppb dry	2.3 U	2.4 U	2.4 U	2.4 U	2.8 U	2.9 U
bz 187*	ppb dry	5.7 U	5.8 U	5.7 U	0.90 JM	0.7 U	1.0
bz 195*	ppb dry	5.5 U	5.6 U	5.6 U	5.6 U	R	R
bz 206*	ppb dry	2.8 U	2.8 U	2.8 U	2.8 U	R	R
bz 209*	ppb dry	2.5 U	2.5 U	2.5 U	1.2 J	1.6 J	1.3 J
Total PCBs <sup>2</sup>	ppb dry	2.2	ND	ND	22	9	11.4
<b>PESTICIDES, ppb dry (ug/kg)</b>							
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	ppb dry	7.4 U	7.5 U	7.4 U	7.4 U	0.7 U	3.7 U
2,4'-DDD	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	7.0 U	7.0 U
2,4'-DDE	ppb dry	7.2 U	7.3 U	7.2 U	7.2 U	5.9 U	5.9 U
2,4'-DDT	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
4,4'-DDD	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
4,4'-DDE	ppb dry	25.7 U	26.1 U	25.8 U	1.60 JM	1.2	1.1
4,4'-DDT	ppb dry	20.1 U	20.4 U	20.2 U	20.2 U	311.3 UJ	0.8 JM
total DDT	ppb dry	ND	ND	ND	1.6	1.2	1.9
aldrin	ppb dry	30.5 U	31.0 U	30.7 U	30.7 U	12.4 U	12.5 U
alpha-bhc	ppb dry	7.8 U	7.9 U	7.8 U	7.8 U	8.3 U	8.4 U
alpha-chlordane	ppb dry	6.9 U	7.0 U	6.9 U	6.9 U	0.7 U	0.7 U
beta-bhc	ppb dry	5.9 U	6.0 U	5.9 U	5.9 U	0.7 U	0.7 U
delta-bhc	ppb dry	5.7 U	5.8 U	5.7 U	5.7 U	13.6 U	13.7 U
dieldrin	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	5.1 U	5.2 U
endosulfan i	ppb dry	7.3 U	7.4 U	7.4 U	7.4 U	0.7 U	0.7 U
endosulfan ii	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
endosulfan sulfate	ppb dry	6.2 U	6.3 U	6.2 U	6.2 U	0.7 U	0.7 U
total endosulfans	ppb dry	ND	ND	ND	ND	ND	ND
endrin	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
gamma-bhc	ppb dry	7.9 U	7.9 U	7.8 U	7.8 U	0.7 U	0.7 U
gamma-chlordane	ppb dry	6.0 U	6.1 U	6.1 U	6.1 U	6.4 U	6.4 U
heptachlor	ppb dry	10.2 U	10.4 U	10.3 U	10.3 U	0.7 U	0.7 U

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Analyte Group - Analyte Name	Units					
heptachlor epoxide	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
toxaphene (camphechlor)	72.3 U	73.5 U	72.7 U	72.7 U	171.9 U	173.4 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>						
2,3,7,8-tcdf (db225)	14 I	8.2	9.0	13 UI	19 UI	17 UI
2,3,7,8-cl4-dibenzo-p-dioxin	0.49	0.41	0.46	0.34	0.26	0.46 UJ
2,3,4,7,8-cl5-dibenzofuran	4.0	3.7	4.0	3.2	3.1	3.6 J
2,3,4,6,7,8-cl6-dibenzofuran	4.9	4.3	4.6	3.5	3.6	4.2 J
1,2,3,7,8-cl5-dibenzofuran	3.2	2.8	3.0	2.4	3.2	3.2 J
1,2,3,7,8-cl5-dibenzo-p-dioxin	1.4	1.1	1.1	0.96 B	0.98	1.1 J
1,2,3,7,8,9-cl6-dibenzofuran	0.16	0.12	0.15	0.14	0.12	0.51
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	6.2 J	5.6 J	5.9 J	4.7 J	4.5 J	5.2 J
1,2,3,6,7,8-cl6-dibenzofuran	2.8	2.5	2.7	2.1	2.1	2.4 J
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	6.5	5.5	5.7	4.6	4.3	4.9 J
1,2,3,4,7,8-cl6-dibenzofuran	6.1	5.2	5.7	4.4	4.8	5.4 J
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	1.8	1.5	1.6	1.2	1.3	1.4 J
1,2,3,4,7,8,9-cl7-dibenzofuran	1.8	1.7	1.9	1.4	1.6	1.8 J
1,2,3,4,6,7,8-cl7-dibenzofuran	53 EB	50 EB	55 EB	40 EB	44 EB	49 JEB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	150 EB	140 EB	150 EB	110 EB	120 EB	130 JEB
octachlorodibenzo-p-dioxin	1400 EB	1300 EB	1500 EB	1100 EB	1200 EB	1400 JEB
octachlorodibenzofuran	150 EB	140 EB	150 EB	110 EB	130 EB	150 JEB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 77	1.5	1.2	1.2	0.95	0.92	1.1
bz 114	0.032 U	0.0040 U	0.029 U	0.0010 U	0.019 U	0.0060 U
bz 123	0.034 U	0.0030 U	0.031 U	0.019 U	0.025 U	0.0060 U
bz 126	0.23	0.12	0.15	0.11	0.13	0.11
bz 156/157	0.31	0.24	0.28	0.26	0.22	0.21
bz 167	0.15	0.11	0.13	0.11	0.11	0.099
bz 169	0.1	0.058	0.068	0.054 U	0.065	0.054 U
bz 189	0.04 U	0.032 U	0.034 U	0.028 U	0.028 U	0.032 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>						
TBT - TBT (ppb dry)	1.9	2.8	2.1	1.4 J	1.3	1.3

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS 1KW LIS01CL1KWC1 N Far Field	CLIS 1KW LIS01CL1KWC3 N Far Field	CLIS 1KW LIS01CL1KWC5 N Far Field	CLIS 1KW LIS01CL1KWCP SC Far Field	CLIS 25W LIS01CL25WC1 N Reference	CLIS 25W LIS01CL25WC3 N Reference	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.14 U	0.15 U	0.07 U	0.24	-0.15 U	-0.05 U
cobalt 60	pCi/g dry	-0.0002 U	0.04 U	0.05 U	-0.03 U	-0.08 U	-0.004 U
strontium 90	pCi/g dry	-0.04 U	0.15 U	0.48 U	-0.04 U	0.12 U	0.04 U
uranium 234	pCi/g dry	0.66 J	0.73 J	0.98 U	0.7 U	0.81 J	0.93 J
uranium 235	pCi/g dry	0.091 U	0.05 U	-0.017 U	0.031 U	0.024 U	0.12 U
uranium 238	pCi/g dry	0.99 J	0.63 J	0.83 J	0.96 J	0.81 J	0.74 J
total uranium	pCi/g dry	1.65	2.72	0.83	0.96	1.62	1.67

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation		CLIS 25W LIS01CL25WC5 N Reference	CLIS 25W LIS01CL25WCP SC Reference	CLIS 2KW LIS01CL2KWC1 N Far Field	CLIS 2KW LIS01CL2KWC3 N Far Field	CLIS 2KW LIS01CL2KWC5 N Far Field	CLIS 2KW LIS01CL2KWC6 SC Far Field
Analyte Group - Analyte Name	Units						
% Fines	%	94.00	93.00	93.00	90.00	81.00	92.00
% Water	%	105.46	112.63	154.81	137.74	143.09	143.53
% TOC	%	2.25	2.2	1.9	1.85	1.75	1.8
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	16800	17700	15800	14900	16500	15800
arsenic	ppm dry	6.0 J	6.4 J	7.4 J	6.9 J	7.3 J	6.0 J
beryllium	ppm dry	0.56 J	0.58 J	0.70	0.70	0.63	0.52
cadmium	ppm dry	0.14 J	0.14 J	0.15 J	0.18 J	0.17 J	0.14 J
chromium	ppm dry	51.1 J	57.6 J	68.9	65.4	66.4	55.7
copper	ppm dry	50.8	51.9 J	53.3	49.6	56	46.9
iron	ppm dry	28900	29300	27200	25600	28400	25800
lead	ppm dry	30.9 J	31.3 J	35.1 J	32.3 J	37.8 J	31.9 J
mercury	ppm dry	0.14 J	0.14 J	0.12 J	0.12 J	0.12 J	0.11 J
nickel	ppm dry	22.1	22.3 J	24.2	24.1	24.7	20.3
selenium	ppm dry	0.38 J	0.37 J	0.35 J	0.33 J	0.32 J	0.29 J
silver	ppm dry	0.67	0.71	0.65	0.61	0.67	0.64
zinc	ppm dry	111	109 J	117 J	108 J	117 J	99.6 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	4.44E+00 J	2.71E+00 J	4.06E-01 J	3.97E+00 J	6.75E+00 J	2.99E+00 J
SEM cadmium	umol/g dry	3.74E-03 JM	2.22E-03 JM	2.05E-03 UJ	3.47E-03 UJ	2.85E-03 UJ	2.94E-03 UJ
SEM copper	umol/g dry	3.82E-01 EBJ	4.53E-01 EBJ	5.68E-01 EBJ	3.89E-01 EBJ	4.63E-01 EBJ	3.95E-01 EBJ
SEM lead	umol/g dry	1.65E-01 EBJ	1.51E-01 EBJ	1.81E-01 EBJ	1.57E-01 EBJ	1.88E-01 EBJ	1.52E-01 EBJ
SEM nickel	umol/g dry	2.21E-01 EBJ	7.33E-02 UJ	1.07E-01 UJ	7.50E-02 UJ	1.01E-01 UJ	8.86E-02 UJ
SEM silver	umol/g dry	3.99E-03 UJ	3.34E-03 UJ	3.62E-03 UJ	2.97E-03 UJ	4.36E-03 UJ	3.80E-03 UJ
SEM zinc	umol/g dry	1.39E+00 J	1.11E+00 J	1.27E+00 J	1.12E+00 J	1.41E+00 J	1.18E+00 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	26 U	26 U	35 U	36 U	35 U	35 U
1-methylphenanthrene	ppb dry	18	19	12	7 U	11	8
2,6-dimethylnaphthalene	ppb dry	7 JM	7 JM	29 U	30 U	29 U	29 U
2-methylnaphthalene	ppb dry	8 JM	9 JM	31 U	31 U	31 U	31 U
acenaphthene+	ppb dry	7 JM	30 U	34 U	35 U	34 U	34 U
acenaphthylene+	ppb dry	53	49	27	12	19	15
anthracene+	ppb dry	51	49	31	16	24	20

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS 25W LIS01CL25W5 N Reference	CLIS 25W LIS01CL25WCP SC Reference	CLIS 2KW LIS01CL2KWC1 N Far Field	CLIS 2KW LIS01CL2KWC3 N Far Field	CLIS 2KW LIS01CL2KWC5 N Far Field	CLIS 2KW LIS01CL2KWC6 N Far Field
Analyte Group - Analyte Name	Units					
benzo(a)anthracene+	110	100	74	41	67	53
benzo(a)pyrene+	160 J	160 J	94	51	80	67
benzo(b)fluoranthene+	150	140	88	51	75	62
benzo(e)pyrene	110	110	70	38	61	50
benzo(g,h,i)perylene+	140	140	67	35	55	47
benzo(k)fluoranthene+	120 J	120 J	80	41	67	57
biphenyl	27 U	27 U	31 U	31 U	31 U	31 U
chrysene+	120	110	89	51	82	63
dibenz[a,h]anthracene+	24	25	11 JM	7 U	9 JM	7 JM
fluoranthene+	140 J	140 J	110	69	100	82
fluorene+	7 JM	23 U	42 U	42 U	42 U	42 U
indeno[1,2,3-cd]pyrene+	140	140	74	37	60	51
naphthalene+	23 JM	27 JM	16 J	13 J	13 J	16 J
perylene	43	42	25	13	20	18
phenanthrene+	86	88	59	34	46	41
pyrene+	150 J	150 J	130	77	110	90
Total PAH <sup>1</sup>	1481	1438	949	528	808	671
<b>BIS(2-ETHYLHEXYL)PHthalate, ppb dry (ug/kg)</b>						
bis(2-ethylhexyl)phthalate	66 U	160 U	120 U	90 U	110 U	94 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 8*	0.7 U	0.7 U	15.7 U	16.0 U	16.0 U	15.9 U
bz 18*	2.6 U	2.6 U	4.8 U	4.9 U	4.9 U	4.9 U
bz 28*	0.9	1.1	0.7 U	0.7 U	0.7 U	0.7 U
bz 44*	0.7 J	0.7 U	4.7 U	4.8 U	4.8 U	4.7 U
bz 49	0.7 J	0.7 U	4.2 U	4.2 U	4.2 U	4.2 U
bz 52*	2.3 J	2.2 J	6.3 U	6.4 U	6.4 U	6.3 U
bz 66*	0.7 U	0.7 U	6.7 U	6.8 U	6.8 U	6.8 U
bz 87	0.7 U	0.7 J	6.6 U	6.7 U	6.7 U	6.7 U
bz 101*	1.9	2.2	12.9 U	13.1 U	13.1 U	13.0 U
bz 105*	0.7 U	0.7 U	3.5 U	3.6 U	3.6 U	3.5 U
bz 118*	2.2 J	2.7 J	1.2 JM	6.8 U	1.0 JM	0.90 JM
bz 128*	3.2 U	3.2 U	2.6 U	2.6 U	2.6 U	2.6 U
bz 138*	1.9 J	1.7 J	0.90 JM	6.4 UJ	0.90 JM	0.8 JM

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS 25W LIS01CL25WC5 N Reference	CLIS 25W LIS01CL25WCP SC Reference	CLIS 2KW LIS01CL2KWC1 N Far Field	CLIS 2KW LIS01CL2KWC3 N Far Field	CLIS 2KW LIS01CL2KWC5 N Far Field	CLIS 2KW LIS01CL2KWC6 SC Far Field
Analyte Group - Analyte Name	Units					
bz 153*	R	R	1.1 JM	5.4 U	5.4 U	5.3 U
bz 170*	11.0 UJ	11.1 U	2.0 U	2.0 U	2.0 U	2.0 U
bz 180*	5.2 J	4.8	2.7 J	1.3 JM	2.7 J	2.1 J
bz 183	6.4 U	6.4 U	3.0 U	3.0 U	3.0 U	3.0 U
bz 184	2.8 U	2.8 U	2.3 U	2.4 U	2.4 U	2.4 U
bz 187*	2.0	2.1	1.0 JM	5.8 U	0.8 JM	0.7 JM
bz 195*	R	R	5.5 U	5.6 U	5.6 U	5.6 U
bz 206*	0.7 J	0.7 J	2.8 U	2.8 U	2.8 U	2.8 U
bz 209*	2.4 J	2.5 J	1.4 J	2.5 U	1.2 J	2.5 U
Total PCBs <sup>2</sup>	41.8	41.4	16.6	2.6	13.2	9
<b>PESTICIDES, ppb dry (ug/kg)</b>						
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	0.8 U	5.6 U	7.4 U	7.5 U	7.5 U	7.4 U
2,4'-DDD	6.8 U	6.9 U	0.7 U	0.7 U	0.7 U	0.7 U
2,4'-DDE	5.8 U	5.8 U	7.2 U	7.3 U	7.3 U	7.2 U
2,4'-DDT	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
4,4'-DDD	2.3 J	1.1 J	0.7 U	0.7 U	0.7 U	0.7 U
4,4'-DDE	1.5	1.9	1.3 JM	26.0 U	1.2 JM	25.8 U
4,4'-DDT	305.7 UJ	307.8 U	20.0 U	20.4 U	20.3 U	20.2 U
total DDT	3.8	3	1.3	ND	1.2	ND
aldrin	12.2 U	12.3 U	30.4 U	30.9 U	30.8 U	30.7 U
alpha-bhc	8.1 U	8.2 U	7.8 U	7.9 U	7.9 U	7.8 U
alpha-chlordane	0.7 U	0.7 U	6.9 U	7.0 U	7.0 U	6.9 U
beta-bhc	0.7 U	0.7 U	5.8 U	5.9 U	5.9 U	5.9 U
delta-bhc	13.4 U	13.4 U	5.6 U	5.7 U	5.7 U	5.7 U
dieldrin	5.0 J	5.1 U	0.7 U	0.7 U	0.7 U	0.7 U
endosulfan i	0.7 U	0.7 U	7.3 U	7.4 U	7.4 U	7.4 U
endosulfan ii	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
endosulfan sulfate	0.7 U	0.7 U	6.1 U	6.2 U	6.2 U	6.2 U
total endosulfans	ND	ND	ND	ND	ND	ND
endrin	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
gamma-bhc	0.7 U	0.7 U	7.8 U	7.9 U	7.9 U	7.8 U
gamma-chlordane	6.3 U	6.3 U	6.0 U	6.1 U	6.1 U	6.1 U
heptachlor	0.7 U	0.7 U	10.2 U	10.4 U	10.3 U	10.3 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS 25W LIS01CL25WC5 N Reference	CLIS 25W LIS01CL25WCP SC Reference	CLIS 2KW LIS01CL2KWC1 N Far Field	CLIS 2KW LIS01CL2KWC3 N Far Field	CLIS 2KW LIS01CL2KWC5 N Far Field	CLIS 2KW LIS01CL2KWC6 SC Far Field
Analyte Group - Analyte Name	Units					
heptachlor epoxide	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
toxaphene (camphechlor)	168.8 U	170.0 U	72.0 U	73.3 U	73.1 U	72.7 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>						
2,3,7,8-tcdf (db225)	17 UI	14 UI	26 UI	21 UI	12 UI	31 UI
2,3,7,8-cl4-dibenzo-p-dioxin	0.60 J	0.15 UJ	0.29 U	0.49	0.24 UJ	0.14 U
2,3,4,7,8-cl5-dibenzofuran	3.6 J	3.7 J	3.4	3.2	1.7 J	4.2
2,3,4,6,7,8-cl6-dibenzofuran	4.2 J	3.8 J	3.6	3.5	2.1 J	4.5
1,2,3,7,8-cl5-dibenzofuran	3.2 J	2.7 J	3.9	3.3	1.3 J	4.2
1,2,3,7,8-cl5-dibenzo-p-dioxin	1.1 J	0.89 J	0.73	0.89	0.74 J	1.2
1,2,3,7,8,9-cl6-dibenzofuran	0.62	0.12U	0.43	0.51	0.21U	0.62
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	5.4 J	4.8 J	4.7 J	4.7 J	2.9 J	5.8 J
1,2,3,6,7,8-cl6-dibenzofuran	2.4 J	2.3 J	2.1	2.1	1.3 J	2.4
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	5.3 J	5.1 J	4.6	4.4	2.6 J	5.8
1,2,3,4,7,8-cl6-dibenzofuran	5.2 J	4.9 J	5.4	4.9	2.9 J	6.3
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	1.6 J	1.3 J	1.2	1.3	0.83 J	1.6
1,2,3,4,7,8,9-cl7-dibenzofuran	1.9 J	1.7 J	0.12 U	1.6	0.97 J	2.3
1,2,3,4,6,7,8-cl7-dibenzofuran	51 JEB	47 JEB	43 EB	44 EB	21 JEB	54 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	140 JEB	120 JEB	110 EB	120 EB	56 JEB	140 EB
octachlorodibenzo-p-dioxin	1400 JEB	1200 JEB	1200 EB	1300 EB	600 JEB	1400 EB
octachlorodibenzofuran	150 JEB	130 JEB	120 EB	130 EB	58 JEB	150 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 77	0.94	0.92	0.78	1.0	0.38	1.1
bz 114	0.037 U	0.0090 U	0.024 U	0.019 U	0.011 U	0.033 U
bz 123	0.035 U	0.0090 U	0.023 U	0.022	0.011 U	0.032 U
bz 126	0.093	0.11	0.095	0.15	0.052	0.15
bz 156/157	0.23	0.24	0.25	0.24	0.13	0.29
bz 167	0.11	0.11	0.12	0.11	0.055 U	0.14
bz 169	0.047 U	0.053 U	0.048 U	0.061	0.016 U	0.059
bz 189	0.030 U	0.032 U	0.030 U	0.030 U	0.016 U	0.034 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>						
TBT - TBT (ppb dry)	1.5	1.3	1.9	0.95	2.4	1.6 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS 25W LIS01CL25WC5 N Reference	CLIS 25W LIS01CL25WCP SC Reference	CLIS 2KW LIS01CL2KWC1 N Far Field	CLIS 2KW LIS01CL2KWC3 N Far Field	CLIS 2KW LIS01CL2KWC5 N Far Field	CLIS 2KW LIS01CL2KWC1 SC Far Field	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.04 U	-0.02 U	0.11 U	-0.07 U	0.03 U	-0.05 U
cobalt 60	pCi/g dry	-0.0006 U	-0.112 U	-0.07 U	0.15 U	0.04 U	-0.07 U
strontium 90	pCi/g dry	0.37 U	0.28 U	0.58 U	0.89 JEB	0.12 U	0.08 U
uranium 234	pCi/g dry	0.78 J	0.62 J	1.05	0.98 J	0.88 J	0.82 J
uranium 235	pCi/g dry	0.032 U	0.018 U	0.063 J	0.063 U	0.035 U	0.036 U
uranium 238	pCi/g dry	0.87 J	0.87 J	0.93 J	1.03	1.18	0.82 J
total uranium	pCi/g dry	1.65	1.49	2.043	2.01	2.06	1.64

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS FVP LIS01CLFVPC1 N Historic	CLIS FVP LIS01CLFVPC3 N Historic	CLIS FVP LIS01CLFVPC5 N Historic	CLIS FVP LIS01CLFVPCP SC Historic	CLIS N74 LIS01CLN74C1 N Historic	CLIS N74 LIS01CLN74C3 N Historic	
Analyte Group - Analyte Name	Units						
% Fines	%	73.00	85.00	89.00	84.00	54.00	18.00
% Water	%	88.10	92.18	111.81	107.24	79.39	35.84
% TOC	%	1.65	2.05	1.95	1.95	1.3	0.615
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	13800	14700	14700	15200	10800	4770
arsenic	ppm dry	5.8 J	5.7 J	6.0 J	6.2 J	4.8 J	2.3 J
beryllium	ppm dry	0.45 J	0.47 J	0.54 J	0.51 J	0.39 J	0.16 J
cadmium	ppm dry	1.5	0.93	0.29 J	0.69	0.47	0.060 J
chromium	ppm dry	146 J	100 J	64.6 J	92.7 J	42.6 J	13.2 J
copper	ppm dry	219	140	58.3	93.6	114	14.3
iron	ppm dry	22900	25500	25500	25800	18800	9390
lead	ppm dry	55.1 J	38.1 J	31.2 J	36.3 J	27.9 J	10.9 J
mercury	ppm dry	0.22 J	0.19 J	0.33 J	0.17 J	0.13 J	0.043 J
nickel	ppm dry	25.8	23.3	23.3	24.1	16.5	6.1
selenium	ppm dry	0.30 J	0.29 J	0.35 J	0.34 J	0.29 J	0.12 J
silver	ppm dry	1.7	1.2	0.86	1.1	0.66	0.19
zinc	ppm dry	152	126	110	129	90.7	32.9
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	4.09E+01 J	2.15E+01 J	1.97E+01 J	8.19E+00 J	5.19E-01 J	1.65E-01 UJ
SEM cadmium	umol/g dry	5.07E-03 JM	6.05E-03 JM	4.27E-03 JM	4.80E-03 JM	5.60E-03 JM	1.51E-03 JM
SEM copper	umol/g dry	2.52E-01 EBJ	5.07E-01 EBJ	4.25E-01 EBJ	2.06E-01 EBJ	4.30E-01 EBJ	1.18E-01 EBJ
SEM lead	umol/g dry	1.32E-01 EBJ	1.46E-01 EBJ	1.63E-01 EBJ	1.61E-01 EBJ	1.08E-01 EBJ	4.92E-02 EBJM
SEM nickel	umol/g dry	7.16E-02 UJ	6.30E-02 UJ	9.37E-02 UJ	7.84E-02 UJ	9.71E-02 UJ	2.90E-02 UJ
SEM silver	umol/g dry	3.52E-03 UJ	3.06E-03 UJ	6.03E-03 J	3.34E-03 UJ	3.52E-03 UJ	2.13E-03 UJ
SEM zinc	umol/g dry	1.03E+00 J	1.08E+00 J	1.15E+00 J	1.14E+00 J	8.58E-01 J	3.38E-01 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	26 U	26 U	22 U	7 JM	22 U	19 U
1-methylphenanthrene	ppb dry	28	34	13	29	13	5
2,6-dimethylnaphthalene	ppb dry	12 JM	9 JM	24 U	11 JM	24 U	20 U
2-methylnaphthalene	ppb dry	11 JM	7 JM	26 U	9 JM	26 U	21 U
acenaphthene+	ppb dry	8 JM	8 JM	26 U	8 JM	7 JM	21 U
acenaphthylene+	ppb dry	91	45	32	56	21	9
anthracene+	ppb dry	83	53	32	54	40	19

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS FVP LIS01CLFVPC1 N Historic	CLIS FVP LIS01CLFVPC3 N Historic	CLIS FVP LIS01CLFVPC5 N Historic	CLIS FVP LIS01CLFVPCP SC Historic	CLIS N74 LIS01CLN74C1 N Historic	CLIS N74 LIS01CLN74C3 N Historic	
Analyte Group - Analyte Name	Units						
benzo(a)anthracene+	ppb dry	190	110	71	130	76	33
benzo(a)pyrene+	ppb dry	220 J	130 J	100 J	160 J	91 J	37 J
benzo(b)fluoranthene+	ppb dry	200	100	92	140	96	35
benzo(e)pyrene	ppb dry	160	83	67	110	63	26
benzo(g,h,i)perylene+	ppb dry	180	92	81	130	70	30
benzo(k)fluoranthene+	ppb dry	170 J	93 J	78 J	120 J	70 J	34 J
biphenyl	ppb dry	27 U	27 U	23 U	27 U	23 U	19 U
chrysene+	ppb dry	180	120	80	140	88	34
dibenz[a,h]anthracene+	ppb dry	35	18	15	25	12	5
fluoranthene+	ppb dry	200 J	120 J	93 J	150 J	120 J	57 J
fluorene+	ppb dry	7 JM	23 U	20 U	8 JM	7 JM	16 U
indeno[1,2,3-cd]pyrene+	ppb dry	180	89	82	130	69	30
naphthalene+	ppb dry	13 JM	11 JM	11 JM	14 JM	25 JM	23 UJ
perylene	ppb dry	54	29	26	41	29	12
phenanthrene+	ppb dry	130	84	54	110	72	31
pyrene+	ppb dry	320 J	140 J	100 J	180 J	130 J	50 J
Total PAH <sup>1</sup>	ppb dry	2207	1213	921	1555	994	404
<b>BIS(2-ETHYLHEXYL)PHthalate, ppb dry (ug/kg)</b>							
bis(2-ethylhexyl)phthalate	ppb dry	390 U	120 U	84 U	170 U	120 U	41 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 8*	ppb dry	4.3 J	1.9 J	0.7 U	0.7 U	0.7 U	0.5 U
bz 18*	ppb dry	6.5	2.6 U	2.6 U	2.6 U	2.6 U	1.9 U
bz 28*	ppb dry	13 J	2.4	0.7 U	3.4	1.9	0.5 U
bz 44*	ppb dry	12	2.0 J	0.8 J	3.0 J	1.1 J	0.5 U
bz 49	ppb dry	8.7	2.1	3.0 J	4.0 J	2.6	0.5 U
bz 52*	ppb dry	16	3.8	3.8 J	6.1 J	2.0	0.5 U
bz 66*	ppb dry	16	3.9	1.7 J	5.3 J	0.7 U	0.5 U
bz 87	ppb dry	14 J	5.4	0.8 J	6.0 J	0.7 J	0.5 U
bz 101*	ppb dry	18	4.4	2.0	5.9	1.6	0.5 U
bz 105*	ppb dry	13 J	2.8 J	1.0 J	3.5 J	1.0 J	0.5 U
bz 118*	ppb dry	14 J	3.8 J	2.8	5.9 J	1.5 J	0.5 U
bz 128*	ppb dry	4.4 J	1.0 JM	3.2 U	1.3 J	3.2 U	2.3 U
bz 138*	ppb dry	19 J	4.3 J	1.8 J	6.1 J	1.7 J	0.5 UJ

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS FVP LIS01CLFVPC1 N Historic	CLIS FVP LIS01CLFVPC3 N Historic	CLIS FVP LIS01CLFVPC5 N Historic	CLIS FVP LIS01CLFVPCP SC Historic	CLIS N74 LIS01CLN74C1 N Historic	CLIS N74 LIS01CLN74C3 N Historic
Analyte Group - Analyte Name	Units					
bz 153*	9.4 J	R	R	R	R	R
bz 170*	2.7 JM	11.2 UJ	11.0 UJ	1.0 JM	11.0 UJ	8.0 UJ
bz 180*	10 J	3.9 J	2.8	5.5 J	2.3	0.5 U
bz 183	1.4 JM	6.4 U	6.4 U	6.5 U	6.4 U	4.6 U
bz 184	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.0 U
bz 187*	3.6	1.2	0.8 J	2.6	1.1	0.5 U
bz 195*	R	0.7 U	R	R	R	R
bz 206*	1.7 J	0.7 U	R	0.9 J	R	R
bz 209*	2.2 J	1.3 J	1.2 J	2.0 J	0.9 J	0.5 U
Total PCBs <sup>2</sup>	379.8	88.4	45	125	36.8	ND
<b>PESTICIDES, ppb dry (ug/kg)</b>						
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	2.0 U	1.1 U	0.7 U	1.1 U	0.9 U	0.6 U
2,4'-DDD	6.9 U	6.9 U	6.8 U	7.0 U	6.8 U	5.0 U
2,4'-DDE	5.8 U	5.8 U	5.8 U	5.9 U	5.8 U	4.2 U
2,4'-DDT	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
4,4'-DDD	11	4.1	1.3	6.1	0.7 U	0.5 U
4,4'-DDE	5.3	2.2	1.4	2.9	1.2	0.5 U
4,4'-DDT	1.4 JM	310.2 UJ	306.1 UJ	312.2 UJ	306.2 UJ	222.4 UJ
total DDT	17.7	6.3	2.7	9	1.2	ND
aldrin	12.3 U	12.3 U	12.2 U	12.4 U	12.2 U	8.9 U
alpha-bhc	8.2 U	8.3 U	8.1 U	8.3 U	8.1 U	5.9 U
alpha-chlordane	1.7	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
beta-bhc	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
delta-bhc	13.5 U	13.6 U	13.4 U	13.6 U	13.4 U	9.7 U
dieldrin	12 J	5.1 U	5.1 U	5.2 U	5.1 U	3.7 U
endosulfan i	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
endosulfan ii	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
endosulfan sulfate	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
total endosulfans	ND	ND	ND	ND	ND	ND
endrin	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
gamma-bhc	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
gamma-chlordane	2.3 J	6.4 U	6.3 U	0.9 JM	6.3 U	4.6 U
heptachlor	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS FVP LIS01CLFVPC1 N Historic	CLIS FVP LIS01CLFVPC3 N Historic	CLIS FVP LIS01CLFVPC5 N Historic	CLIS FVP LIS01CLFVPCP SC Historic	CLIS N74 LIS01CLN74C1 N Historic	CLIS N74 LIS01CLN74C3 N Historic
Analyte Group - Analyte Name	Units					
heptachlor epoxide	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	0.5 U
toxaphene (camphechlor)	ppb dry	170.9 U	171.13 U	169.0 U	172.4 U	122.8 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>						
2,3,7,8-tcdf (db225)	pptr dry	19	15	11	13	24 UI
2,3,7,8-cl4-dibenzo-p-dioxin	pptr dry	1.4	0.76	0.51	0.83	0.35
2,3,4,7,8-cl5-dibenzofuran	pptr dry	7.0	6.1	4.2	5.5	2.6
2,3,4,6,7,8-cl6-dibenzofuran	pptr dry	8.9	7.0	5.3	7.3	3
1,2,3,7,8-cl5-dibenzofuran	pptr dry	5.0	3.8	3.2	3.8	1.9 J
1,2,3,7,8-cl5-dibenzo-p-dioxin	pptr dry	2.6 J	1.7 J	1.2 J	1.8 J	1.1
1,2,3,7,8,9-cl6-dibenzofuran	pptr dry	0.4	0.21	0.2	0.24	0.1U
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	pptr dry	8.3	7.2	6.3	8.5	5.7 J
1,2,3,6,7,8-cl6-dibenzofuran	pptr dry	6.3	4.5	3.2	4.6	1.8
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	pptr dry	9.0	7.4	6.2	9.3	5
1,2,3,4,7,8-cl6-dibenzofuran	pptr dry	17	12	6.8	11	4.2 J
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	pptr dry	2.2	1.9	1.8	2.4	1.5
1,2,3,4,7,8,9-cl7-dibenzofuran	pptr dry	4.0	2.5	2.0	4.1	2
1,2,3,4,6,7,8-cl7-dibenzofuran	pptr dry	81 EB	66 EB	57 EB	83 EB	37 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	pptr dry	180 EB	150 EB	150 EB	260 EB	120 EB
octachlorodibenzo-p-dioxin	pptr dry	1600 JEB	1400 JEB	1400 JEB	2600 JEB	1100 JEB
octachlorodibenzofuran	pptr dry	170 EB	140 EB	130 EB	250 EB	140 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 77	ppb dry	3.0	1.9	1.9	2.0	1.1
bz 114	ppb dry	0.96	0.41	0.084 U	0.033 U	0.085
bz 123	ppb dry	0.59	0.25	0.059	0.031 U	0.074
bz 126	ppb dry	0.22	0.15	0.23	0.28	0.11
bz 156/157	ppb dry	5.7	2.3	0.75	2.0	0.54
bz 167	ppb dry	1.8	0.77	0.29	0.67	0.21
bz 169	ppb dry	0.070	0.056 U	0.11	0.098	0.043
bz 189	ppb dry	0.23	0.12	0.058 U	0.10	0.056
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>						
TBT - TBT (ppb dry)	ppb dry	5	3.1	2.8	2.8 J	4.1

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS FVP LIS01CLFVPC1 N Historic	CLIS FVP LIS01CLFVPC3 N Historic	CLIS FVP LIS01CLFVPC5 N Historic	CLIS FVP LIS01CLFVPCP SC Historic	CLIS N74 LIS01CLN74C1 N Historic	CLIS N74 LIS01CLN74C3 N Historic	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.05 U	0.08 U	0.01 U	0.12 U	0.099 U	0.034 U
cobalt 60	pCi/g dry	-0.017 U	-0.07 U	0.13 U	-0.05 U	-0.032 U	-0.00006 U
strontium 90	pCi/g dry	0.13 U	0.23 U	0.19 U	-0.2 U	0.002 U	7.7
uranium 234	pCi/g dry	0.88 U	0.98 U	1.28 U	1.18 U	0.81 J	0.56 U
uranium 235	pCi/g dry	0.13 U	0.022 U	0.034 U	0.03 U	0.18 J	-0.009 U
uranium 238	pCi/g dry	0.86 J	0.6 J	1.09	1.08	1.06	0.48 J
total uranium	pCi/g dry	0.86	0.6	1.09	1.08	2.05	0.48

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation		CLIS N74 LIS01CLN74C5 N Historic	CLIS N74 LIS01CLN74CP SC Historic	CLIS N93 LIS01CLN93C1 N Active	CLIS N93 LIS01CLN93C3 N Active	CLIS N93 LIS01CLN93C5 N Active	CLIS N93 LIS01CLN93CP SC Active
Analyte Group - Analyte Name	Units						
% Fines	%	31.00	25.00	80.00	87.00	77.00	83.00
% Water	%	35.84	35.69	111.84	127.09	127.00	116.06
% TOC	%	0.815	0.635	2.05	2.4	2.1	2.2
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	7220	6020	16800	16200	13400	15900
arsenic	ppm dry	3.5 J	3.1 J	7.8 J	7.1 J	7.2 J	7.1 J
beryllium	ppm dry	0.29 J	0.24 J	0.56 J	0.52 J	0.48 J	0.52 J
cadmium	ppm dry	0.095 J	0.10 J	0.71	0.54	0.52	0.56
chromium	ppm dry	22.3 J	19.4 J	89.1 J	77.1 J	73.9 J	77.2 J
copper	ppm dry	21.2	20.6	83.9	73.7	72.4	73.0
iron	ppm dry	13200	11000	29000	28800	25000	28200
lead	ppm dry	17.1 J	14.7 J	46.8 J	44.5 J	42.4 J	43.2 J
mercury	ppm dry	0.061 J	0.050 J	0.21 J	0.20 J	0.19 J	0.20 J
nickel	ppm dry	10.5	9.2	25.0	22.9	21.8	23.1
selenium	ppm dry	0.13 J	0.099 J	0.36 J	0.35 J	0.33 J	0.32 J
silver	ppm dry	0.28	0.26	1.4	1.4	1.2	1.3
zinc	ppm dry	52.9	45.1	150	137	132	136
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	2.41E-01 J	6.00E-01 J	7.56E+00 J	5.72E+01 J	3.56E+01 J	1.69E+01 J
SEM cadmium	umol/g dry	2.22E-03 JM	1.25E-02 UJ	6.67E-03 JM	8.90E-03 JM	5.16E-03 JM	5.69E-03 JM
SEM copper	umol/g dry	2.19E-01 EBJ	1.02E-01 EBJ	6.45E-01 EBJ	4.94E-01 EBJ	3.24E-01 EBJ	4.01E-01 EBJ
SEM lead	umol/g dry	8.20E-02 EBJ	4.87E-02 EBJM	2.10E-01 EBJ	2.40E-01 EBJ	1.78E-01 EBJ	1.78E-01 EBJ
SEM nickel	umol/g dry	6.81E-02 UJ	2.39E-02 UJ	1.23E-01 UJ	2.30E-01 EBJ	8.69E-02 UJ	9.03E-02 UJ
SEM silver	umol/g dry	2.41E-03 UJ	3.15E-03 J	4.08E-03 UJ	6.21E-03 UJ	3.99E-03 UJ	4.08E-03 UJ
SEM zinc	umol/g dry	5.92E-01 J	3.09E-01 J	1.44E+00 J	1.85E+00 J	1.41E+00 J	1.34E+00 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	19	19 U	26 U	26 U	26 U	26 U
1-methylphenanthrene	ppb dry	5	10	16	8	11	10
2,6-dimethylnaphthalene	ppb dry	20	20 U	28 U	28 U	28 U	28 U
2-methylnaphthalene	ppb dry	21	21 U	30 U	30 U	30 U	30 U
acenaphthene+	ppb dry	21 U	16 JM	30 U	30 U	30 U	30 U
acenaphthylene+	ppb dry	10	11	41	25	27	30
anthracene+	ppb dry	12	33	44	26	32	31

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS N74 LIS01CLN74C5 N Historic	CLIS N74 LIS01CLN74CP SC Historic	CLIS N93 LIS01CLN93C1 N Active	CLIS N93 LIS01CLN93C3 N Active	CLIS N93 LIS01CLN93C5 N Active	CLIS N93 LIS01CLN93CP SC Active	
Analyte Group - Analyte Name	Units						
benzo(a)anthracene+	26	80	88	49	59	60	
benzo(a)pyrene+	38 J	56 J	140 J	78 J	90 J	94 J	
benzo(b)fluoranthene+	42	76	140	79	90	110	
benzo(e)pyrene	29	35	100	61	69	72	
benzo(g,h,i)perylene+	36	18	130	77	86	92	
benzo(k)fluoranthene+	28 J	66 J	110 J	71 J	80 J	75 J	
biphenyl	19	19 U	27 U	27 U	27 U	27 U	
chrysene+	31	75	110	61	73	74	
dibenz[a,h]anthracene+	5	10	23	13	14	17	
fluoranthene+	43 J	140 J	150 J	92 J	110 J	110 J	
fluorene+	16 U	11 JM	7 JM	23 U	23 U	23 U	
indeno[1,2,3-cd]pyrene+	33	44	130	72	82	88	
naphthalene+	23 UJ	6 JM	14 JM	32 UJ	13 JM	10 JM	
perylene	12	12	61	36	38	42	
phenanthrene+	25	74	90	49	67	62	
pyrene+	46 J	100 J	170 J	97 J	110 J	110 J	
Total PAH <sup>1</sup>	375	816	1387	789	933	963	
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>							
bis(2-ethylhexyl)phthalate	46 U	88 U	110 U	100 U	110 U	100 U	
<b>PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 8*	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	
bz 18*	2.0 U	2.0 U	2.6 U	2.6 U	2.6 U	2.6 U	
bz 28*	0.5 U	0.5 U	1.8	0.7 U	1.2	0.7 U	
bz 44*	0.5 U	0.5 U	1.5 J	0.7 U	0.7 U	0.7 U	
bz 49	0.5 U	0.5 U	6.6 J	5.2 J	5.2 J	11	
bz 52*	0.5 U	0.5 U	8.9 J	4.0 J	8.3 J	7.6 J	
bz 66*	0.5 U	0.5 U	3.0 J	0.7 U	0.7 U	0.7 U	
bz 87	0.5 U	0.5 U	0.8 J	0.7 J	0.8 J	0.9 J	
bz 101*	0.5 U	0.5 U	3.4	0.7 U	1.8	0.7 U	
bz 105*	0.5 U	0.5 U	1.3 J	0.7 U	0.7 UJ	0.7 U	
bz 118*	0.5 U	0.5 U	2.7 J	1.8	1.7 J	2.0 J	
bz 128*	2.5 U	2.5 U	1.0 JM	3.2 U	3.2 U	3.2 U	
bz 138*	0.6 J	0.5 UJ	3.0 J	1.6 J	1.7 J	2.0 J	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS N74 LIS01CLN74C5 N Historic	CLIS N74 LIS01CLN74CP SC Historic	CLIS N93 LIS01CLN93C1 N Active	CLIS N93 LIS01CLN93C3 N Active	CLIS N93 LIS01CLN93C5 N Active	CLIS N93 LIS01CLN93CP SC Active	
Analyte Group - Analyte Name	Units						
bz 153*	R	R	R	1.9 J	R	R	
bz 170*	8.7 UJ	8.5 UJ	11.2 UJ	11.0 UJ	11.0 UJ	11.2 UJ	
bz 180*	0.5 U	0.5 U	5.9 J	1.9 J	1.4	2.5 J	
bz 183	5.0 U	4.9 U	6.4 U	6.3 U	6.4 U	6.5 U	
bz 184	2.2 U	2.2 U	2.8 U	2.8 U	2.8 U	2.8 U	
bz 187*	0.5 U	0.5 U	2.7	1.1	1.2	1.5	
bz 195*	R	R	R	R	R	R	
bz 206*	R	R	R	R	R	R	
bz 209*	0.5 U	0.7 J	1.7 J	1.2 J	1.5 J	1.6 J	
Total PCBs <sup>2</sup>	1.2	1.4	88.6	38.8	49.6	58.2	
<b>PESTICIDES, ppb dry (ug/kg)</b>							
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	0.5 U	0.5 U	1.3 U	0.7 U	1.7 U	0.9 U	
2,4'-DDD	5.4 U	5.3 U	6.9 U	6.8 U	6.8 U	7.0 U	
2,4'-DDE	4.5 U	4.5 U	5.8 U	5.8 U	5.8 U	5.9 U	
2,4'-DDT	0.5 U	0.5 U	0.4	0.7 U	0.7 U	0.7 U	
4,4'-DDD	0.5 U	0.5 U	1.3	0.7 U	0.7 U	0.9 J	
4,4'-DDE	0.5 U	0.5 U	2.2	1.4	1.8	1.9	
4,4'-DDT	240.6 UJ	236.6 UJ	309.9 UJ	305.6 UJ	306.3 UJ	311.3 UJ	
total DDT	ND	ND	3.9	1.4	1.8	2.8	
aldrin	9.6 U	9.4 U	12.3 U	12.2 U	12.2 U	12.4 U	
alpha-bhc	6.4 U	6.3 U	8.2 U	8.1 U	8.1 U	8.3 U	
alpha-chlordane	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	
beta-bhc	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	
delta-bhc	10.5 U	10.3 U	13.5 U	13.4 U	13.4 U	13.6 U	
dieldrin	4.0 U	3.9 U	5.1 U	5.0 U	5.1 U	5.1 U	
endosulfan i	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	
endosulfan ii	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	
endosulfan sulfate	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	
total endosulfans	ND	ND	ND	ND	ND	ND	
endrin	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	
gamma-bhc	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	
gamma-chlordane	4.9 U	4.8 U	0.7 U	6.3 U	6.3 U	6.4 U	
heptachlor	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS N74 LIS01CLN74C5 N Historic	CLIS N74 LIS01CLN74CP SC Historic	CLIS N93 LIS01CLN93C1 N Active	CLIS N93 LIS01CLN93C3 N Active	CLIS N93 LIS01CLN93C5 N Active	CLIS N93 LIS01CLN93CP SC Active
Analyte Group - Analyte Name	Units					
heptachlor epoxide	0.5 U	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U
toxaphene (camphechlor)	132.9 U	130.7 U	171.1 U	168.8 U	169.1 U	171.9 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>						
2,3,7,8-tcdf (db225)	7.9 UI	8.0 UI	34 UI	32 UI	35 UI	38 UI
2,3,7,8-cl4-dibenzo-p-dioxin	0.16	0.23	0.61	0.77	0.56	0.66
2,3,4,7,8-cl5-dibenzofuran	1.2	0.99	5.3	6.0	4.1	5.1
2,3,4,6,7,8-cl6-dibenzofuran	1.4	1.2	7.8	7.7	5.1	7.0
1,2,3,7,8-cl5-dibenzofuran	1.1	0.84	4.5	5.3	3.4	4.5
1,2,3,7,8-cl5-dibenzo-p-dioxin	0.42	0.40	1.6	1.9	1.4	1.7
1,2,3,7,8,9-cl6-dibenzofuran	0.097U	0.19	0.16	0.2U	0.19	0.11U
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	2	2.0	8.6	8.5	5.8	7.5
1,2,3,6,7,8-cl6-dibenzofuran	0.82	0.79	3.5	3.6	2.6	3.2
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	1.8	1.8	9.7	9.8	6.3	8.4
1,2,3,4,7,8-cl6-dibenzofuran	1.7	1.5	8.3	8.1	6.2	6.9
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	0.63	0.54	2.3	2.4	1.9	2.1
1,2,3,4,7,8,9-cl7-dibenzofuran	0.68	0.63	2.7	3.0	1.9	2.5
1,2,3,4,6,7,8-cl7-dibenzofuran	14 EB	12 EB	76 EB	73 EB	53 EB	65 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	45 EB	42 EB	210 EB	220 EB	150 EB	190 EB
octachlorodibenzo-p-dioxin	440 EB	400 EB	1700 EB	1900 EB	1400 EB	1700 EB
octachlorodibenzofuran	32 EB	34 EB	230 EB	220 EB	150 EB	190 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 77	0.31	0.33	4.5	5.4	2.8	4.3
bz 114	0.012	0.017	0.053	0.037	0.031	0.038
bz 123	0.017	0.014	0.025 U	0.028 U	0.024 U	0.039
bz 126	0.04	0.046	0.80	0.95	0.50	0.79
bz 156/157	0.13 U	0.15 U	0.65	0.51	0.41	0.49
bz 167	0.059 U	0.066	0.29	0.24	0.19	0.23
bz 169	0.018 U	0.017 U	0.30	0.37	0.20	0.32
bz 189	0.017 U	0.02 U	0.075	0.069	0.052	0.064
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>						
TBT - TBT (ppb dry)	1.4 J	1.3 J	5.3 J	6	3.7 J	4.9

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CLIS N74 LIS01CLN74C5 N Historic	CLIS N74 LIS01CLN74CP SC Historic	CLIS N93 LIS01CLN93C1 N Active	CLIS N93 LIS01CLN93C3 N Active	CLIS N93 LIS01CLN93C5 N Active	CLIS N93 LIS01CLN93CP SC Active	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.065 U	-0.026 U	0.12 U	0.13 U	0.06 U	-0.003 U
cobalt 60	pCi/g dry	-0.028 U	0.02 U	0.07 U	0.12 U	-0.1 U	-0.11 U
strontium 90	pCi/g dry	0.28 U	-0.59 U	0.21 U	0.32 U	-0.26 U	0.32 U
uranium 234	pCi/g dry	0.46 U	0.49 U	0.92 J	0.79 J	0.73 J	1 U
uranium 235	pCi/g dry	0.021 U	0.06 U	0.11 U	0.034 U	0.036 U	0.08 U
uranium 238	pCi/g dry	0.52 J	0.32 U	0.72 J	0.81 J	0.73 J	0.7 J
total uranium	pCi/g dry	0.52	ND	1.64	1.6	1.46	0.7

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Site ID Station Code Field Sample ID Type Designation	Units	CLIS REF LIS01CLREFC1 N Reference	CLIS REF LIS01CLREFC3 N Reference	CLIS REF LIS01CLREFC5 N Reference	CLIS REF LIS01CLREFCP SC Reference
% Fines		%	91.00	92.00	92.00	90.00
% Water		%	90.94	124.47	113.11	118.48
% TOC		%	1.6	1.6	1.55	1.55
<b>METALS, ppm dry (mg/kg)</b>						
aluminum		ppm dry	16400	14300	12500	14100
arsenic		ppm dry	6.9 J	5.9 J	5.5 J	5.3 J
beryllium		ppm dry	0.77	0.61	0.58	0.51
cadmium		ppm dry	0.13 J	0.11 J	0.098 J	0.11 J
chromium		ppm dry	60.5	50.7	47.2	45.1
copper		ppm dry	41.5	35.3	31.5	32
iron		ppm dry	27900	24300	21500	22800
lead		ppm dry	30.7 J	25.8 J	23.4 J	24.3 J
mercury		ppm dry	0.084 J	0.088 J	0.078 J	0.084 J
nickel		ppm dry	28.3	23.2	20.8	20.5
selenium		ppm dry	0.32 J	0.29 J	0.25 J	0.22 J
silver		ppm dry	0.56	0.49	0.42	0.5
zinc		ppm dry	118 J	98.3 J	88.5 J	88.9 J
<b>AVS/SEM, umol/g dry</b>						
AVS		umol/g dry	1.58E+00 J	3.66E-01 J	1.70E+00 J	3.05E+00 J
SEM cadmium		umol/g dry	4.00E-03 UJ	2.49E-03 UJ	3.02E-03 UJ	3.11E-03 UJ
SEM copper		umol/g dry	3.12E-01 EBJ	2.44E-01 EBJ	2.63E-01 EBJ	2.71E-01 EBJ
SEM lead		umol/g dry	1.64E-01 EBJ	1.21E-01 EBJ	1.37E-01 EBJ	1.24E-01 EBJ
SEM nickel		umol/g dry	9.54E-02 UJ	5.96E-02 UJ	9.03E-02 UJ	8.01E-02 UJ
SEM silver		umol/g dry	3.71E-03 UJ	3.71E-03 UJ	4.17E-03 UJ	3.24E-03 UJ
SEM zinc		umol/g dry	1.21E+00 J	8.18E-01 J	9.93E-01 J	8.75E-01 J
<b>PAH Compounds, ppb dry (ug/kg)</b>						
1-methylnaphthalene		ppb dry	35 U	35 U	36 U	35 U
1-methylphenanthrene		ppb dry	7	7	7 U	7 U
2,6-dimethylnaphthalene		ppb dry	30 U	29 U	30 U	29 U
2-methylnaphthalene		ppb dry	31 U	31 U	32 U	31 U
acenaphthene+		ppb dry	34 U	34 U	35 U	34 U
acenaphthylene+		ppb dry	12	12	10	9
anthracene+		ppb dry	15	15	13	10

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Site ID Station Code Field Sample ID Type Designation	CLIS REF LIS01CLREFC1 N Reference	CLIS REF LIS01CLREFC3 N Reference	CLIS REF LIS01CLREFC5 N Reference	CLIS REF LIS01CLREFCP SC Reference
	Units				
benzo(a)anthracene+	ppb dry	46	46	36	33
benzo(a)pyrene+	ppb dry	59	61	48	43
benzo(b)fluoranthene+	ppb dry	51	52	42	38
benzo(e)pyrene	ppb dry	43	47	37	32
benzo(g,h,i)perylene+	ppb dry	45	45	37	31
benzo(k)fluoranthene+	ppb dry	54	56	47	39
biphenyl	ppb dry	31 U	31 U	32 U	31 U
chrysene+	ppb dry	58	59	46	42
dibenz[a,h]anthracene+	ppb dry	45 UJ	44 UJ	45 UJ	45 UJ
fluoranthene+	ppb dry	76	81	61	52
fluorene+	ppb dry	42 U	42 U	42 U	42 U
indeno[1,2,3-cd]pyrene+	ppb dry	44	48	39	33
naphthalene+	ppb dry	33 UJ	32 UJ	33 UJ	33 UJ
perylene	ppb dry	17	18	14	13
phenanthrene+	ppb dry	34	35	27	22
pyrene+	ppb dry	84	90	66	59
Total PAH <sup>1</sup>	ppb dry	578	600	472	411
<b>BIS(2-ETHYLHEXYL)PHthalate, ppb dry (ug/kg)</b>					
bis(2-ethylhexyl)phthalate	ppb dry	110 U	71 U	82 U	81 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>					
bz 8*	ppb dry	16.0 U	15.7 U	16.1 U	15.9 U
bz 18*	ppb dry	4.9 U	4.8 U	4.9 U	4.9 U
bz 28*	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U
bz 44*	ppb dry	4.8 U	4.7 U	4.8 U	4.7 U
bz 49	ppb dry	4.2 U	4.1 U	4.2 U	4.2 U
bz 52*	ppb dry	6.4 U	6.3 U	6.4 U	6.4 U
bz 66*	ppb dry	6.8 U	6.7 U	6.8 U	6.8 U
bz 87	ppb dry	6.7 U	6.6 U	6.7 U	6.7 U
bz 101*	ppb dry	13.1 U	12.8 U	13.2 U	13.1 U
bz 105*	ppb dry	3.6 U	3.5 U	3.6 U	3.6 U
bz 118*	ppb dry	6.8 U	0.8 JM	6.8 U	6.8 U
bz 128*	ppb dry	2.6 U	2.6 U	2.6 U	2.6 U
bz 138*	ppb dry	6.4 UJ	6.3 UJ	6.4 UJ	6.4 UJ

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Site ID Station Code Field Sample ID Type Designation	CLIS REF LIS01CLREFC1 N Reference	CLIS REF LIS01CLREFC3 N Reference	CLIS REF LIS01CLREFC5 N Reference	CLIS REF LIS01CLREFCP SC Reference
	Units				
bz 153*	ppb dry	5.4 U	5.3 U	5.4 U	5.3 U
bz 170*	ppb dry	2.0 U	2.0 U	2.0 U	2.0 U
bz 180*	ppb dry	4.6 U	4.6 U	4.7 U	4.6 U
bz 183	ppb dry	3.0 U	3.0 U	3.0 U	3.0 U
bz 184	ppb dry	2.4 U	2.3 U	2.4 U	2.4 U
bz 187*	ppb dry	5.8 U	5.7 U	5.8 U	5.8 U
bz 195*	ppb dry	5.6 U	5.5 U	5.6 U	5.6 U
bz 206*	ppb dry	2.8 U	2.8 U	2.8 U	2.8 U
bz 209*	ppb dry	2.5 U	0.7 JM	2.5 U	2.5 U
Total PCBs <sup>2</sup>	ppb dry	ND	3	ND	ND
<b>PESTICIDES, ppb dry (ug/kg)</b>					
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	ppb dry	7.5 U	7.4 U	7.5	7.5 U
2,4'-DDD	ppb dry	0.7	0.7 U	0.7 U	0.7 U
2,4'-DDE	ppb dry	7.3 U	7.1 U	7.3 U	7.3 U
2,4'-DDT	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U
4,4'-DDD	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U
4,4'-DDE	ppb dry	26.0 U	25.5 U	26.1 U	25.9 U
4,4'-DDT	ppb dry	20.3 U	20.0 U	20.5 U	20.3 U
total DDT	ppb dry	ND	ND	ND	ND
aldrin	ppb dry	30.9 U	30.3 U	31.0 U	30.8 U
alpha-bhc	ppb dry	7.9 U	7.7 U	7.9 U	7.9 U
alpha-chlordane	ppb dry	7.0 U	6.9 U	7.0 U	7.0 U
beta-bhc	ppb dry	5.9 U	5.8 U	6.0 U	5.9 U
delta-bhc	ppb dry	5.7 U	5.6 U	5.8 U	5.7 U
dieldrin	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U
endosulfan i	ppb dry	7.4 U	7.3 U	7.4 U	0.7 U
endosulfan ii	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U
endosulfan sulfate	ppb dry	6.2 U	6.1 U	6.3 U	6.2U
total endosulfans	ppb dry	ND	ND	ND	ND
endrin	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U
gamma-bhc	ppb dry	7.9 U	7.7 U	7.9 U	7.9U
gamma-chlordane	ppb dry	6.1 U	6.0 U	6.1 U	6.1U
heptachlor	ppb dry	10.3 U	10.1 U	10.4 U	10.3U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Site ID Station Code Field Sample ID Type Designation	CLIS REF LIS01CLREFC1 N Reference	CLIS REF LIS01CLREFC3 N Reference	CLIS REF LIS01CLREFC5 N Reference	CLIS REF LIS01CLREFCP SC Reference
	Units				
heptachlor epoxide	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U
toxaphene (camphechlor)	ppb dry	73.1 U	71.8 U	73.5	72.9U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>					
2,3,7,8-tcdf (db225)	pptr dry	8.4	7.7	9.3	8.1
2,3,7,8-cl4-dibenzo-p-dioxin	pptr dry	0.30	0.34	0.42	0.49
2,3,4,7,8-cl5-dibenzofuran	pptr dry	3.0	3.0	3.8	2.7
2,3,4,6,7,8-cl6-dibenzofuran	pptr dry	2.9	3.1	3.8	2.8
1,2,3,7,8-cl5-dibenzofuran	pptr dry	2.3	2.4	3.1	2.1
1,2,3,7,8-cl5-dibenzo-p-dioxin	pptr dry	0.83 B	0.85 B	1.1	0.76 B
1,2,3,7,8,9-cl6-dibenzofuran	pptr dry	0.13	0.14	0.21	0.21
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	pptr dry	4.3 J	4.4 J	6.0 J	3.2 J
1,2,3,6,7,8-cl6-dibenzofuran	pptr dry	1.8	2.0	2.5	1.8
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	pptr dry	4.2	4.4	6.0	3.8
1,2,3,4,7,8-cl6-dibenzofuran	pptr dry	3.8	4.0	4.9	3.5
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	pptr dry	1.2	1.2	1.7	1.2
1,2,3,4,7,8,9-cl7-dibenzofuran	pptr dry	1.2	1.3	1.5	1.1
1,2,3,4,6,7,8-cl7-dibenzofuran	pptr dry	34 EB	35 EB	45 EB	31 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	pptr dry	110 EB	110 EB	150 EB	97 EB
octachlorodibenzo-p-dioxin	pptr dry	1000 EB	1100 EB	1400 EB	910 EB
octachlorodibenzofuran	pptr dry	77 EB	78 EB	97 EB	69 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>					
bz 77	ppb dry	0.39	0.41	0.49	0.33
bz 114	ppb dry	0.013 U	0.014 U	0.019 U	0.011 U
bz 123	ppb dry	0.018 U	0.023 U	0.028 U	0.017 U
bz 126	ppb dry	0.036 U	0.043 U	0.049	0.035 U
bz 156/157	ppb dry	0.14	0.15	0.18	0.12 U
bz 167	ppb dry	0.073	0.079	0.095	0.065
bz 169	ppb dry	0.02 U	0.018 U	0.026 U	0.017 U
bz 189	ppb dry	0.02 U	0.022 U	0.027 U	0.019 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>					
TBT - TBT (ppb dry)	ppb dry	0.32 J	0.38 J	0.74 J	0.55 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Site ID Station Code Field Sample ID Type Designation	CLIS REF LIS01CLREFC1 N Reference	CLIS REF LIS01CLREFC3 N Reference	CLIS REF LIS01CLREFC5 N Reference	CLIS REF LIS01CLREFCP SC Reference
	Units				
<b>RADIONUCLIDES, pCi/g dry</b>					
cesium 137	pCi/g dry	0.008 U	0.05 U	0.08 U	0.19 U
cobalt 60	pCi/g dry	0.08 U	-0.018 U	0.04 U	0.005 U
strontium 90	pCi/g dry	0.12 U	1.53 JEB	0.21 U	-0.1 UJ
uranium 234	pCi/g dry	1.06 U	0.99 J	0.94 U	1.22 U
uranium 235	pCi/g dry	0.06 U	0.021 U	0.09 U	-0.011 U
uranium 238	pCi/g dry	0.81 J	0.83 J	0.9 J	0.96 J
total uranium	pCi/g dry	0.81	1.82	0.9	0.96

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

† Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 2KW LIS01CS2KWC1 N Far Field	CSDS 2KW LIS01CS2KWC3 N Far Field	CSDS 2KW LIS01CS2KWC5 N Far Field	CSDS 2KW LIS01CS2KWCP SC Far Field	CSDS 4KW LIS01CS4KWC1 N Far Field	CSDS 4KW LIS01CS4KWC3 N Far Field	
Analyte Group - Analyte Name	Units						
% Fines	%	2.00	6.00	5.00	3.00	2.00	2.00
% Water	%	18.93	19.65	16.57	19.88	18.00	15.97
% TOC	%	0.056	0.225	0.145	0.125	0.11	0.12
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	2210	2470	2570	2840	2470	2670
arsenic	ppm dry	2 J	2.6 J	1.7 J	2.1 J	2.7 J	2.6 J
beryllium	ppm dry	0.086 J	0.12 J	0.081 J	0.095 J	0.097 J	0.09 J
cadmium	ppm dry	R	R	R	R	R	R
chromium	ppm dry	4.6	6.9	4.5	5.7	5.3	4.4
copper	ppm dry	1.9	3.5	2.4	2.9	2	1.9
iron	ppm dry	8280	7700	8700	10700	9390	8630
lead	ppm dry	3.2	5.7	3.9	3.8	2	2.6
mercury	ppm dry	0.0027 JM	0.011 JM	0.0052 JM	0.0044 JM	0.0016 JM	0.0026 JM
nickel	ppm dry	5.1	6.8	4.5	6.1	5.9	5.8
selenium	ppm dry	0.045 J	0.045 J	0.036 J	0.041 J	0.023 J	0.043 J
silver	ppm dry	0.028	0.046	0.04	0.039	0.03	0.063
zinc	ppm dry	16.4 J	20.9 J	15.6 J	17.0 J	11.2 J	11.1 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	1.25E-01 UJ	1.31E-01 UJ	1.34E-01 UJ	1.34E-01 UJ	1.09E-01 UJ	1.28E-01 UJ
SEM cadmium	umol/g dry	1.78E-03 UJ	1.78E-03 UJ	1.78E-03 UJ	1.78E-03 UJ	1.78E-03 UJ	1.78E-03 UJ
SEM copper	umol/g dry	1.31E-02 EBJ	4.88E-02 EBJ	2.36E-02 EBJ	1.53E-02 EBJ	3.31E-02 EBJ	2.05E-02 EBJ
SEM lead	umol/g dry	1.59E-02 EBJ	3.23E-02 J	1.30E-02 EBJ	8.98E-01 EBJ	9.17E-03 EBJ	1.40E-02 EBJ
SEM nickel	umol/g dry	2.04E-02 UJ	3.58E-02 UJ	2.56E-02 UJ	4.09E-02 UJ	3.07E-01 EBJ	3.07E-02 UJ
SEM silver	umol/g dry	1.01E-02 UJ	1.01E-02 UJ	6.67E-03 JM	1.01E-02 UJ	1.01E-02 UJ	3.24E-03 JM
SEM zinc	umol/g dry	1.71E-01 J	2.55E-01 J	1.87E-01 J	2.11E-01 J	2.66E-01 J	1.41E-01 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	4 U	4 U	4 U	4 U	4 U	4 U
1-methylphenanthrene	ppb dry	11.7 U	12.0 U	11.6 U	11.9 U	11.4 U	11.2 U
2,6-dimethylnaphthalene	ppb dry	14.2 U	14.6 U	14.1 U	14.4 U	13.9 U	13.7 U
2-methylnaphthalene	ppb dry	13.9 U	14.3 U	13.8 U	14.1 U	13.6 U	13.4 U
acenaphthene+	ppb dry	14.2 U	14.6 U	14.1 U	14.4 U	13.9 U	13.7 U
acenaphthylene+	ppb dry	4 U	4 U	4 U	4 U	4 U	4 U
anthracene+	ppb dry	4 U	4 U	4 U	4 U	4 U	4 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 2KW LIS01CS2KWC1 N Far Field	CSDS 2KW LIS01CS2KWC3 N Far Field	CSDS 2KW LIS01CS2KWC5 N Far Field	CSDS 2KW LIS01CS2KWCP SC Far Field	CSDS 4KW LIS01CS4KWC1 N Far Field	CSDS 4KW LIS01CS4KWC3 N Far Field
Analyte Group - Analyte Name	Units					
benzo(a)anthracene+	4 U	5	4 U	4 U	4 U	4 U
benzo(a)pyrene+	4 U	6	5	4 U	4 U	4 U
benzo(b)fluoranthene+	4 U	6	5	4 U	4 U	4 U
benzo(e)pyrene	4 U	5	4 U	4 U	4 U	4 U
benzo(g,h,i)perylene+	4 U	5	5	4 U	4 U	4 U
benzo(k)fluoranthene+	4 U	6 J	5 J	4 U	4 U	4 U
biphenyl	13.9 U	14.3 U	13.8 U	14.1 U	13.6 U	13.4 U
chrysene+	4 U	6	4	4 U	4 U	4 U
dibenz[a,h]anthracene+	4 U	4 U	4 U	4 U	4 U	4 U
fluoranthene+	4 U	8	6	4 U	4 U	4 U
fluorene+	4 U	4 U	4 U	4 U	4 U	4 U
indeno[1,2,3-cd]pyrene+	4 U	5	4	4 U	4 U	4 U
naphthalene+	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ
perylene	4 U	4 U	4 U	4 U	4 U	4 U
phenanthrene+	4 U	5	4 U	4 U	4 U	4 U
pyrene+	4 U	8	6	4 U	4 U	4 U
Total PAH <sup>1</sup>	0	60	40	0	0	0
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>						
bis(2-ethylhexyl)phthalate	40 U	40 U	55 U	59 U	40 U	40 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 8*	2.5 UJ	2.6 UJ	2.5 UJ	2.5 UJ	2.4 UJ	2.4 UJ
bz 18*	0.45 JM	2.8 U	2.7 U	2.8 U	2.7 U	2.7 U
bz 28*	0.66 JM	3.9 U	3.7 U	3.8 U	3.7 U	3.6 U
bz 44*	4.3 J	4.0 U	3.9 U	4.0 U	3.8 U	3.8 U
bz 49	4.5 J	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U
bz 52*	15 J	2.6 U	2.5 U	2.5 U	2.4 U	2.4 U
bz 66*	2.5 U	2.6 U	2.5 U	2.5 U	2.4 U	2.4 U
bz 87	2.3 U	2.3 U	2.2 U	2.3 U	2.2 U	2.2 U
bz 101*	16	3.4 U	3.3 U	3.4 U	3.2 U	3.2 U
bz 105*	12 J	6.7 U	6.5 U	6.6 U	6.3 U	6.3 U
bz 118*	14	1.3 U	1.2 U	1.3 U	1.2 U	1.2 U
bz 128*	4.6 J	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
bz 138*	16 J	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 2KW LIS01CS2KWC1 N Far Field	CSDS 2KW LIS01CS2KWC3 N Far Field	CSDS 2KW LIS01CS2KWC5 N Far Field	CSDS 2KW LIS01CS2KWCP SC Far Field	CSDS 4KW LIS01CS4KWC1 N Far Field	CSDS 4KW LIS01CS4KWC3 N Far Field
Analyte Group - Analyte Name	Units					
bz 153*	8.6 J	1.8 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ
bz 170*	3.6 J	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
bz 180*	6.2 J	1.1 U	1.1 U	1.1 U	1.0 U	1.0 U
bz 183	1.60 J	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
bz 184	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
bz 187*	2.6 J	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
bz 195*	0.81 JM	R	0.90 JM	R	R	R
bz 206*	0.71 J	1.7 U	1.6 U	1.7 U	1.6 U	1.6 U
bz 209*	1.7 U	1.7 U	1.6 U	1.7 U	1.6 U	1.6 U
Total PCBs <sup>2</sup>	223.26	ND	1.8	ND	ND	ND
<b>PESTICIDES, ppb dry (ug/kg)</b>						
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	1.70 JM	6.2 U	6.0 U	6.1 U	5.9 U	5.8 U
2,4'-DDD	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
2,4'-DDE	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
2,4'-DDT	0.69 J	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
4,4'-DDD	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
4,4'-DDE	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
4,4'-DDT	1.8 J	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
total DDT	2.49	ND	ND	ND	ND	ND
aldrin	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
alpha-bhc	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
alpha-chlordane	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
beta-bhc	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
delta-bhc	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
dieldrin	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
endosulfan i	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
endosulfan ii	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
endosulfan sulfate	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
total endosulfans	ND	ND	ND	ND	ND	ND
endrin	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
gamma-bhc	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
gamma-chlordane	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
heptachlor	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 2KW LIS01CS2KWC1 N Far Field	CSDS 2KW LIS01CS2KWC3 N Far Field	CSDS 2KW LIS01CS2KWC5 N Far Field	CSDS 2KW LIS01CS2KWCP SC Far Field	CSDS 4KW LIS01CS4KWC1 N Far Field	CSDS 4KW LIS01CS4KWC3 N Far Field
Analyte Group - Analyte Name	Units					
heptachlor epoxide	0.41 U	0.42 U	0.4 U	0.41 U	0.4 U	0.39 U
toxaphene (camphechlor)	103.6 U	106.2 U	102.6 U	105.1 U	100.9 U	99.7 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>						
2,3,7,8-tcdf (db225)	1.8 U	0.78	0.68 UI	4.1 UI	0.25	1.4 U
2,3,7,8-cl4-dibenzo-p-dioxin	0.095 U	0.10 U	0.10 U	0.099 U	0.17 U	0.21 U
2,3,4,7,8-cl5-dibenzofuran	0.23 B	0.37 B	0.18 B	0.30 B	0.097 U	0.15 U
2,3,4,6,7,8-cl6-dibenzofuran	0.22 B	0.35 B	0.25 B	0.31 B	0.15 B	0.12 U
1,2,3,7,8-cl5-dibenzofuran	0.14 J	0.25 J	0.14 J	0.24 J	0.11 U	0.18 U
1,2,3,7,8-cl5-dibenzo-p-dioxin	0.16	0.19	0.10 U	0.20	0.11 U	0.18 U
1,2,3,7,8,9-cl6-dibenzofuran	0.11	0.15	0.1U	0.19	0.12U	0.12U
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	0.20 J	0.33 J	0.14 J	0.26 J	0.097 U	0.11 U
1,2,3,6,7,8-cl6-dibenzofuran	0.23 B	0.25 B	0.18 B	0.25 B	0.11 U	0.11 U
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	0.16	0.35	0.15	0.25	0.11 U	0.13 U
1,2,3,4,7,8-cl6-dibenzofuran	0.23B	0.37 B	0.15 B	0.28 B	0.10 U	0.11 U
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	0.15	0.18	0.096 U	0.18	0.092 U	0.11 U
1,2,3,4,7,8,9-cl7-dibenzofuran	0.13	0.24	0.097 U	0.22	0.081 U	0.12 U
1,2,3,4,6,7,8-cl7-dibenzofuran	0.48 EB	1.5 EB	0.76 EB	0.72 EB	0.30 U	0.18 U
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	1.4 EB	5.4 EB	2.5 EB	2.2 EB	1.2 EB	0.79 EB
octachlorodibenzo-p-dioxin	14 JEB	54 JEB	27 JEB	24 JEB	15 EB	7.3 EB
octachlorodibenzofuran	0.71 EB	2.3 EB	0.86 EB	1.1 EB	0.65 EB	0.35 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 77	0.010 U	0.020	0.010 U	0.015 J	0.0060 U	0.0050 U
bz 114	0.0050	0.0060	0.0030 U	R	0.0010 U	0.0010 U
bz 123	0.0090	0.011	0.0040	R	0.0010 U	0.0050
bz 126	0.0040	0.0030 U	0.0030 U	R	0.0010 U	0.0010 U
bz 156/157	0.041 U	0.060 U	0.039 U	R	0.028 U	0.058 U
bz 167	0.024 U	0.033	0.017 U	R	0.012 U	0.025 U
bz 169	0.0040 U	0.0040 U	0.0020 U	R	0.0010 U	0.0020 U
bz 189	0.0080 U	0.012 U	0.0070 U	R	0.0060 U	0.011 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>						
TBT - TBT (ppb dry)	2.35 UJ	2.43 UJ	2.44 UJ	2.82 UJ	2.34 U	2.31 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 2KW LIS01CS2KWC1 N Far Field	CSDS 2KW LIS01CS2KWC3 N Far Field	CSDS 2KW LIS01CS2KWC5 N Far Field	CSDS 2KW LIS01CS2KWCP SC Far Field	CSDS 4KW LIS01CS4KWC1 N Far Field	CSDS 4KW LIS01CS4KWC3 N Far Field	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.003 U	-0.023 U	0.009 U	0.022 U	-0.043 U	0.019 U
cobalt 60	pCi/g dry	0.043 U	-0.002 U	0.017 U	-0.034 U	0.006 U	-0.0002 U
strontium 90	pCi/g dry	-0.09 U	0.1 U	0.02 U	0.01 U	0.26 U	0.39 U
uranium 234	pCi/g dry	0.82 J	0.34 U	0.61 J	0.63 J	0.62 U	0.43 U
uranium 235	pCi/g dry	0.018 U	0.015 U	-0.009 U	0.012 U	0.106 J	-0.004 U
uranium 238	pCi/g dry	0.88 J	0.35 U	0.79 J	0.74 J	0.41 J	0.48 J
total uranium	pCi/g dry	1.7	ND	1.4	1.37	0.516	0.48

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 4KW LIS01CS4KWC5 N Far Field	CSDS 4KW LIS01CS4KWCP SC Far Field	CSDS B92 LIS01CSB92C1 N Active	CSDS B92 LIS01CSB92C3 N Active	CSDS B92 LIS01CSB92C5 N Active	CSDS B92 LIS01CSB92CP SC Active	
Analyte Group - Analyte Name	Units						
% Fines	%	0.00	7.00	2.00	2.00	0.00	3.00
% Water	%	20.49	19.62	20.19	16.91	18.62	18.42
% TOC	%	0.0285	0.19	0.0425	0.0965	0.115	0.0695
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	2490	5350	2630	2230	2940	2510
arsenic	ppm dry	2.7 J	3.1 J	2.5 J	2.5 J	2.6 J	2.2 J
beryllium	ppm dry	0.10 J	0.22 J	0.090	0.093	0.13	0.11
cadmium	ppm dry	R	R	R	R	R	R
chromium	ppm dry	4.4	8.2	5.1	5.2	6.7	8.4
copper	ppm dry	2.4	6.7	2.2	2.2	2.9	3.2
iron	ppm dry	7860	13400	7620	6940	8660	7510
lead	ppm dry	3.5	4.6	3.4 J	3.6 J	3.7 J	4.2 J
mercury	ppm dry	0.0027 JM	0.0052 JM	0.0045 J	0.0039 J	0.0068 J	0.0093 J
nickel	ppm dry	6.6	10.5	5.6	5.7	6.6	8.3
selenium	ppm dry	0.046 J	0.072 J	0.046 J	0.037 J	0.032 J	0.039 J
silver	ppm dry	0.027	0.056	0.023	0.061	0.032	0.033
zinc	ppm dry	16.0 J	23.1 J	15.8 J	15.6 J	20.7 J	19.6 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	1.31E-01 UJ	1.28E-01 UJ	1.44E-01 UJ	1.19E-01 UJ	1.25E-01 UJ	1.31E-01 UJ
SEM cadmium	umol/g dry	1.78E-03 UJ	1.78E-03 UJ	8.90E-04 UJ	7.38E-04 UJ	7.74E-04 UJ	1.07E-03 UJ
SEM copper	umol/g dry	2.05E-02 EBJ	2.99E-02 EBJ	2.36E-02 EBJ	1.73E-02 UJ	1.89E-02 EBJ	2.44E-01 EBJ
SEM lead	umol/g dry	1.59E-02 EBJ	1.40E-02 EBJ	1.21E-02 EBJM	1.30E-02 EBJM	1.01E-02 EBJM	1.21E-02 EBJM
SEM nickel	umol/g dry	3.07E-02 UJ	3.75E-02 UJ	4.09E-02 UJ	3.07E-02 UJ	2.90E-02 UJ	3.58E-02 UJ
SEM silver	umol/g dry	9.18E-03 JM	2.41E-02 J	5.28E-03 J	2.60E-03 J	1.67E-03 J	4.36E-03 J
SEM zinc	umol/g dry	1.67E-01 J	1.70E-01 J	2.26E-01 UJ	1.58E-01 UJ	1.39E-01 UJ	2.06E-01 UJ
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	4 U	4 U	22 U	21 U	22 U	22 U
1-methylphenanthrene	ppb dry	11.5 U	12.3 U	4 U	4 U	4 U	4 U
2,6-dimethylnaphthalene	ppb dry	14.0 U	15.0 U	18 U	18 U	18 U	19 U
2-methylnaphthalene	ppb dry	13.7 U	14.6 U	19 U	19 U	19 U	20 U
acenaphthene+	ppb dry	14.0 U	15.0 U	21 U	21 U	21 U	22 U
acenaphthylene+	ppb dry	4 U	5	4 U	4 U	4 U	4 U
anthracene+	ppb dry	4 U	4 U	4 U	4 U	4 U	4 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 4KW LIS01CS4KWC5 N Far Field	CSDS 4KW LIS01CS4KWCP SC Far Field	CSDS B92 LIS01CSB92C1 N Active	CSDS B92 LIS01CSB92C3 N Active	CSDS B92 LIS01CSB92C5 N Active	CSDS B92 LIS01CSB92CP SC Active
Analyte Group - Analyte Name	Units					
benzo(a)anthracene+	4 U	4 U	4 U	4 U	4 U	4 U
benzo(a)pyrene+	4 U	6	4 U	4 U	4	4 U
benzo(b)fluoranthene+	4 U	4 U	4 U	4 U	4 U	4 U
benzo(e)pyrene	4 U	4 U	4 U	4 U	4 U	4 U
benzo(g,h,i)perylene+	4 U	4 U	4 U	4 U	4 U	4 U
benzo(k)fluoranthene+	4 U	4 U	4 U	4 U	4 U	4 U
biphenyl	13.7 U	14.6 U	19 U	19 U	19 U	20 U
chrysene+	4 U	4 U	4 U	4 U	4 U	4 U
dibenz[a,h]anthracene+	4 U	4 U	27 UJ	27 UJ	28 UJ	28 UJ
fluoranthene+	4 U	4 U	5	4 U	4 U	5
fluorene+	4 U	4 U	26 U	26 U	26 U	27 U
indeno[1,2,3-cd]pyrene+	4 U	4 U	4 U	4 U	4 U	4 U
naphthalene+	4 UJ	4 UJ	20 UJ	20 UJ	20 UJ	21 UJ
perylene	4 U	4 U	4 U	4 U	4 U	4 U
phenanthrene+	4 U	4 U	4 U	4 U	4 U	4 U
pyrene+	4 U	4 U	5	4 U	4 U	5
Total PAH <sup>1</sup>	0	11	10	0	4	10
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>						
bis(2-ethylhexyl)phthalate	40 U	45 U	40 U	45 U	43 U	67 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 8*	2.5 UJ	2.6 UJ	9.7 U	9.7 U	9.8 U	10.0 U
bz 18*	2.7 U	2.9 U	3.0 U	3.0 U	3.0 U	3.1 U
bz 28*	3.7 U	4.0 U	0.4 U	0.4 U	0.4 U	0.4 U
bz 44*	3.9 U	4.1 U	2.9 U	2.9 U	2.9 U	3.0 U
bz 49	1.8 U	2.0 U	2.6 U	2.6 U	2.6 U	2.7 U
bz 52*	2.5 U	2.6 U	3.9 U	3.9 U	3.9 U	4.0 U
bz 66*	2.5 U	2.6 U	4.1 U	4.1 U	4.2 U	4.3 U
bz 87	2.2 U	2.4 U	4.1 U	4.1 U	4.1 U	4.2 U
bz 101*	3.3 U	3.5 U	7.9 U	7.9 U	8.1 U	8.2 U
bz 105*	6.5 U	6.9 U	2.2 U	2.2 U	2.2 U	2.2 U
bz 118*	1.2 U	1.3 U	4.1 U	4.1 U	4.2 U	4.3 U
bz 128*	0.4 U	0.43 U	1.6 U	1.6 U	1.6 U	1.6 U
bz 138*	0.4 U	0.43 U	3.9 UJ	3.9 UJ	3.9 UJ	4.0 UJ

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 4KW LIS01CS4KWC5 N Far Field	CSDS 4KW LIS01CS4KWCP SC Far Field	CSDS B92 LIS01CSB92C1 N Active	CSDS B92 LIS01CSB92C3 N Active	CSDS B92 LIS01CSB92C5 N Active	CSDS B92 LIS01CSB92CP SC Active	
Analyte Group - Analyte Name	Units						
bz 153*	1.7 UJ	1.8 UJ	3.3 U	3.3 U	3.34 UJ	3.4 U	
bz 170*	0.4 U	0.43 U	1.2 U	1.2 U	1.3 UJ	1.3 U	
bz 180*	1.1 U	1.1 U	2.8 U	2.8 U	2.9 U	2.9 U	
bz 183	0.4 U	0.43 U	1.8 U	1.8 U	1.9 U	1.9 U	
bz 184	0.4 U	0.43 U	1.4 U	1.4 U	1.5 U	1.5 U	
bz 187*	0.4 U	0.43 U	3.5 U	3.5 U	3.6 U	3.6 U	
bz 195*	R	R	3.4 U	3.4 U	3.5 U	3.5 U	
bz 206*	1.6 U	1.7 U	1.7 U	1.7 U	1.7 U	1.8 U	
bz 209*	1.6 U	1.7 U	1.5 U	1.5 U	1.5 U	1.6 U	
Total PCBs <sup>2</sup>	ND	ND	ND	ND	ND	ND	
<b>PESTICIDES, ppb dry (ug/kg)</b>							
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	6.0 U	6.4 U	4.5 U	4.5 U	4.6 U	4.7 U	
2,4'-DDD	0.4 U	0.43 U	0.4 U	0.4 U	0.4 U	0.4 U	
2,4'-DDE	0.4 U	0.43 U	4.4 U	4.4 U	4.5 U	4.6 U	
2,4'-DDT	0.4 U	0.43 U	0.4 U	0.4 U	0.4 U	0.4 U	
4,4'-DDD	0.4 U	0.43 U	0.4 U	0.4 U	0.4 U	0.4 U	
4,4'-DDE	0.4 U	0.43 U	15.8 U	15.8 U	16.0 U	16.3 U	
4,4'-DDT	0.4 U	0.43 U	12.3 U	12.3 U	12.5 U	12.8 U	
total DDT	ND	ND	ND	ND	ND	ND	
aldrin	0.4 U	0.43 U	18.7 U	18.7 U	19.0 U	19.4 U	
alpha-bhc	0.4 U	0.43 U	4.8 U	4.8 U	4.9 U	5.0 U	
alpha-chlordane	0.4 U	0.43 U	4.2 U	4.2 U	4.3 U	4.4 U	
beta-bhc	0.4 U	0.43 U	3.6 U	3.6 U	3.7 U	3.7 U	
delta-bhc	0.4 U	0.43 U	3.5 U	3.5 U	3.5 U	3.6 U	
dieldrin	0.4 U	0.43 U	0.4 U	0.4 U	0.4 U	0.4 U	
endosulfan i	0.4 U	0.43 U	4.5 U	4.5 U	4.6 U	4.7 U	
endosulfan ii	0.4 U	0.43 U	0.4 U	0.4 U	0.4 U	0.4 U	
endosulfan sulfate	0.4 U	0.43 U	3.8 U	3.8 U	3.8 U	3.9 U	
total endosulfans	ND	ND	ND	ND	ND	ND	
endrin	0.4 U	0.43 U	0.4 U	0.4 U	0.4 U	0.4 U	
gamma-bhc	0.4 U	0.43 U	4.8 U	4.8 U	4.9 U	5.0 U	
gamma-chlordane	0.4 U	0.43 U	3.7 U	3.7 U	3.8 U	3.8 U	
heptachlor	0.4 U	0.43 U	6.3 U	6.3 U	6.4 U	6.5 U	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 4KW LIS01CS4KWC5 N Far Field	CSDS 4KW LIS01CS4KWCP SC Far Field	CSDS B92 LIS01CSB92C1 N Active	CSDS B92 LIS01CSB92C3 N Active	CSDS B92 LIS01CSB92C5 N Active	CSDS B92 LIS01CSB92CP SC Active	
Analyte Group - Analyte Name	Units						
heptachlor epoxide	0.4 U	0.43 U	0.4 U	0.4 U	0.4 U	0.4 U	
toxaphene (camphechlor)	102.6 U	108.9 U	44.4 U	44.4 U	45.0 U	46.0 U	
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>							
2,3,7,8-tcdf (db225)	1.1 U	0.27	0.21	0.21	0.26	0.32	
2,3,7,8-cl4-dibenzo-p-dioxin	0.11 U	0.14 U	0.097 U	0.079 U	0.13 U	0.11 U	
2,3,4,7,8-cl5-dibenzofuran	0.19 B	0.55 B	0.20 B	0.14 B	0.13 B	0.18 B	
2,3,4,6,7,8-cl6-dibenzofuran	0.20 B	0.47 B	0.20 B	0.16 B	0.16 B	0.18 B	
1,2,3,7,8-cl5-dibenzofuran	0.16 J	0.48 J	0.15 B	0.099 B	0.079 U	0.14 B	
1,2,3,7,8-cl5-dibenzo-p-dioxin	0.13	0.44	0.14	0.10 U	0.075 U	0.11	
1,2,3,7,8,9-cl6-dibenzofuran	0.1U	0.46	0.12	0.068U	0.087U	0.06U	
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	0.17 J	0.46 J	0.16 B	0.11 B	0.11 B	0.19 B	
1,2,3,6,7,8-cl6-dibenzofuran	0.20 B	0.52 B	0.16 B	0.13 B	0.14 B	0.15 B	
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	0.14	0.49	0.12	0.098	0.12	0.17	
1,2,3,4,7,8-cl6-dibenzofuran	0.20 B	0.45 B	0.13 B	0.097 B	0.11 B	0.14 B	
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	0.13	0.43	0.075 U	0.064 U	0.076 U	0.081 B	
1,2,3,4,7,8,9-cl7-dibenzofuran	0.11 U	0.41	0.079 U	0.075 U	0.071 U	0.097 U	
1,2,3,4,6,7,8-cl7-dibenzofuran	0.47 EB	0.63 EB	0.48 EB	0.45 EB	0.46 EB	0.63 EB	
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	0.93 EB	1.3 EB	1.3 JEB	1.5 EB	1.7 EB	2.4 EB	
octachlorodibenzo-p-dioxin	8.7 EBJ	11 JEB	11 EB	14 EB	17 EB	23 EB	
octachlorodibenzofuran	0.62 EB	1.1 EB	0.55 EB	0.67 EB	0.61 EB	0.77 EB	
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 77	0.0090 U	0.017	0.010 U	0.0060 U	0.0050 U	0.0090 U	
bz 114	0.0050	0.011	0.0030 U	0.0020 U	0.0020 U	0.0020 U	
bz 123	0.0090	0.026	0.0040 U	0.0020 U	0.0020 U	0.0020 U	
bz 126	0.0020 U	0.0090	0.0020 U	0.0020 U	0.0020 U	0.0020 U	
bz 156/157	0.042 U	0.059 U	0.017 U	0.010 U	0.010 U	0.013 U	
bz 167	0.024 U	0.043	0.0070 U	0.0050 U	0.0040 U	0.0060 U	
bz 169	0.0040 U	0.0090 U	0.0020 U	0.0020 U	0.0010 U	0.0020 U	
bz 189	0.0090 U	0.016 U	0.0020 U	0.0010 U	0.0020 U	0.0020 U	
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>							
TBT - TBT (ppb dry)	2.21 U	2.42 UJ	2.41 U	2.26 UJ	2.25 U	2.79 U	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS 4KW LIS01CS4KWC5 N Far Field	CSDS 4KW LIS01CS4KWCP SC Far Field	CSDS B92 LIS01CSB92C1 N Active	CSDS B92 LIS01CSB92C3 N Active	CSDS B92 LIS01CSB92C5 N Active	CSDS B92 LIS01CSB92CP SC Active	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	-0.021 U	0.02 U	-0.03 U	0.031 U	-0.055 U	-0.036 U
cobalt 60	pCi/g dry	-0.033 U	0.026 U	-0.02 U	-0.043 U	-0.016 U	0.076 U
strontium 90	pCi/g dry	-0.18 U	-0.12 U	2.14 JEB	-0.06 U	-0.03 U	0.09 U
uranium 234	pCi/g dry	0.164 U	0.41 U	0.72 J	0.55 J	0.59 J	1.16
uranium 235	pCi/g dry	-0.0027 U	0.071 J	0.04 U	0.029 U	-0.007 U	0.07 U
uranium 238	pCi/g dry	0.22 U	0.26 J	0.63 J	0.85 J	0.34 U	0.85 J
total uranium	pCi/g dry	ND	0.331	1.35	1.4	0.59	2.01

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS RF3 LIS01CSRF3C1 N Reference	CSDS RF3 LIS01CSRF3C3 N Reference	CSDS RF3 LIS01CSRF3C5 N Reference	CSDS RF3 LIS01CSRF3CP SC Reference	CSDS RF4 LIS01CSRF4C1 N Reference	CSDS RF4 LIS01CSRF4C3 N Reference	
Analyte Group - Analyte Name	Units						
% Fines	%	22.00	11.00	14.00	12.00	3.00	4.00
% Water	%	31.41	20.77	25.01	23.98	21.00	14.83
% TOC	%	0.625	0.44	0.7	0.605	0.145	0.135
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	4840	3190	4590	3680	2700	2330
arsenic	ppm dry	3.3 J	2.5 J	3.1 J	3.4 J	1.1 J	2.0 J
beryllium	ppm dry	0.22 J	0.14 J	0.19 J	0.16 J	0.12 J	0.078 J
cadmium	ppm dry	R	R	R	R	R	R
chromium	ppm dry	15.3	8.2	12.2	10.2	6.7	4
copper	ppm dry	9.9	4.9	6.7	6	5.3	2.5
iron	ppm dry	11600	9030	11700	10200	6900	8920
lead	ppm dry	11.8	7.1	9.2	7.6	4.2	4.4
mercury	ppm dry	0.026 JM	0.0085 JM	0.016 JM	0.013 JM	0.0084 JM	0.0028 JM
nickel	ppm dry	10.5	7.4	8.7	9.9	9.3	4.7
selenium	ppm dry	0.12 J	0.08 J	0.12 J	0.073 J	0.053 J	0.039 J
silver	ppm dry	0.16	0.065	0.088	0.11	0.046	0.034
zinc	ppm dry	37 J	24.2 J	31.5 J	29.0 J	14.6 J	12.1 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	1.48E+00 J	1.41E-01 UJ	4.16E-01 J	4.81E-01 J	1.53E-01 UJ	1.25E-01 UJ
SEM cadmium	umol/g dry	1.78E-03 UJ	1.78E-03 UJ	1.78E-03 UJ	1.78E-03 UJ	1.78E-03 U	1.78E-03 UJ
SEM copper	umol/g dry	8.97E-02 EBJ	3.46E-02 EBJ	6.45E-02 EBJ	5.98E-02 EBJ	5.35E-02 EBJ	1.89E-02 EBJ
SEM lead	umol/g dry	6.37E-02 EBJ	2.46E-02 EBJ	4.87E-02 EBJ	4.68E-02 EBJ	2.27E-02 EBJ	1.74E-02 EBJ
SEM nickel	umol/g dry	5.79E-02 EBJ	3.75E-02 UJ	4.26E-02 UJ	5.11E-02 EBJ	3.92E-02 UJ	3.58E-02 UJ
SEM silver	umol/g dry	1.01E-02 UJ	1.95E-02 J	3.89E-03 JM	3.99E-03 JM	1.01E-02 UJ	1.01E-02 UJ
SEM zinc	umol/g dry	4.21E-01 J	2.14E-01 J	3.79E-01 J	3.55E-01 J	1.68E-01 J	1.28E-01 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	5 U	4 U	5 U	4 U	4 U	4 U
1-methylphenanthrene	ppb dry	13.2 U	12.1 U	13.0 U	12.5 U	12.0 U	11.2 U
2,6-dimethylnaphthalene	ppb dry	16.0 U	14.7 U	15.8 U	15.2 U	14.6 U	13.6 U
2-methylnaphthalene	ppb dry	15.6 U	14.4 U	15.5 U	14.8 U	14.3 U	13.3 U
acenaphthene+	ppb dry	16.0 U	14.7 U	15.8 U	15.2 U	14.6 U	13.6 U
acenaphthylene+	ppb dry	5 U	4 U	5 U	4 U	4 U	5
anthracene+	ppb dry	5	4 U	5 U	4 U	4 U	8

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS RF3 LIS01CSR3C1 N Reference	CSDS RF3 LIS01CSR3C3 N Reference	CSDS RF3 LIS01CSR3C5 N Reference	CSDS RF3 LIS01CSR3CP SC Reference	CSDS RF4 LIS01CSR4C1 N Reference	CSDS RF4 LIS01CSR4C3 N Reference
Analyte Group - Analyte Name	Units					
benzo(a)anthracene+	12	5	9	7	4	20
benzo(a)pyrene+	18	8	14	10	5	23
benzo(b)fluoranthene+	20	9	15	11	5	22
benzo(e)pyrene	14	6	10	8	4 U	17
benzo(g,h,i)perylene+	15	7	11	8	5	15
benzo(k)fluoranthene+	17 J	8 J	13 J	10 J	6 J	21 J
biphenyl	15.6 U	14.4 U	15.5 U	14.8 U	14.3 U	13.3 U
chrysene+	16	7	12	10	5	25
dibenz[a,h]anthracene+	5 U	4 U	5 U	4 U	4 U	4
fluoranthene+	22	10	16	13	5	29
fluorene+	5 U	4 U	5 U	4 U	4 U	4 U
indeno[1,2,3-cd]pyrene+	17	8	13	11	5	18
naphthalene+	5 UJ	4 UJ	5 UJ	4 UJ	4 UJ	4 UJ
perylene	8	4 U	5	4	4 U	70
phenanthrene+	12	5	9	7	4 U	18
pyrene+	24	10	16	13	5	36
Total PAH <sup>1</sup>	178	77	128	100	45	244
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>						
bis(2-ethylhexyl)phthalate	64 U	42 U	50 U	40 U	49 U	71 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 8*	2.8 UJ	2.6 UJ	2.8 UJ	2.7 UJ	2.6 UJ	2.4 UJ
bz 18*	3.1 U	2.9 U	3.1 U	2.9 U	2.9 U	2.6 U
bz 28*	4.3 U	4.0 U	4.2 U	4.0 U	3.9 U	0.72 JM
bz 44*	4.4 U	4.1 U	4.4 U	4.1 U	4.0 U	3.7 U
bz 49	2.1 U	1.9 U	2.1 U	2.0 U	1.9 U	1.8 U
bz 52*	2.8 U	2.6 U	2.8 U	2.7 U	2.6 U	0.67 JM
bz 66*	2.8 U	2.6 U	2.8 U	2.7 U	2.6 U	2.4 U
bz 87	2.6 U	2.4 U	2.5 U	2.4 U	2.3 U	2.2 U
bz 101*	3.8 U	3.5 U	3.7 U	3.5 U	3.4 U	3.2 U
bz 105*	7.4 U	6.8 U	7.3 U	6.9 U	6.7 U	6.2 U
bz 118*	1.4 U	1.3 U	1.4 U	1.3 U	1.3 U	1.2 U
bz 128*	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
bz 138*	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation		CSDS RF3 LIS01CSRF3C1 N Reference	CSDS RF3 LIS01CSRF3C3 N Reference	CSDS RF3 LIS01CSRF3C5 N Reference	CSDS RF3 LIS01CSRF3CP SC Reference	CSDS RF4 LIS01CSRF4C1 N Reference	CSDS RF4 LIS01CSRF4C3 N Reference
Analyte Group - Analyte Name	Units						
bz 153*	ppb dry	1.9 UJ	1.8 UJ	1.9 UJ	1.8 UJ	1.8 UJ	1.6 UJ
bz 170*	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
bz 180*	ppb dry	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.0 U
bz 183	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
bz 184	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
bz 187*	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
bz 195*	ppb dry	R	R	R	R	R	R
bz 206*	ppb dry	1.9 U	1.7 U	1.9 U	1.8 U	1.7 U	1.6 U
bz 209*	ppb dry	1.9 U	1.7 U	1.9 U	1.8 U	1.7 U	1.6 U
Total PCBs <sup>2</sup>	ppb dry	ND	ND	ND	ND	ND	2.78
<b>PESTICIDES, ppb dry (ug/kg)</b>							
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	ppb dry	6.9 U	6.3 U	6.8 U	6.4 U	6.2 U	5.8 U
2,4'-DDD	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
2,4'-DDE	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
2,4'-DDT	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
4,4'-DDD	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
4,4'-DDE	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
4,4'-DDT	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
total DDT	ppb dry	ND	ND	ND	ND	ND	ND
aldrin	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
alpha-bhc	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
alpha-chlordane	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
beta-bhc	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
delta-bhc	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
dieldrin	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
endosulfan i	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
endosulfan ii	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
endosulfan sulfate	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
total endosulfans	ppb dry	ND	ND	ND	ND	ND	ND
endrin	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
gamma-bhc	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
gamma-chlordane	ppb dry	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
heptachlor	ppb dry	0.46 UJ	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS RF3 LIS01CSR3C1 N Reference	CSDS RF3 LIS01CSR3C3 N Reference	CSDS RF3 LIS01CSR3C5 N Reference	CSDS RF3 LIS01CSR3CP SC Reference	CSDS RF4 LIS01CSR4C1 N Reference	CSDS RF4 LIS01CSR4C3 N Reference
Analyte Group - Analyte Name	Units					
heptachlor epoxide	0.46 U	0.43 U	0.46 U	0.43 U	0.42 U	0.39 U
toxaphene (camphechlor)	117.4 U	108.2 U	116.2 U	110.1 U	106.8 U	99.0 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>						
2,3,7,8-tcdf (db225)	2.2	0.71	1.1	1.1	0.70	0.26
2,3,7,8-cl4-dibenzo-p-dioxin	0.16	0.11	0.097 U	0.13 U	0.10 U	1.0 U
2,3,4,7,8-cl5-dibenzofuran	0.91	0.38 B	0.49 B	0.50 B	0.31 B	1.8
2,3,4,6,7,8-cl6-dibenzofuran	0.83 B	0.35 B	0.46 B	0.48 B	0.26 B	1.8
1,2,3,7,8-cl5-dibenzofuran	0.73	0.31 B	0.43 B	0.43 B	0.22 B	1.3 U
1,2,3,7,8-cl5-dibenzo-p-dioxin	0.29 BJ	0.16 BJ	0.15 BJ	0.19 BJ	0.12 BJ	1.00 J
1,2,3,7,8,9-cl6-dibenzofuran	0.073U	0.089U	0.077U	0.088U	0.074U	0.7U
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	1.3	0.47 B	0.70	0.70	0.35 B	1.5
1,2,3,6,7,8-cl6-dibenzofuran	0.64 B	0.27 B	0.32 B	0.33 B	0.23 B	1.6
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	1.3	0.41	0.57	0.61	0.34	1.3
1,2,3,4,7,8-cl6-dibenzofuran	1.1	0.36 B	0.50	0.50	0.31 B	1.5
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	0.36	0.17	0.22	0.19	0.13	0.74 U
1,2,3,4,7,8,9-cl7-dibenzofuran	0.58	0.14	0.19	0.19	0.10 U	0.72
1,2,3,4,6,7,8-cl7-dibenzofuran	8.2 EB	2	3.4 EB	3.2 EB	1.9 EB	6.4 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	32 EB	8.4	14 EB	13 EB	7.2 EB	20 EB
octachlorodibenzo-p-dioxin	310 JEB	93 JEB	160 JEB	150 JEB	74 JEB	240 JEB
octachlorodibenzofuran	11 EB	2.6 EB	4.9 EB	4.6 EB	2.7 EB	10 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 77	0.080 U	0.021 U	0.037 U	0.033 U	0.018 U	0.0060 U
bz 114	0.0050 U	0.0020	0.0030 U	0.0010 U	0.0010 U	0.0010 U
bz 123	0.0070 U	0.0030 U	0.0030 U	0.0020 U	0.0020 U	0.0010 U
bz 126	0.0050 U	0.0010 U	0.0030 U	0.0010 U	0.0010 U	0.0010 U
bz 156/157	0.047 U	0.018 U	0.027 U	0.028 U	0.019 U	0.011 U
bz 167	0.024 U	0.0090 U	0.013 U	0.012 U	0.010 U	0.0050 U
bz 169	0.0010 U	0.0010 U	U	0.0010 U	0.0010 U	0.0010 U
bz 189	0.0060 U	0.0030 U	0.0030 U	0.0040 U	0.0040 U	0.0020 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>						
TBT - TBT (ppb dry)	2.76 UJ	2.53 UJ	2.69 UJ	2.56 UJ	2.43 U	2.24 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS RF3 LIS01CSR3C1 N Reference	CSDS RF3 LIS01CSR3C3 N Reference	CSDS RF3 LIS01CSR3C5 N Reference	CSDS RF3 LIS01CSR3CP SC Reference	CSDS RF4 LIS01CSR4C1 N Reference	CSDS RF4 LIS01CSR4C3 N Reference	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	0.051 U	-0.02 U	-0.057 U	0.022 U	-0.002 U	-0.005 U	
cobalt 60	0.041 U	0.06 U	0.095 U	0.079 U	0.026 U	-0.045 U	
strontium 90	-0.1 U	-0.002 U	0.3 U	0.18 U	0.14 U	0.11 U	
uranium 234	0.87 U	0.9 U	0.55 U	0.66 U	0.48 U	0.91 J	
uranium 235	0.06 U	0.015 U	0.047 U	0.03 U	0.08 U	0 J	
uranium 238	0.48 J	0.71 J	0.45 J	0.9 J	0.68 J	1.11	
total uranium	0.48	0.71	0.45	0.9	0.68	2.02	

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS RF4 LIS01CSRF4C5 N Reference	CSDS RF4 LIS01CSRF4CP SC Reference	CSDS S94 LIS01CSS94C1 N Active	CSDS S94 LIS01CSS94C3 N Active	CSDS S94 LIS01CSS94C5 N Active	CSDS S94 LIS01CSS94CP SC Active	
Analyte Group - Analyte Name	Units						
% Fines	%	4.00	5.00	2.00	0.00	6.00	3.00
% Water	%	19.72	19.22	19.00	17.97	19.73	17.97
% TOC	%	0.0465	0.18	0.0295	0.0475	0.35	0.195
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	2330	2560	2660	2760	3800	3080
arsenic	ppm dry	1.4 J	1.6 J	2.2 J	2.5 J	2.0 J	2.3 J
beryllium	ppm dry	0.099 J	0.11 J	0.082	0.097	0.11	0.11
cadmium	ppm dry	R	R	R	R	0.058 J	0.037 J
chromium	ppm dry	5.1	5.7	4.3	5.5	7	6.2
copper	ppm dry	4.6	4.7	2.2	2.5	4.7	3.6
iron	ppm dry	7770	8020	9600	8470	9130	8580
lead	ppm dry	2.5	4.8	4 J	4.3 J	5.4 J	4.9 J
mercury	ppm dry	0.0014 UJ	0.0067 JM	0.0041 J	0.0095 J	0.015 J	0.012 J
nickel	ppm dry	8.1	8	4.6	5.6	6.5	5.5
selenium	ppm dry	0.05 J	0.054 J	0.047 J	0.049 J	0.044 J	0.027 J
silver	ppm dry	0.022	0.044	0.024	0.023	0.097	0.054
zinc	ppm dry	11.9 J	16.4 J	14.1 J	16.7 J	18.9 J	18.5 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	1.47E-01 UJ	1.28E-01 UJ	1.28E-01 UJ	1.13E-01 UJ	1.22E-01 UJ	3.03E-01 J
SEM cadmium	umol/g dry	1.78E-03 UJ	1.78E-03 UJ	8.10E-04 UJ	7.12E-04 UJ	9.79E-04 UJ	1.07E-03 UJ
SEM copper	umol/g dry	1.89E-02 EBJ	2.83E-02 EBJ	2.20E-02 EBJ	2.99E-02 EBJ	2.36E-02 EBJ	4.25E-02 EBJ
SEM lead	umol/g dry	1.83E-02 EBJ	1.98E-02 EBJ	1.40E-02 EBJM	1.25E-02 EBJM	1.79E-02 EBJM	2.51E-02 EBJM
SEM nickel	umol/g dry	2.90E-02 UJ	2.73E-02 UJ	3.41E-02 UJ	4.60E-02 UJ	2.90E-02 UJ	4.94E-02 UJ
SEM silver	umol/g dry	1.01E-02 UJ	1.01E-02 UJ	3.52E-03 J	1.21E-02 J	1.21E-02 J	5.28E-03 J
SEM zinc	umol/g dry	1.28E-01 J	1.71E-01 J	1.91E-01 UJ	1.80E-01 UJ	1.64E-01 UJ	2.34E-01 UJ
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	4 U	4 U	22 U	21 U	23 U	22 U
1-methylphenanthrene	ppb dry	11.7 U	11.7 U	4 U	4 U	4 U	4 U
2,6-dimethylnaphthalene	ppb dry	14.2 U	14.3 U	18 U	18 U	19 U	18 U
2-methylnaphthalene	ppb dry	13.9 U	14.0 U	19 U	19 U	20 U	19 U
acenaphthene+	ppb dry	14.2 U	14.3 U	21 U	21 U	22 U	21 U
acenaphthylene+	ppb dry	4 U	4 U	4 U	4 U	4 U	4 U
anthracene+	ppb dry	4 U	4 U	4 U	4 U	4 U	4 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS RF4 LIS01CSRF4C5 N Reference	CSDS RF4 LIS01CSRF4CP SC Reference	CSDS S94 LIS01CSS94C1 N Active	CSDS S94 LIS01CSS94C3 N Active	CSDS S94 LIS01CSS94C5 N Active	CSDS S94 LIS01CSS94CP SC Active	
Analyte Group - Analyte Name	Units						
benzo(a)anthracene+	ppb dry	4 U	4 U	4 U	4 U	13	7
benzo(a)pyrene+	ppb dry	4 U	4	4 U	4 U	16	9
benzo(b)fluoranthene+	ppb dry	4 U	4	4 U	4 U	15	8
benzo(e)pyrene	ppb dry	4 U	4 U	4 U	4 U	13	7
benzo(g,h,i)perylene+	ppb dry	4 U	4 U	4 U	7	12	7
benzo(k)fluoranthene+	ppb dry	4 U	4 J	4 U	4 U	16	8
biphenyl	ppb dry	13.9 U	14.0 U	19 U	19 U	20 U	19 U
chrysene+	ppb dry	4 U	4 U	4 U	4	15	8
dibenz[a,h]anthracene+	ppb dry	4 U	4 U	27 UJ	27 UJ	28 UJ	28 UJ
fluoranthene+	ppb dry	4 U	5	4 U	6	21	12
fluorene+	ppb dry	4 U	4 U	26 U	26 U	27 U	26 U
indeno[1,2,3-cd]pyrene+	ppb dry	4 U	4 U	4 U	4 U	12	7
naphthalene+	ppb dry	4 UJ	4 UJ	20 UJ	20 UJ	21 UJ	20 UJ
perylene	ppb dry	4 U	4 U	4 U	4 U	19	12
phenanthrene+	ppb dry	4 U	4 U	4 U	4 U	8	5
pyrene+	ppb dry	4 U	5	4 U	5	23	13
Total PAH <sup>1</sup>	ppb dry	0	22	0	22	151	84
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>							
bis(2-ethylhexyl)phthalate	ppb dry	40 U	40 U	66 U	98 U	65 U	63 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 8*	ppb dry	2.5 UJ	2.5 UJ	9.7 U	9.7 U	10.2 U	9.9 U
bz 18*	ppb dry	2.8 U	2.8 U	3.0 U	3.0 U	3.1 U	3.0 U
bz 28*	ppb dry	3.8 U	3.8 U	0.4 U	0.4 U	0.4 U	0.4 U
bz 44*	ppb dry	3.9 U	3.9 U	2.9 U	2.9 U	3.0 U	3.0 U
bz 49	ppb dry	1.9 U	1.9 U	2.6 U	2.6 U	2.7 U	2.6 U
bz 52*	ppb dry	2.5 U	2.5 U	3.9 U	3.9 U	4.1 U	4.0 U
bz 66*	ppb dry	2.5 U	2.5 U	4.1 U	4.1 U	4.3 U	4.2 U
bz 87	ppb dry	2.3 U	2.3 U	4.1 U	4.1 U	4.3 U	4.2 U
bz 101*	ppb dry	3.3 U	3.3 U	7.9 U	7.9 U	8.3 U	8.1 U
bz 105*	ppb dry	6.5 U	6.6 U	2.2 U	2.2 U	2.3 U	2.2 U
bz 118*	ppb dry	1.3 U	1.3 U	4.1 U	4.1 U	4.3 U	4.2 U
bz 128*	ppb dry	0.41 U	0.41 U	1.6 U	1.6 U	1.7 U	1.6 U
bz 138*	ppb dry	0.41 U	0.41 U	3.9 UJ	3.9 UJ	4.1 UJ	4.0 UJ

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS RF4 LIS01CSRF4C5 N Reference	CSDS RF4 LIS01CSRF4CP SC Reference	CSDS S94 LIS01CSS94C1 N Active	CSDS S94 LIS01CSS94C3 N Active	CSDS S94 LIS01CSS94C5 N Active	CSDS S94 LIS01CSS94CP SC Active
Analyte Group - Analyte Name	Units					
bz 153*	1.7 UJ	1.7 UJ	3.3 U	3.2 U	3.4 U	3.3 U
bz 170*	0.41 U	0.41 U	1.2 U	1.2 U	1.3 U	1.3 U
bz 180*	1.1 U	1.1 U	2.8 U	2.8 U	3.0 U	2.9 U
bz 183	0.41 U	0.41 U	1.8 U	1.8 U	1.9 U	1.9 U
bz 184	0.41 U	0.41 U	1.4 U	1.4 U	1.5 U	1.5 U
bz 187*	0.41 U	0.41 U	3.5 U	3.5 U	3.7 U	3.6 U
bz 195*	R	R	3.4 U	3.4 U	3.6 U	3.5 U
bz 206*	1.7 U	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U
bz 209*	1.7 U	1.7 U	1.5 U	1.5 U	1.6 U	1.5 U
Total PCBs <sup>2</sup>	ND	ND	ND	ND	ND	ND
<b>PESTICIDES, ppb dry (ug/kg)</b>						
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	6.1 U	6.1 U	4.5 U	4.5 U	4.8 U	4.6 U
2,4'-DDD	0.41 U	0.41 U	0.4 U	0.4 U	0.4 U	0.4 U
2,4'-DDE	0.41 U	0.41 U	4.4 U	4.4 U	4.6 U	4.5 U
2,4'-DDT	0.41 U	0.41 U	0.4 U	0.4 U	0.4 U	0.4 U
4,4'-DDD	0.41 U	0.41 U	0.4 U	0.4 U	0.4 U	0.4 U
4,4'-DDE	0.41 U	0.41 U	15.8 U	15.7 U	16.5 U	16.1 U
4,4'-DDT	0.41 U	0.41 U	12.3 U	12.3 U	12.9 U	12.6 U
total DDT	ND	ND	ND	ND	ND	ND
aldrin	0.41 U	0.41 U	18.7 U	18.7 U	19.6 U	19.1 U
alpha-bhc	0.41 U	0.41 U	4.8 U	4.8 U	5.0 U	4.9 U
alpha-chlordane	0.41 U	0.41 U	4.2 U	4.2 U	4.4 U	4.3 U
beta-bhc	0.41 U	0.41 U	3.6 U	3.6 U	3.8 U	3.7 U
delta-bhc	0.41 U	0.41 U	3.5 U	3.5 U	3.6 U	3.6 U
dieldrin	0.41 U	0.41 U	0.4 U	0.4 U	0.4 U	0.4 U
endosulfan i	0.41 U	0.41 U	4.5 U	4.5 U	4.7 U	4.6 U
endosulfan ii	0.41 U	0.41 U	0.4 U	0.4 U	0.4 U	0.4 U
endosulfan sulfate	0.41 U	0.41 U	3.8 U	3.8 U	4.0 U	3.9 U
total endosulfans	ND	ND	ND	ND	ND	ND
endrin	0.41 U	0.41 U	0.4 U	0.4 U	0.4 U	0.4 U
gamma-bhc	0.41 U	0.41 U	4.8 U	4.8 U	5.0 U	4.9 U
gamma-chlordane	0.41 U	0.41 U	3.7 U	3.7 U	3.9 U	3.8 U
heptachlor	0.41 U	0.41 U	6.3 U	6.3 U	6.6 U	6.4 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	CSDS RF4 LIS01CSRF4C5 N Reference	CSDS RF4 LIS01CSRF4CP SC Reference	CSDS S94 LIS01CSS94C1 N Active	CSDS S94 LIS01CSS94C3 N Active	CSDS S94 LIS01CSS94C5 N Active	CSDS S94 LIS01CSS94CP SC Active	
Analyte Group - Analyte Name	Units						
heptachlor epoxide	0.41 U	0.41 U	0.4 U	0.4 U	0.4 U	0.4 U	
toxaphene (camphechlor)	104.1 U	104.5 U	44.4 U	44.3 U	46.5 U	45.4 U	
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>							
2,3,7,8-tcdf (db225)	0.14	0.46	0.24	0.22 U	2.1	0.56	
2,3,7,8-cl4-dibenzo-p-dioxin	0.089 U	0.11 U	0.10 U	0.11 U	0.100 U	0.10 U	
2,3,4,7,8-cl5-dibenzofuran	0.13 B	0.29 B	0.40 B	0.26 B	0.82	0.52 B	
2,3,4,6,7,8-cl6-dibenzofuran	0.15 B	0.24 B	0.47 B	0.22 B	0.52 B	0.46 B	
1,2,3,7,8-cl5-dibenzofuran	0.13 B	0.16 B	0.37 J	0.16 J	0.85 J	0.41 J	
1,2,3,7,8-cl5-dibenzo-p-dioxin	0.079 U	0.10 BJ	0.36	0.11 U	0.21	0.36	
1,2,3,7,8,9-cl6-dibenzofuran	0.071U	0.08U	0.34	0.11U	0.32	0.29	
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	0.089 B	0.24	0.41 J	0.21 J	0.52 J	0.57 J	
1,2,3,6,7,8-cl6-dibenzofuran	0.16 B	0.19 B	0.40 B	0.22 B	0.50 B	0.42 B	
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	0.089	0.23	0.35	0.22	0.62	0.68	
1,2,3,4,7,8-cl6-dibenzofuran	0.12 B	0.22 B	0.43 B	0.20 B	1.4	0.53	
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	0.063 U	0.086 U	0.30	0.11	0.20 U	0.36	
1,2,3,4,7,8,9-cl7-dibenzofuran	0.069 U	0.098	0.33	0.096 U	0.35	0.40	
1,2,3,4,6,7,8-cl7-dibenzofuran	0.28 EB	1.2 EB	0.72 EB	0.61 U	3.1 EB	2.1 EB	
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	1.1 EB	4.4 EB	1.5 EB	1.9 EB	11 EB	7.9 EB	
octachlorodibenzo-p-dioxin	11 JEB	46 EB	13 JEB	19 JEB	100 JEB	74 JEB	
octachlorodibenzofuran	0.42 EB	1.8 EB	1.1 EB	1.1 EB	4.9 EB	3.1 EB	
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 77	0.0030 U	0.013 U	0.017	0.010 U	0.069	0.045	
bz 114	0.0010 U	0.0010	0.010	0.0040	0.0090	0.0060	
bz 123	0.0010 U	0.0010 U	0.024	0.0080	0.016	0.0070	
bz 126	0.0010 U	0.0010 U	0.0090	0.0020 U	0.0050 U	0.0030 U	
bz 156/157	0.0080 U	0.013 U	0.046 U	0.043 U	0.088	0.058 U	
bz 167	0.0040 U	0.0050 U	0.038	0.022 U	0.042	0.028 U	
bz 169	0.0010 U	0.0010 U	0.0060 U	0.0010 U	0.0050 U	0.0010 U	
bz 189	0.0010 U	0.0020 U	0.012 U	0.0080 U	0.016 U	0.010 U	
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>							
TBT - TBT (ppb dry)	2.34 U	2.37 UJ	1.00 U	0.98 U	1.08 U	1.54 U	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Site ID Station Code Field Sample ID Type Designation	CSDS RF4 LIS01CSRF4C5 N Reference	CSDS RF4 LIS01CSRF4CP SC Reference	CSDS S94 LIS01CSS94C1 N Active	CSDS S94 LIS01CSS94C3 N Active	CSDS S94 LIS01CSS94C5 N Active	CSDS S94 LIS01CSS94CP SC Active
	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	-0.024 U	0.014 U	-0.045 U	-0.04 U	0.038 U	-0.012 U
cobalt 60	pCi/g dry	-0.016 U	0.017 U	0.043 U	-0.052 U	0.018 U	-0.025 U
strontium 90	pCi/g dry	0.26 U	0.07 U	0.11 U	0.05 U	0.02 U	0.05 U
uranium 234	pCi/g dry	0.41 U	0.59 J	0.49 U	0.52 U	0.73 J	0.4 U
uranium 235	pCi/g dry	0.047 U	0.029 U	0.041 U	0.042 U	0.027 U	0.043 U
uranium 238	pCi/g dry	0.72 J	0.68 J	0.45 J	0.67 J	0.32 U	0.35 U
total uranium	pCi/g dry	0.72	1.27	0.45	0.67	0.73	ND

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 1KE LIS01NL1KEC1 N Far Field	NLDS 1KE LIS01NL1KEC3 N Far Field	NLDS 1KE LIS01NL1KEC5 N Far Field	NLDS 1KE LIS01NL1KECP SC Far Field	NLDS 2KE LIS01NL2KEC1 N Far Field	NLDS 2KE LIS01NL2KEC3 N Far Field	
Analyte Group - Analyte Name	Units						
% Fines	%	67.00	61.00	64.00	62.00	54.00	58.00
% Water	%	60.40	55.11	56.03	60.35	61.27	68.71
% TOC	%	1.5	1.05	1.2	1.2	1.3	1.3
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	9430	8670	8370	8840	8340	7680
arsenic	ppm dry	4.8 J	3.8 J	3.9 J	3.9 J	4.1 J	3.8 J
beryllium	ppm dry	0.37	0.36	0.31	0.32	0.36	0.32
cadmium	ppm dry	0.13 J	0.11 J	0.097 J	0.10 J	0.10 J	0.090 J
chromium	ppm dry	24.5	23.7	20.2	21.8	23.3	20.2
copper	ppm dry	16.3	15.3	14.5	15.3	14.4	14.7
iron	ppm dry	16300	15000	15200	15100	15200	14100
lead	ppm dry	17.8 J	17.5 J	16.3 J	18.1 J	16.8 J	16.5 J
mercury	ppm dry	0.036 JM	0.036 JM	0.031 JM	0.033 JM	0.030 JM	0.033 JM
nickel	ppm dry	14.7	13.7	12.1	12.7	12.9	11.9
selenium	ppm dry	0.29 J	0.28 J	0.20 J	0.22 J	0.24 J	0.21 J
silver	ppm dry	0.081	0.29	0.043	0.056	0.052	0.045
zinc	ppm dry	56.2 J	54.3 J	47.1 J	50.2 J	54.3 J	49.2 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	8.97E+00 J	5.50E-01 J	1.14E+01 J	1.47E+00 J	1.86E+00 J	1.09E+00 J
SEM cadmium	umol/g dry	3.91E-03 J	1.60E-03 JM	1.78E-03 JM	1.51E-03 JM	3.83E-03 UJ	3.83E-03 UJ
SEM copper	umol/g dry	1.05E-01 EBJ	8.50E-02 EBJ	7.24E-02 EBJ	1.05E-01 EBJ	1.15E-01 EBJ	8.34E-02 EBJ
SEM lead	umol/g dry	8.64E-02 EBJ	7.53E-02 EBJ	7.77E-02 EBJ	7.77E-02 EBJ	7.24E-02 EBJ	6.13E-02 EBJ
SEM nickel	umol/g dry	6.13E-02 UJ	1.60E-01 EBJ	8.35E-02 UJ	5.96E-02 UJ	7.50E-02 UJ	8.86E-02 UJ
SEM silver	umol/g dry	6.77E-03 UJ	5.01E-03 UJ	7.23E-03 UJ	6.95E-03 UJ	8.81E-03 UJ	5.10E-03 UJ
SEM zinc	umol/g dry	6.06E-01 J	5.64E-01 J	5.14E-01 J	5.20E-01 J	5.32E-01 J	4.86E-01 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	13.9 U	13.3 U	13.3 U	13.6 U	14.1 U	14.6 U
1-methylphenanthrene	ppb dry	81.3 U	78.2 U	78.2 U	8 JM	6 JM	85.8 U
2,6-dimethylnaphthalene	ppb dry	20.2 U	19.4 U	19.4 U	19.8 U	20.6 U	21.3 U
2-methylnaphthalene	ppb dry	13.9 U	13.3 U	13.3 U	13.6 U	14.1 U	14.6 U
acenaphthene+	ppb dry	11.7 U	11.2 U	11.2 U	11.4 U	11.9 U	12.3 U
acenaphthylene+	ppb dry	9 JM	18 JM	9 JM	17 JM	9 JM	8 JM
anthracene+	ppb dry	24	14 J	13 J	32 J	12 J	11 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 1KE LIS01NL1KEC1 N Far Field	NLDS 1KE LIS01NL1KEC3 N Far Field	NLDS 1KE LIS01NL1KEC5 N Far Field	NLDS 1KE LIS01NL1KECP SC Far Field	NLDS 2KE LIS01NL2KEC1 N Far Field	NLDS 2KE LIS01NL2KEC3 N Far Field
Analyte Group - Analyte Name	Units					
benzo(a)anthracene+	46 J	46 J	39 J	120 J	37 J	36 J
benzo(a)pyrene+	53 J	61 J	46 J	110 J	48 J	47 J
benzo(b)fluoranthene+	49 J	50 J	48 J	100 J	41 J	41 J
benzo(e)pyrene	38 J	41 J	34 J	74 J	33 J	33 J
benzo(g,h,i)perylene+	32 J	41 J	33 J	57 J	35 J	34 J
benzo(k)fluoranthene+	47 J	50 J	40 J	110 J	40 J	40 J
biphenyl	6 U	6 U	7	6 U	6 U	6 U
chrysene+	64 J	54 J	51 J	120 J	46 J	43 J
dibenz[a,h]anthracene+	7 J	8 J	6 J	12 J	6 J	6 U
fluoranthene+	58 J	54 J	63 J	77 J	57 J	56 J
fluorene+	18.6 U	17.9 U	17.9 U	18.2 U	19.0 U	19.6 U
indeno[1,2,3-cd]pyrene+	38 J	44 J	36 J	66 J	36 J	37 J
naphthalene+	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ
perylene	22 J	22 J	20 J	36 J	18 J	19 J
phenanthrene+	33 J	23 J	26 J	39 J	29 J	27 J
pyrene+	60 J	58 J	61 J	78 J	59 J	57 J
Total PAH <sup>1</sup>	520	521	471	938	455	437
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>						
bis(2-ethylhexyl)phthalate	65 U	60 U	88 U	87 U	71 U	110 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 8*	4.0 UJ	3.8 UJ	3.8 UJ	3.9 UJ	4.0 UJ	4.2 UJ
bz 18*	2.4 U	2.3 U	2.3 U	2.4 U	2.5 U	2.6 U
bz 28*	0.66 JM	2.6 U	0.90 J	2.6 U	2.7 U	2.8 U
bz 44*	2.4 U	2.3 U	2.3 U	2.4 U	2.5 U	2.6 U
bz 49	2.1 U	2.0 U	2.0 U	2.0 U	2.1 U	2.2 U
bz 52*	2.3 U	2.2 U	2.2 U	2.2 U	2.3 U	2.4 U
bz 66*	7.0 U	6.7 U	6.6 U	6.7 U	7.0 U	7.4 U
bz 87	3.0 U	2.9 U	2.8 U	2.9 U	3.0 U	3.2 U
bz 101*	3.0 U	2.9 U	2.8 U	2.9 U	3.0 U	3.2 U
bz 105*	2.3 U	2.2 U	2.2 U	2.2 U	2.3 U	2.4 U
bz 118*	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
bz 128*	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.4 U
bz 138*	0.59 U	0.56 U	0.56 U	0.74 J	0.6 U	0.62 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 1KE LIS01NL1KEC1 N Far Field	NLDS 1KE LIS01NL1KEC3 N Far Field	NLDS 1KE LIS01NL1KEC5 N Far Field	NLDS 1KE LIS01NL1KECP SC Far Field	NLDS 2KE LIS01NL2KEC1 N Far Field	NLDS 2KE LIS01NL2KEC3 N Far Field
Analyte Group - Analyte Name	Units					
bz 153*	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
bz 170*	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
bz 180*	1.2 JM	1.5 JM	1.4 JM	1.70 JM	1.4 JM	1.2 JM
bz 183	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
bz 184	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
bz 187*	1.5 U	1.5 U	1.5 U	1.5 U	1.6 U	1.6 U
bz 195*	1.5 U	1.5 U	1.5 U	1.5 U	1.6 U	1.6 U
bz 206*	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
bz 209*	1.5 U	1.5 U	1.5 U	1.5 U	1.6 U	1.6 U
Total PCBs <sup>2</sup>	3.72	3	4.6	4.88	2.8	2.4
<b>PESTICIDES, ppb dry (ug/kg)</b>						
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
2,4'-DDD	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
2,4'-DDE	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
2,4'-DDT	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
4,4'-DDD	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
4,4'-DDE	0.59 U	0.56 U	0.79 J	1 J	0.6 U	0.62 U
4,4'-DDT	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
total DDT	ND	ND	0.79	1	ND	ND
aldrin	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
alpha-bhc	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
alpha-chlordane	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
beta-bhc	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
delta-bhc	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
dieldrin	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
endosulfan i	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
endosulfan ii	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
endosulfan sulfate	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
total endosulfans	ND	ND	ND	ND	ND	ND
endrin	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
gamma-bhc	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
gamma-chlordane	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U
heptachlor	0.59 U	0.56 U	0.56 U	0.57 U	0.6 U	0.62 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 1KE LIS01NL1KEC1 N Far Field	NLDS 1KE LIS01NL1KEC3 N Far Field	NLDS 1KE LIS01NL1KEC5 N Far Field	NLDS 1KE LIS01NL1KECP SC Far Field	NLDS 2KE LIS01NL2KEC1 N Far Field	NLDS 2KE LIS01NL2KEC3 N Far Field	
Analyte Group - Analyte Name	Units						
heptachlor epoxide	ppb dry	17.2 U	16.4 U	16.4 U	16.6 U	17.3 U	18.2 U
toxaphene (camphechlor)	ppb dry	43.4 U	41.6 U	41.3 U	42.1 U	43.8 U	45.9 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>							
2,3,7,8-tcdf (db225)	pptr dry	5.9 U	N	5.7 U	5.4 U	4.7	5.7
2,3,7,8-cl4-dibenzo-p-dioxin	pptr dry	0.20	N	0.27	0.17	0.14 U	0.22
2,3,4,7,8-cl5-dibenzofuran	pptr dry	1.0	N	1.2	1.1	1.1	1.3
2,3,4,6,7,8-cl6-dibenzofuran	pptr dry	0.98	N	1.1	0.94	1.0	1.2
1,2,3,7,8-cl5-dibenzofuran	pptr dry	0.87 B	N	0.98	0.86	0.91	1.1
1,2,3,7,8-cl5-dibenzo-p-dioxin	pptr dry	0.39	N	0.42	0.38	0.39	0.45
1,2,3,7,8,9-cl6-dibenzofuran	pptr dry	0.067U	N	0.07U	0.086U	0.1	0.12
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	pptr dry	2.0	N	2.3	1.9	2.0	2.2
1,2,3,6,7,8-cl6-dibenzofuran	pptr dry	0.73	N	0.87	0.71	0.77	0.84
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	pptr dry	1.9	N	2.2	1.7	1.9	1.9
1,2,3,4,7,8-cl6-dibenzofuran	pptr dry	1.4	N	1.7	1.4	1.4	1.6
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	pptr dry	0.59	N	0.67	0.54	0.54	0.65
1,2,3,4,7,8,9-cl7-dibenzofuran	pptr dry	0.43	N	0.56	0.45	0.48	0.50
1,2,3,4,6,7,8-cl7-dibenzofuran	pptr dry	12 EB	N	15 EB	11 EB	12 EB	13 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	pptr dry	49 EB	N	55 EB	44 EB	54 EB	52 EB
octachlorodibenzo-p-dioxin	pptr dry	490 EB	N	510 EB	460 EB	540 EB	510 EB
octachlorodibenzofuran	pptr dry	13 EB	N	16 EB	12 EB	16 EB	13 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 77	ppb dry	0.12	N	0.13	0.12	0.10	0.12
bz 114	ppb dry	0.012 U	N	0.012 U	0.010 U	0.0080 U	0.011 U
bz 123	ppb dry	0.013 U	N	0.014 U	0.013 U	0.010 U	0.014 U
bz 126	ppb dry	0.0070 U	N	0.0080 U	0.0050 U	0.0050 U	0.0090 U
bz 156/157	ppb dry	0.092 U	N	0.10 U	0.081 U	0.072 U	0.095 U
bz 167	ppb dry	0.042 U	N	0.048 U	0.036 U	0.036 U	0.043 U
bz 169	ppb dry	0.0010 U	N	0.0020 U	0.0020 U	0.0020 U	0.0020 U
bz 189	ppb dry	0.011 U	N	0.012 U	0.0090 U	0.0080 U	0.010 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>							
TBT - TBT (ppb dry)	ppb dry	1.52 J	1.45 J	1.47 J	1.54 J	1.56 J	2.41 JM

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 1KE LIS01NL1KEC1 N Far Field	NLDS 1KE LIS01NL1KEC3 N Far Field	NLDS 1KE LIS01NL1KEC5 N Far Field	NLDS 1KE LIS01NL1KECP SC Far Field	NLDS 2KE LIS01NL2KEC1 N Far Field	NLDS 2KE LIS01NL2KEC3 N Far Field	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.11 U	-0.075 U	-0.029 U	-0.059 U	0.009 U	0.014 U
cobalt 60	pCi/g dry	-0.06 U	0.1 U	-0.051 U	0.02 U	-0.052 U	0.002 U
strontium 90	pCi/g dry	0.58 U	0.45 U	0.14 U	-0.02 U	0.44 U	-0.26 U
uranium 234	pCi/g dry	0.78 J	0.7 J	0.79 J	0.88 J	0.7 J	0.87 J
uranium 235	pCi/g dry	0.015 U	0.036 U	0.042 U	0.05 U	0.14 U	0.16 J
uranium 238	pCi/g dry	0.7 J	0.69 J	0.8 J	0.73 J	0.64 J	0.82 J
total uranium	pCi/g dry	1.48	1.39	1.59	1.61	1.34	1.85

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 2KE LIS01NL2KEC5 N Far Field	NLDS 2KE LIS01NL2KECP SC Far Field	NLDS LRF LIS01NLLRFC1 N Reference	NLDS LRF LIS01NLLRFC3 N Reference	NLDS LRF LIS01NLLRFC5 N Reference	NLDS LRF LIS01NLLRFCP SC Reference	
Analyte Group - Analyte Name	Units						
% Fines	%	56.00	56.00	40.00	29.00	42.00	36.00
% Water	%	59.15	61.23	44.73	38.65	47.87	43.65
% TOC	%	0.84	0.8	0.915	0.58	0.845	0.745
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	7980	7890	5960	4650	7010	5780
arsenic	ppm dry	3.5 J	3.5 J	2.8 J	2.6 J	2.9 J	2.7 J
beryllium	ppm dry	0.31	0.30	0.24	0.18	0.24	0.23
cadmium	ppm dry	0.10 J	0.10 J	0.079 J	0.066 J	R	0.073 J
chromium	ppm dry	20.4	20.4	14.9	11.1	14.9	14.6
copper	ppm dry	13.8	13.4	10.3	7.0	10.8	9.6
iron	ppm dry	14200	14200	10800	9130	12700	10800
lead	ppm dry	17.8 J	15.2 J	12.7 J	9.5 J	13.3 J	11.7 J
mercury	ppm dry	0.031 JM	0.030 JM	0.022 JM	0.019 JM	0.026 JM	0.020 JM
nickel	ppm dry	12.0	12.5	8.5	6.1	8.4	8.2
selenium	ppm dry	0.22 J	0.20 J	0.17 J	0.10 J	0.20 J	0.12 J
silver	ppm dry	0.059	0.050	0.026	0.013	0.045	0.027
zinc	ppm dry	50.5 J	48.8 J	39.4 J	30.7 J	40.0 J	37.4 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	9.31E+00 J	3.34E+00 J	2.31E+00 J	3.59E-01 J	4.34E+00 J	5.28E-01 J
SEM cadmium	umol/g dry	2.67E-03 JM	1.78E-03 JM	3.83E-03 UJ	1.51E-03 JM	2.22E-03 JM	1.96E-03 JM
SEM copper	umol/g dry	8.97E-02 EBJ	8.50E-02 EBJ	5.67E-02 EBJ	5.98E-02 EBJ	9.92E-02 EBJ	5.98E-02 EBJ
SEM lead	umol/g dry	6.61E-02 EBJ	6.42E-02 EBJ	7.29E-02 EBJ	4.15E-02 EBJM	7.14E-02 EBJ	4.49E-02 EBJM
SEM nickel	umol/g dry	6.30E-02 UJ	6.13E-02 UJ	5.79E-02 UJ	5.45E-02 UJ	8.52E-02 UJ	6.47E-02 UJ
SEM silver	umol/g dry	3.80E-03 UJ	6.86E-03 UJ	2.78E-03 UJ	2.22E-03 UJ	3.99E-03 UJ	4.82E-03 UJ
SEM zinc	umol/g dry	5.11E-01 J	4.47E-01 J	4.80E-01 J	3.92E-01 J	5.06E-01 J	3.98E-01 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	13.4 U	13.7 U	11.8 U	11.1 U	12.2 U	11.9 U
1-methylphenanthrene	ppb dry	78.7 U	9 JM	69.0 U	65.0 U	71.3 U	70.0 U
2,6-dimethylnaphthalene	ppb dry	19.5 U	19.9 U	17.1 U	16.1 U	17.7 U	17.4 U
2-methylnaphthalene	ppb dry	13.4 U	13.7 U	11.8 U	11.1 U	12.2 U	11.9 U
acenaphthene+	ppb dry	11.3 U	11.5 U	9.9 U	9.3 U	10.2 U	10.0 U
acenaphthylene+	ppb dry	6 JM	12 JM	6 JM	63.5 U	8 JM	68.4 U
anthracene+	ppb dry	8	14 J	9 J	12 J	11 J	6 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 2KE LIS01NL2KEC5 N Far Field	NLDS 2KE LIS01NL2KECP SC Far Field	NLDS LRF LIS01NLLRFC1 N Reference	NLDS LRF LIS01NLLRFC3 N Reference	NLDS LRF LIS01NLLRFC5 N Reference	NLDS LRF LIS01NLLRFCP SC Reference
Analyte Group - Analyte Name	Units					
benzo(a)anthracene+	ppb dry	30 J	32 J	21 J	18 J	20 J
benzo(a)pyrene+	ppb dry	38 J	39 J	25 J	21 J	24 J
benzo(b)fluoranthene+	ppb dry	32 J	30 J	18 J	18 J	22 J
benzo(e)pyrene	ppb dry	26 J	25 J	16 J	12 J	17 J
benzo(g,h,i)perylene+	ppb dry	27 J	24 J	17 J	16 J	17 J
benzo(k)fluoranthene+	ppb dry	31 J	30 J	20 J	19 J	20 J
biphenyl	ppb dry	6 U	6 U	5 U	5 U	5 U
chrysene+	ppb dry	36 J	37 J	23 J	21 J	23 J
dibenz[a,h]anthracene+	ppb dry	6 U	6 U	5 U	5 U	5 U
fluoranthene+	ppb dry	47 J	38 J	29 J	25 J	30 J
fluorene+	ppb dry	18.0 U	18.3 U	15.8 U	14.9 U	16.0 U
indeno[1,2,3-cd]pyrene+	ppb dry	28 J	26 J	17 J	17 J	18 J
naphthalene+	ppb dry	6 UJ	6 UJ	5 UJ	5 UJ	5 UJ
perylene	ppb dry	14 J	13 J	7 J	6 J	8 J
phenanthrene+	ppb dry	21 J	30 J	12 J	11 J	16 J
pyrene+	ppb dry	48 J	47 J	31 J	29 J	29 J
Total PAH <sup>1</sup>	ppb dry	352	359	228	207	225
<b>BIS(2-ETHYLHEXYL)PHthalate, ppb dry (ug/kg)</b>						
bis(2-ethylhexyl)phthalate	ppb dry	77 U	78 U	100 U	50 U	68 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 8*	ppb dry	3.9 UJ	3.9 UJ	3.4 UJ	3.2 UJ	3.4 UJ
bz 18*	ppb dry	2.4 U	2.4 U	2.1 U	1.9 U	2.1 U
bz 28*	ppb dry	2.6 U	2.6 U	2.3 U	2.1 U	2.3 U
bz 44*	ppb dry	2.4 U	2.4 U	2.1 U	1.9 U	2.1 U
bz 49	ppb dry	2.0 U	2.0 U	1.7 U	1.6 U	1.8 U
bz 52*	ppb dry	2.2 U	2.2 U	2.0 U	1.8 U	2.0 U
bz 66*	ppb dry	6.7 U	6.8 U	5.9 U	5.5 U	5.9 U
bz 87	ppb dry	2.9 U	2.9 U	2.5 U	2.4 U	2.6 U
bz 101*	ppb dry	2.9 U	2.9 U	2.5 U	2.4 U	2.6 U
bz 105*	ppb dry	2.2 U	2.2 U	2.0 U	1.8 U	2.0 U
bz 118*	ppb dry	1.8 U	1.8 U	1.6 U	1.5 U	1.6 U
bz 128*	ppb dry	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U
bz 138*	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.5 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 2KE LIS01NL2KEC5 N Far Field	NLDS 2KE LIS01NL2KECP SC Far Field	NLDS LRF LIS01NLLRFC1 N Reference	NLDS LRF LIS01NLLRFC3 N Reference	NLDS LRF LIS01NLLRFC5 N Reference	NLDS LRF LIS01NLLRFCP SC Reference	
Analyte Group - Analyte Name	Units						
bz 153*	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
bz 170*	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
bz 180*	ppb dry	0.90 JM	0.92 JM	5.1 U	4.8 U	5.3 U	5.2 U
bz 183	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
bz 184	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
bz 187*	ppb dry	1.5 U	1.5 U	1.3 U	1.2 U	1.4 U	1.3 U
bz 195*	ppb dry	1.5 U	1.5 U	1.3 U	1.2 U	1.4 U	1.3 U
bz 206*	ppb dry	0.57 U	0.57 U	1.60 J	0.47 U	0.52 U	0.5 U
bz 209*	ppb dry	1.5 U	1.5 U	0.52 J	1.2 U	1.4 U	1.3 U
Total PCBs <sup>2</sup>	ppb dry	1.8	1.84	4.24	ND	ND	ND
<b>PESTICIDES, ppb dry (ug/kg)</b>							
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
2,4'-DDD	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
2,4'-DDE	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
2,4'-DDT	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
4,4'-DDD	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
4,4'-DDE	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
4,4'-DDT	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
total DDT	ppb dry	ND	ND	ND	ND	ND	ND
aldrin	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
alpha-bhc	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
alpha-chlordane	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
beta-bhc	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
delta-bhc	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
dieldrin	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
endosulfan i	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
endosulfan ii	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
endosulfan sulfate	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
total endosulfans	ppb dry	ND	ND	ND	ND	ND	ND
endrin	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
gamma-bhc	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
gamma-chlordane	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U
heptachlor	ppb dry	0.57 U	0.57 U	0.5 U	0.47 U	0.52 U	0.5 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 2KE LIS01NL2KEC5 N Far Field	NLDS 2KE LIS01NL2KECP SC Far Field	NLDS LRF LIS01NLLRFC1 N Reference	NLDS LRF LIS01NLLRFC3 N Reference	NLDS LRF LIS01NLLRFC5 N Reference	NLDS LRF LIS01NLLRFCP SC Reference	
Analyte Group - Analyte Name	Units						
heptachlor epoxide	16.6 U	16.7 U	14.6 U	13.6 U	15.0 U	14.7 U	
toxaphene (camphechlor)	42.0 U	42.2 U	36.9 U	34.4 U	38.0 U	37.0 U	
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>							
2,3,7,8-tcdf (db225)	5.3 U	5.6 U	3.8	2.5	4.1	2.6	
2,3,7,8-cl4-dibenzo-p-dioxin	0.19	0.19	0.15	0.092 U	0.15	0.11 U	
2,3,4,7,8-cl5-dibenzofuran	1.2	1.2	0.81 B	0.66 B	1.0	0.81 B	
2,3,4,6,7,8-cl6-dibenzofuran	1.1	1.0	0.84 B	0.57 B	0.93	0.75 B	
1,2,3,7,8-cl5-dibenzofuran	0.92	0.93	0.74 B	0.52 B	0.84 B	0.61 B	
1,2,3,7,8-cl5-dibenzo-p-dioxin	0.40	0.36	0.28	0.22	0.34	0.26	
1,2,3,7,8,9-cl6-dibenzofuran	0.078U	0.09U	0.075U	0.077U	0.1	0.085U	
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	2.1	2.0	1.5	0.94	1.6	1.3	
1,2,3,6,7,8-cl6-dibenzofuran	0.78	0.75	0.59 B	0.43 B	0.73 B	0.59 B	
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	1.9	1.8	1.4	0.95	1.5	1.2	
1,2,3,4,7,8-cl6-dibenzofuran	1.4	1.4	1.0 J	0.73 J	1.4 J	0.98	
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	0.60	0.55	0.45	0.30 B	0.51	0.40 B	
1,2,3,4,7,8,9-cl7-dibenzofuran	0.50	0.46	0.37	0.26	0.51	0.32	
1,2,3,4,6,7,8-cl7-dibenzofuran	12 EB	11 EB	8.8 EB	6.0 EB	10 EB	8.0 EB	
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	49 EB	45 EB	36 EB	26 EB	38 EB	32 EB	
octachlorodibenzo-p-dioxin	49 EB	450 EB	370 EB	290 EB	380 EB	320 EB	
octachlorodibenzofuran	14 EB	13 EB	9.8 EB	7.3 EB	11 EB	9.0 EB	
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 77	0.11	0.10	0.079	0.089	0.078	0.070	
bz 114	0.011 U	0.0090 U	0.0060 U	0.0090 U	0.011 U	0.0060 U	
bz 123	0.010 U	0.0090 U	0.010 U	0.0080 U	0.0090 U	0.0060 U	
bz 126	0.0020 U	0.0080 U	0.0050 U	0.0020 U	0.0030 U	0.0030 U	
bz 156/157	0.099 U	0.072 U	0.056 U	0.038 U	0.083 U	0.047 U	
bz 167	0.043 U	0.035 U	0.027 U	0.019 U	0.037 U	0.024 U	
bz 169	0.0010 U	0.0020 U	0.0020 U	0.0010 U	0.0010 U	0.0010 U	
bz 189	0.010 U	0.0080 U	0.0060 U	0.0040 U	0.0080 U	0.0060 U	
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>							
TBT - TBT (ppb dry)	1.47 J	1.50 J	1.29 J	1.21 JM	1.34 J	1.28 JM	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS 2KE LIS01NL2KEC5 N Far Field	NLDS 2KE LIS01NL2KECP SC Far Field	NLDS LRF LIS01NLLRFC1 N Reference	NLDS LRF LIS01NLLRFC3 N Reference	NLDS LRF LIS01NLLRFC5 N Reference	NLDS LRF LIS01NLLRFCP SC Reference
Analyte Group - Analyte Name	Units					
<b>RADIONUCLIDES, pCi/g dry</b>						
cesium 137	pCi/g dry	-0.021 U	0.087 U	0.039 U	-0.037 U	0.034 U
cobalt 60	pCi/g dry	0.033 U	0.04 U	0.051 U	-0.019 U	0.011 U
strontium 90	pCi/g dry	0.02 U	0.13 U	0.1 U	-0.12 U	-0.09 U
uranium 234	pCi/g dry	0.45 U	0.65 J	0.79 J	0.68 J	0.92 J
uranium 235	pCi/g dry	0.09 U	0.034 U	0.046 U	0.036 U	-0.006 U
uranium 238	pCi/g dry	0.44 U	0.4 U	0.71 J	0.76 J	1.03
total uranium	pCi/g dry	ND	0.65	1.5	1.44	1.52

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS RLC LIS01NLRLLCC1 N Historic	NLDS RLC LIS01NLRLLCC3 N Historic	NLDS RLC LIS01NLRLLCC5 N Historic	NLDS RLC LIS01NLRLLCCP SC Historic	NLDS SEA LIS01NLSEAC1 N Active	NLDS SEA LIS01NLSEAC3 N Active	
Analyte Group - Analyte Name	Units						
% Fines	%	43.00	30.00	24.00	31.00	78.00	82.00
% Water	%	54.17	36.04	40.70	38.81	87.70	88.17
% TOC	%	1.55	0.77	0.805	1.1	2.25	2.3
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	7310	5960	4820	5700	12000	13800
arsenic	ppm dry	4.4 J	3.1 J	3.0 J	3.1 J	7.8 J	8.5 J
beryllium	ppm dry	0.30	0.27	0.18	0.24	0.5 J	0.49 J
cadmium	ppm dry	0.15 J	R	0.10 J	0.080 J	0.19 J	0.16 J
chromium	ppm dry	27.2	16.0	14.7	17.1	33.9	32.7
copper	ppm dry	22.4	18.2	14.0	16.8	25	16.3
iron	ppm dry	12900	10100	8730	10400	24000	27000
lead	ppm dry	28.2 J	29.2 J	18.3 J	27.1 J	23.1	13.4
mercury	ppm dry	0.063 J	0.029 JM	0.033 JM	0.034 JM	0.041 JM	0.030 JM
nickel	ppm dry	13.0	10.2	8.0	12.0	22.9	20.7
selenium	ppm dry	0.13 J	0.16 J	0.087 J	0.13 J	0.37 J	0.32 J
silver	ppm dry	0.18	0.066	0.029	0.019	0.23	0.2
zinc	ppm dry	60.4 J	57.1 J	32.3 J	64.7 J	74.6 J	59.2 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	1.93E+00 J	7.91E-01 J	6.00E-01 J	2.06E-01 UJ	6.75E-01 J	2.19E+00 J
SEM cadmium	umol/g dry	2.67E-03 JM	3.83E-03 UJ	1.25E-03 JM	2.58E-03 JM	1.96E-03 U	1.78E-03 U
SEM copper	umol/g dry	4.25E-02 UJ	2.90E-01 EBJ	9.29E-02 EBJ	1.13E-01 EBJ	4.25E-02 EBJ	8.50E-02 EBJ
SEM lead	umol/g dry	7.43E-02 J	1.21E-01 EBJ	7.05E-02 EBJ	1.50E-01 EBJ	3.57E-02 EBJ	5.65E-02 EBJ
SEM nickel	umol/g dry	6.98E-02 UJ	7.67E-02 UJ	5.28E-02 UJ	1.16E-01 EBJ	1.21E-01 EBJ	9.37E-02 UJ
SEM silver	umol/g dry	4.26E-03 UJ	5.28E-03 UJ	1.02E-02 UJ	1.02E-02 UJ	6.12E-03 JM	1.01E-02 UJ
SEM zinc	umol/g dry	6.75E-01 J	1.17E+00 J	5.23E-01 J	6.10E-01 J	3.40E-01 J	5.66E-01 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	7 J	11.4 U	11.6 U	11.7 U	7 U	7 U
1-methylphenanthrene	ppb dry	27 J	8 JM	68.0 U	12 JM	10 J	8 J
2,6-dimethylnaphthalene	ppb dry	6 J	16.6 U	16.9 U	17.0 U	22.8 U	22.8 U
2-methylnaphthalene	ppb dry	8 J	11.4 U	11.6 U	11.7 U	22.3 U	22.3 U
acenaphthene+	ppb dry	11.0 U	6 J	9.8 U	9.8 U	22.8 U	22.8 U
acenaphthylene+	ppb dry	13 JM	11 JM	8 JM	13 JM	15	7 U
anthracene+	ppb dry	45 J	19 J	9 J	56 J	26	15

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS RLC LIS01NLRLLCC1 N Historic	NLDS RLC LIS01NLRLLCC3 N Historic	NLDS RLC LIS01NLRLLCC5 N Historic	NLDS RLC LIS01NLRLLCCP SC Historic	NLDS SEA LIS01NLSEAC1 N Active	NLDS SEA LIS01NLSEAC3 N Active	
Analyte Group - Analyte Name	Units						
benzo(a)anthracene+	ppb dry	130 J	47 J	27 J	100 J	89	41
benzo(a)pyrene+	ppb dry	94 J	53 J	32 J	87 J	94	41
benzo(b)fluoranthene+	ppb dry	83 J	38 J	29 J	82 J	92	37
benzo(e)pyrene	ppb dry	57 J	32 J	22 J	53 J	66	27
benzo(g,h,i)perylene+	ppb dry	47 J	29 J	18 J	46 J	59	23
benzo(k)fluoranthene+	ppb dry	84 J	44 J	26 J	78 J	76 J	31 J
biphenyl	ppb dry	6 U	5 U	5 U	5 U	22.3 U	22.3 U
chrysene+	ppb dry	110 J	52 J	32 J	110 J	100	42
dibenz[a,h]anthracene+	ppb dry	13 J	6 J	5 U	12 J	11	7 U
fluoranthene+	ppb dry	140 J	52 J	33 J	130 J	100	57
fluorene+	ppb dry	17.6 U	15.3 U	15.6 U	6 J	7 U	7 U
indeno[1,2,3-cd]pyrene+	ppb dry	54 J	34 J	23 J	55 J	64	26
naphthalene+	ppb dry	8 J	5 UJ	5 UJ	5 UJ	7 UJ	7 UJ
perylene	ppb dry	38 J	19 J	17 J	35 J	260	98
phenanthrene+	ppb dry	42 J	38 J	22 J	71 J	46	46
pyrene+	ppb dry	130 J	61 J	41 J	110 J	130	85
Total PAH <sup>1</sup>	ppb dry	993	490	300	956	902	444
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>							
bis(2-ethylhexyl)phthalate	ppb dry	110 U	50 U	50 U	58 U	91 U	72 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 8*	ppb dry	3.7 UJ	3.3 UJ	3.3 UJ	3.3 UJ	4.0 UJ	4.1 UJ
bz 18*	ppb dry	2.3 U	2.0 U	2.0 U	2.0 U	4.4 U	4.5 U
bz 28*	ppb dry	2.5	1.2 J	2.2 U	2.2 U	1.3 JM	6.1 U
bz 44*	ppb dry	0.94 J	1.2 J	2.0 U	2.0 U	6.2 U	6.3 U
bz 49	ppb dry	0.73 J	1 J	1.7 U	1.7 U	3.0 U	3.0 U
bz 52*	ppb dry	2.6 J	1.70 J	1.9 U	1.9 U	4.0 U	4.1 U
bz 66*	ppb dry	6.5 U	1.3 JM	5.8 U	5.8 U	4.0 U	4.1 U
bz 87	ppb dry	3.7 J	0.78 JM	2.5 U	2.5 U	3.6 U	3.7 U
bz 101*	ppb dry	6.1 J	0.98 J	2.5 U	2.5 U	5.3 U	5.4 U
bz 105*	ppb dry	2.2 U	1.9 U	1.9 U	1.9 U	10.4 U	10.5 U
bz 118*	ppb dry	1.7 U	1.5 U	1.5 U	1.6 U	2.0 U	2.0 U
bz 128*	ppb dry	1.3	1.1 U	1.1 U	1.1 U	0.65 U	0.66 U
bz 138*	ppb dry	4.1 J	1 J	0.49 U	0.49 U	0.65 U	0.66 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS RLC LIS01NLRLLCC1 N Historic	NLDS RLC LIS01NLRLLCC3 N Historic	NLDS RLC LIS01NLRLLCC5 N Historic	NLDS RLC LIS01NLRLLCCP SC Historic	NLDS SEA LIS01NLSEAC1 N Active	NLDS SEA LIS01NLSEAC3 N Active
Analyte Group - Analyte Name	Units					
bz 153*	3.4 J	3.3 J	0.49 U	0.49 U	2.7 UJ	2.8 UJ
bz 170*	0.55 U	0.88 J	0.49 U	0.49 U	0.65 U	0.66 U
bz 180*	1.9 J	75 J	5.0 U	2.5 J	1.7 U	1.7 U
bz 183	0.55 U	4.1 J	0.49 U	0.49 U	0.65 U	0.66 U
bz 184	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
bz 187*	1.4 U	74 J	1.3 U	1.3 U	0.65 U	0.66 U
bz 195*	1.4 U	10 J	1.3 U	1.3 U	R	R
bz 206*	0.55 U	490 J	5.2 J	2.4 J	2.6 U	2.7 U
bz 209*	1.2 J	130 J	3.5 J	1.0 J	1.3 J	2.7 U
Total PCBs <sup>2</sup>	56.94	1592.88	17.4	11.8	5.2	ND
<b>PESTICIDES, ppb dry (ug/kg)</b>						
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	0.56 JM	0.48 U	0.49 U	0.49 U	9.6 U	9.8 U
2,4'-DDD	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
2,4'-DDE	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
2,4'-DDT	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
4,4'-DDD	0.55 U	0.66 J	0.49 U	0.49 U	0.7 J	0.66 U
4,4'-DDE	0.55 U	0.93 J	0.85 J	0.95 J	1.4	1.0 J
4,4'-DDT	0.55 U	0.48 U	0.52 J	0.49 U	0.65 U	0.66 U
total DDT	ND	1.59	1.37	0.95	2.1	1
aldrin	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
alpha-bhc	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
alpha-chlordane	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
beta-bhc	0.55 U	0.48 U	4 J	0.49 U	0.65 U	0.66 U
delta-bhc	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
dieldrin	3.5 J	0.52 J	0.49 U	0.49 U	0.65 U	0.66 U
endosulfan i	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
endosulfan ii	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
endosulfan sulfate	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
total endosulfans	ND	ND	ND	ND	ND	ND
endrin	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
gamma-bhc	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
gamma-chlordane	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U
heptachlor	0.55 U	0.48 U	0.49 U	0.49 U	0.65 U	0.66 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS RLC LIS01NLRLLCC1 N Historic	NLDS RLC LIS01NLRLLCC3 N Historic	NLDS RLC LIS01NLRLLCC5 N Historic	NLDS RLC LIS01NLRLLCCP SC Historic	NLDS SEA LIS01NLSEAC1 N Active	NLDS SEA LIS01NLSEAC3 N Active	
Analyte Group - Analyte Name	Units						
heptachlor epoxide	ppb dry	16.0 U	14.1 U	14.2 U	14.4 U	0.65 U	0.66 U
toxaphene (camphechlor)	ppb dry	40.5 U	35.7 U	35.9 U	36.3 U	164.9 U	167.7 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>							
2,3,7,8-tcdf (db225)	pptr dry	3.0	1.8	1.9	1.9	2.7	1.4
2,3,7,8-cl4-dibenzo-p-dioxin	pptr dry	0.21	0.15	0.18	0.12 U	0.19	0.13 U
2,3,4,7,8-cl5-dibenzofuran	pptr dry	1.1	0.78 B	0.75 B	0.80 B	0.91	0.57 B
2,3,4,6,7,8-cl6-dibenzofuran	pptr dry	1.4	0.82 B	1.1	0.98	1.0	0.53 B
1,2,3,7,8-cl5-dibenzofuran	pptr dry	0.85	0.58 B	0.54 B	0.57 B	0.77	0.41 B
1,2,3,7,8-cl5-dibenzo-p-dioxin	pptr dry	0.42 BJ	0.27 BJ	0.29 BJ	0.27 BJ	0.46 BJ	0.35 BJ
1,2,3,7,8,9-cl6-dibenzofuran	pptr dry	0.1	0.076U	0.095U	0.088U	0.087U	0.078U
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	pptr dry	2.0	1.1	1.4	1.3	2.2	1.8
1,2,3,6,7,8-cl6-dibenzofuran	pptr dry	1.1	0.62 B	0.70 B	0.66 B	0.82	0.45 B
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	pptr dry	2.7	1.3	1.8	1.5	2.4	1.5
1,2,3,4,7,8-cl6-dibenzofuran	pptr dry	2.1	1.1	1.5	1.3	1.4	0.75
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	pptr dry	0.55	0.37	0.43	0.42	0.58	0.45
1,2,3,4,7,8,9-cl7-dibenzofuran	pptr dry	0.82	0.38	0.64	0.50	0.48	0.24
1,2,3,4,6,7,8-cl7-dibenzofuran	pptr dry	35 EB	12 EB	27 EB	21 EB	15 EB	6.7 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	pptr dry	63 EB	33 EB	45 EB	42 EB	59 EB	39 EB
octachlorodibenzo-p-dioxin	pptr dry	530 EB	310 EB	380 JEB	360 JEB	640 JEB	530 JEB
octachlorodibenzofuran	pptr dry	28 EB	12 EB	21 EB	18 EB	15 EB	6.9 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 77	ppb dry	0.11	0.12	0.082 U	0.075 U	0.16	0.10
bz 114	ppb dry	0.023 U	0.014 U	0.014 U	0.012 U	0.017 U	0.013 U
bz 123	ppb dry	0.019 U	0.013 U	0.014 U	0.011 U	0.017 U	0.012 U
bz 126	ppb dry	0.0040 U	0.0070 U	0.0070 U	0.0010 U	0.0040 U	0.0040 U
bz 156/157	ppb dry	0.17 U	0.11 U	0.11 U	0.091 U	0.11 U	0.075 U
bz 167	ppb dry	0.062 U	0.046 U	0.045 U	0.040 U	0.044 U	0.032 U
bz 169	ppb dry	0.0020 U	0.0020 U	0.0020 U	0.0010 U	0.0010 U	0.0010 U
bz 189	ppb dry	0.013 U	0.013 U	0.0090 U	0.010 U	0.010 U	0.0070 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>							
TBT - TBT (ppb dry)	ppb dry	1.46 J	2	1.24 JM	1.31 J	0.45 J	0.55 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Units	NLDS RLC LIS01NLRLLC1 N Historic	NLDS RLC LIS01NLRLLC3 N Historic	NLDS RLC LIS01NLRLLC5 N Historic	NLDS RLC LIS01NLRLLCP SC Historic	NLDS SEA LIS01NLSEAC1 N Active	NLDS SEA LIS01NLSEAC3 N Active
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.096 U	0.019 U	0.002 U	0.044 U	-0.02 U	0.007 U
cobalt 60	pCi/g dry	0.08 U	0.015 U	-0.002 U	0.021 U	0.05 U	-0.12 U
strontium 90	pCi/g dry	0.42 U	0.06 U	0.02 U	-0.06 U	0.05 U	-0.25 U
uranium 234	pCi/g dry	1.84	0.77 U	0.63 U	0.56 U	0.93 U	1.08
uranium 235	pCi/g dry	0.098 J	0.005 U	0.012 U	0.068 U	0.16 J	0.017 U
uranium 238	pCi/g dry	0.62 J	0.84 J	0.74 J	0.46 J	0.81 J	0.62 J
total uranium	pCi/g dry	2.558	0.84	0.74	0.46	0.97	1.7

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS SEA LIS01NLSEAC5 N Active	NLDS SEA LIS01NLSEACP SC Active	NLDS WRF LIS01NLWRF1 N Reference	NLDS WRF LIS01NLWRF3 N Reference	NLDS WRF LIS01NLWRF5 N Reference	NLDS WRF LIS01NLWRF7 SC Reference	
Analyte Group - Analyte Name	Units						
% Fines	63.00	72.00	41.00	37.00	34.00	35.00	
% Water	87.36	84.39	47.52	56.61	43.42	45.55	
% TOC	3.45	2.8	0.9	0.77	0.83	0.765	
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	11000	11600	5630	6330	6280	6300	
arsenic	8.0 J	8.0 J	3.2 J	3.0 J	2.7 J	2.9 J	
beryllium	0.44 J	0.46 J	0.23	0.24	0.22	0.24	
cadmium	0.64 J	0.31 J	0.076 J	R	R	R	
chromium	73.3	40.1	15.8	14.8	13.6	15.1	
copper	55	29.1	10.4	10.2	9.5	10.0	
iron	21600	23600	10900	12700	11500	11700	
lead	81	64.9	12.2 J	12.1 J	11.5 J	11.9 J	
mercury	0.36 J	0.11 J	0.020 JM	0.016 JM	0.021 JM	0.017 JM	
nickel	20.1	19.6	10.1	9.4	8.7	9.7	
selenium	0.35 J	0.38 J	0.074 J	0.13 J	0.13 J	0.13 J	
silver	0.63	0.32	0.042	0.0047	0.0048 U	0.020	
zinc	94.3 J	68.2 J	38.9 J	38.4 J	35.4 J	38.6 J	
<b>AVS/SEM, umol/g dry</b>							
AVS	5.06E+00 J	2.91E+00 J	1.62E+00 J	4.94E+00 J	4.94E+00 J	9.06E+00 J	
SEM cadmium	8.90E-03 UJ	2.31E-03 J	2.22E-03 JM	1.87E-03 JM	1.87E-03 JM	2.40E-03 JM	
SEM copper	2.99E-02 EBJ	6.30E-02 EBJ	8.03E-02 EBJ	7.40E-02 EBJ	7.08E-02 EBJ	8.18E-02 EBJ	
SEM lead	3.34E-01 EBJ	2.52E-01 EBJ	5.69E-02 EBJ	7.09E-02 EBJ	5.60E-02 EBJ	5.74E-02 EBJ	
SEM nickel	7.67E-02 UJ	1.11E-01 J	5.62E-02 UJ	5.16E-01 EBJ	6.30E-02 UJ	5.28E-02 UJ	
SEM silver	1.01E-02 UJ	1.01E-02 UJ	9.09E-03 UJ	1.21E-02 UJ	2.41E-02 UJ	3.89E-02 J	
SEM zinc	1.10E+00 J	7.04E-01 J	4.85E-01 J	6.78E-01 J	3.92E-01 J	4.73E-01 J	
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	20	7 U	11.6 U	13.1 U	12.7 U	12.5 U	
1-methylphenanthrene	57	18 J	5 JM	77.0 U	74.6 U	73.4 U	
2,6-dimethylnaphthalene	26	8 J	16.9 U	19.1 U	18.5 U	18.2 U	
2-methylnaphthalene	34	8 J	11.6 U	13.1 U	12.7 U	12.5 U	
acenaphthene+	19 J	23.0 U	9.7 U	11.0 U	10.7 U	10.5 U	
acenaphthylene+	91	36	8 JM	75.2 U	72.8 U	7 JM	
anthracene+	150	43	12 J	12 J	6 J	17 J	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS SEA LIS01NLSEAC5 N Active	NLDS SEA LIS01NLSEACP SC Active	NLDS WRF LIS01NLWRF1 N Reference	NLDS WRF LIS01NLWRF3 N Reference	NLDS WRF LIS01NLWRF5 N Reference	NLDS WRF LIS01NLWRF7 SC Reference	
Analyte Group - Analyte Name	Units						
benzo(a)anthracene+	ppb dry	410	130	39 J	39 J	15 J	32 J
benzo(a)pyrene+	ppb dry	420	84	42 J	44 J	21 J	38 J
benzo(b)fluoranthene+	ppb dry	370	99	37 J	39 J	20 J	30 J
benzo(e)pyrene	ppb dry	300	54	28 J	25 J	16 J	25 J
benzo(g,h,i)perylene+	ppb dry	300	52	27 J	32 J	16 J	24 J
benzo(k)fluoranthene+	ppb dry	300 J	99 J	37 J	40 J	20 J	30 J
biphenyl	ppb dry	13 J	22.5 U	5 U	6 U	5 U	5 U
chrysene+	ppb dry	420	120	41 J	41 J	20 J	40 J
dibenz[a,h]anthracene+	ppb dry	65	19	5 J	10 J	5 U	5 U
fluoranthene+	ppb dry	540	160	63 J	54 J	28 J	50 J
fluorene+	ppb dry	22	7 U	15.5 U	17.6 U	17.0 U	16.8 U
indeno[1,2,3-cd]pyrene+	ppb dry	330	68	31 J	37 J	18 J	26 J
naphthalene+	ppb dry	47 J	11 J	5 UJ	6 UJ	5 UJ	5 UJ
perylene	ppb dry	330	100	13 J	12 J	8 J	11 J
phenanthrene+	ppb dry	310	73	23 J	24 J	14 J	26 J
pyrene+	ppb dry	760	170	56 J	49 J	27 J	57 J
Total PAH <sup>1</sup>	ppb dry	4554	1164	421	421	205	377
<b>BIS(2-ETHYLHEXYL)PHthalate, ppb dry (ug/kg)</b>							
bis(2-ethylhexyl)phthalate	ppb dry	98 U	330 U	71 U	61 U	63 U	61 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 8*	ppb dry	4.1 UJ	4.0 UJ	3.3 UJ	3.8 UJ	3.6 UJ	3.6 UJ
bz 18*	ppb dry	4.5 U	4.5 U	2.0 U	2.3 U	2.2 U	2.2 U
bz 28*	ppb dry	1.3 JM	6.1 U	2.2 U	2.5 U	2.4 U	2.4 U
bz 44*	ppb dry	1.4 JM	0.8 JM	2.0 U	2.3 U	2.2 U	2.2 U
bz 49	ppb dry	1.5 J	3.0 U	1.7 U	1.9 U	1.9 U	1.9 U
bz 52*	ppb dry	2.3 J	1.2 JM	1.9 U	2.2 U	2.1 U	2.1 U
bz 66*	ppb dry	2.7 J	0.66 U	5.8 U	6.6 U	6.3 U	6.3 U
bz 87	ppb dry	2 J	1.2 JM	2.5 U	2.8 U	2.7 U	2.7 U
bz 101*	ppb dry	5.4 U	1.70 JM	2.5 U	2.8 U	2.7 U	2.7 U
bz 105*	ppb dry	1.1 J	10.5 U	1.9 U	2.2 U	2.1 U	2.1 U
bz 118*	ppb dry	2.0 U	2.0 U	1.6 U	1.8 U	1.7 U	1.7 U
bz 128*	ppb dry	0.67 U	0.66 U	1.1 U	1.3 U	1.2 U	1.2 U
bz 138*	ppb dry	1.2 J	0.90 J	0.49 U	0.56 U	0.53 U	0.53 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS SEA LIS01NLSEAC5 N Active	NLDS SEA LIS01NLSEACP SC Active	NLDS WRF LIS01NLWRF1 N Reference	NLDS WRF LIS01NLWRF3 N Reference	NLDS WRF LIS01NLWRF5 N Reference	NLDS WRF LIS01NLWRF7 SC Reference
Analyte Group - Analyte Name	Units					
bz 153*	1.5 J	0.8 JM	0.49 U	0.56 U	0.53 U	0.53 U
bz 170*	0.83 J	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
bz 180*	6 J	5.3 J	5.0 U	5.7 U	5.5 U	0.82 JM
bz 183	1.4 J	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
bz 184	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
bz 187*	4.2 J	1.60 J	1.3 U	1.5 U	1.4 U	1.4 U
bz 195*	R	R	1.3 U	1.5 U	1.4 U	1.4 U
bz 206*	4.1	1.60 J	0.49 U	0.56 U	0.53 U	0.53 U
bz 209*	5.7 J	1.60 J	1.3 U	1.5 U	1.4 U	1.4 U
Total PCBs <sup>2</sup>	74.46	33.4	ND	ND	ND	1.64
<b>PESTICIDES, ppb dry (ug/kg)</b>						
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	0.91 JM	3.5 J	0.49 U	0.56 U	0.53 U	0.53 U
2,4'-DDD	3.2 J	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
2,4'-DDE	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
2,4'-DDT	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
4,4'-DDD	3 J	1.5 J	0.49 U	0.56 U	0.53 U	0.53 U
4,4'-DDE	6 J	2.6 J	0.49 U	0.56 U	0.53 U	0.53 U
4,4'-DDT	3.2 J	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
total DDT	15.4	4.1	ND	ND	ND	ND
aldrin	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
alpha-bhc	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
alpha-chlordane	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
beta-bhc	5 J	4.6 J	0.49 U	0.56 U	0.53 U	0.53 U
delta-bhc	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
dieldrin	2 J	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
endosulfan i	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
endosulfan ii	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
endosulfan sulfate	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
total endosulfans	ND	ND	ND	ND	ND	ND
endrin	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
gamma-bhc	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
gamma-chlordane	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U
heptachlor	0.67 U	0.66 U	0.49 U	0.56 U	0.53 U	0.53 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	NLDS SEA LIS01NLSEAC5 N Active	NLDS SEA LIS01NLSEACP SC Active	NLDS WRF LIS01NLWRF1 N Reference	NLDS WRF LIS01NLWRF3 N Reference	NLDS WRF LIS01NLWRF5 N Reference	NLDS WRF LIS01NLWRF7 SC Reference
Analyte Group - Analyte Name	Units					
heptachlor epoxide	0.67 U	0.66 U	14.3 U	16.3 U	15.6 U	15.5 U
toxaphene (camphechlor)	168.8 U	167.3 U	36.2 U	41.1 U	39.3 U	39.1 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>						
2,3,7,8-tcdf (db225)	9.1	3.7	7.1 U	3.1	3.3	3.3
2,3,7,8-cl4-dibenzo-p-dioxin	0.73	0.34	0.19	0.15	0.12 U	0.11
2,3,4,7,8-cl5-dibenzofuran	2.5	1.3	1.2	0.81 B	0.84 B	0.87 B
2,3,4,6,7,8-cl6-dibenzofuran	5.7	2.0	1.1	0.67 B	0.76 BJ	0.76 B
1,2,3,7,8-cl5-dibenzofuran	1.9	0.97	0.95	0.60 B	0.70 B	0.64 B
1,2,3,7,8-cl5-dibenzo-p-dioxin	1.3 J	0.58 BJ	0.38	0.28	0.26	0.28
1,2,3,7,8,9-cl6-dibenzofuran	0.27	0.12	0.077U	0.075U	0.084U	0.083U
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	7.5	3.5	1.9	1.3	1.4	1.3
1,2,3,6,7,8-cl6-dibenzofuran	5.0	1.7	0.78	0.55 B	0.53 B	0.54 B
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	14	4.8	2.0	1.2	1.3	1.2
1,2,3,4,7,8-cl6-dibenzofuran	11	3.4	1.5	0.91 J	0.97 J	0.97 B
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	1.9	0.96	0.65	0.38 B	0.41 B	0.41 B
1,2,3,4,7,8,9-cl7-dibenzofuran	4.3	1.4	0.55	0.32	0.36 EB	0.35
1,2,3,4,6,7,8-cl7-dibenzofuran	260 EB	79 EB	13 EB	6.8 EB	7.4 EB	7.8 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	280 EB	110 EB	51 EB	31 EB	33	32 EB
octachlorodibenzo-p-dioxin	1800 JEB	890 JEB	500 EB	310 EB	330 EB	320 EB
octachlorodibenzofuran	160 EB	48 EB	15 EB	8.3 EB	8.9 EB	9.0 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 77	0.29	0.17	0.13	0.067	0.076	0.081
bz 114	0.069 U	0.029 U	0.011 U	0.0050 U	0.0060 U	0.0070 U
bz 123	0.048 U	0.025 U	0.013 U	0.0050 U	0.0080 U	0.0080 U
bz 126	0.011 U	0.0040 U	0.0040 U	0.0050 U	0.0060 U	0.0050 U
bz 156/157	0.46	0.16	0.093 U	0.050 U	0.055 U	0.056 U
bz 167	0.17	0.062 U	0.043 U	0.024 U	0.028 U	0.028 U
bz 169	0.0030 U	0.0030 U	0.0050 U	0.0020 U	0.0020 U	0.0020 U
bz 189	0.038 U	0.016 U	0.010 U	0.0060 U	0.0070 U	0.0070 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>						
TBT - TBT (ppb dry)	1.3	1	0.15 J	0.13 J	0.17 J	6.6 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Units	Site ID Station Code Field Sample ID Type Designation	NLDS SEA LIS01NLSEAC5 N Active	NLDS SEA LIS01NLSEACP SC Active	NLDS WRF LIS01NLWRF1 N Reference	NLDS WRF LIS01NLWRF3 N Reference	NLDS WRF LIS01NLWRF5 N Reference	NLDS WRF LIS01NLWRF7 SC Reference
<b>RADIONUCLIDES, pCi/g dry</b>								
cesium 137	pCi/g dry		-0.03 U	0.009 U	-0.01 U	0.077 U	0.042 U	0.064 U
cobalt 60	pCi/g dry		0.03 U	-0.02 U	-0.1 U	-0.014 U	-0.027 U	-0.086 U
strontium 90	pCi/g dry		0.41 U	0.21 U	0.16 U	0.17 U	0.05 U	0.43 U
uranium 234	pCi/g dry		1.16	0.69 U	0.55 U	0.66 U	0.64 U	0.71 U
uranium 235	pCi/g dry		0.16 J	0.057 U	0.035 U	0.042 J	0.043 U	0.081 U
uranium 238	pCi/g dry		1.06	0.84 J	0.56 J	0.77 J	0.62 J	0.61 J
total uranium	pCi/g dry		2.38	0.84	0.56	0.812	0.62	0.61

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	WLIS E5H LIS01WLE5HC1 N Far Field	WLIS E5H LIS01WLE5HC3 N Far Field	WLIS E5H LIS01WLE5HC5 N Far Field	WLIS E5H LIS01WLE5HCP SC Far Field	WLIS EB1 LIS01WLEB1C1 N Historic	WLIS EB1 LIS01WLEB1C3 N Historic
<b>Analyte Group - Analyte Name</b>							
% Fines	%	58.00	92.00	43.00	86.00	92.00	85.00
% Water	%	122.81	134.14	95.87	108.60	155.20	187.05
% TOC	%	2.55	2.85	2.45	3.15	2.65	2.65
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	16400	18500	14300	18800	18700	17700
arsenic	ppm dry	12.2 J	7.8 J	8.8 J	8.9 J	7.6 J	8.9 J
beryllium	ppm dry	0.66 J	0.68 J	0.62 J	0.75 J	0.63	0.93
cadmium	ppm dry	0.74	0.51	0.87	0.59	0.25 J	0.35 J
chromium	ppm dry	56.5 J	58.6 J	72.6 J	77.4 J	59.2 J	68.0 J
copper	ppm dry	82.7	69.2	78.9	73.5	62.5	69.4
iron	ppm dry	28500	30900	28800	32900	29900	31300
lead	ppm dry	79.5 J	42.9 J	57.1 J	48.2 J	41.3 J	47.2 J
mercury	ppm dry	0.79 J	0.19 J	0.79 J	0.38 J	0.18 J	0.18 J
nickel	ppm dry	26.8	25.0	25.5	27.6	22.5	26.8
selenium	ppm dry	0.41 J	0.45 J	0.29 J	0.50 J	0.41 J	0.49 J
silver	ppm dry	1.3	0.93	1.3	1.1	0.89	0.88
zinc	ppm dry	162	144	148	158	125 J	148 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	1.57E+01 J	1.52E+01 J	1.90E+01 J	2.21E+01 J	3.28E+01 J	1.09E+01 J
SEM cadmium	umol/g dry	5.60E-03 JM	3.38E-03 JM	7.74E-03 JM	5.52E-03 JM	2.94E-03 UJ	2.76E-03 J
SEM copper	umol/g dry	5.18E-01 EBJ	3.68E-01 EBJ	5.26E-01 EBJ	5.92E-01 EBJ	4.89E-01 EBJ	6.19E-01 EBJ
SEM lead	umol/g dry	2.35E-01 EBJ	1.87E-01 EBJ	2.02E-01 EBJ	2.24E-01 EBJ	1.87E-01 EBJ	2.50E-01 EBJ
SEM nickel	umol/g dry	1.04E-01 UJ	8.82E-01 EBJ	1.29E-01 UJ	1.64E-01 EBJ	1.35E-01 UJ	1.55E-01 EBJ
SEM silver	umol/g dry	4.26E-03 UJ	5.19E-03 UJ	4.73E-03 UJ	4.54E-03 UJ	6.03E-03 UJ	4.54E-03 UJ
SEM zinc	umol/g dry	1.46E+00 J	1.47E+00 J	1.45E+00 J	1.68E+00 J	1.62E+00 J	1.64E+00 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	25 JM	26 U	15 JM	8 JM	41 U	41 U
1-methylphenanthrene	ppb dry	61	22	43	39	16	21
2,6-dimethylnaphthalene	ppb dry	22	28 U	14 JM	8 JM	20 U	7 JM
2-methylnaphthalene	ppb dry	39 JM	7 JM	18 JM	9 JM	8 JM	8 JM
acenaphthene+	ppb dry	41	30 U	25 JM	13 JM	88 U	8 JM
acenaphthylene+	ppb dry	150	47	93	68	28	40
anthracene+	ppb dry	300	48	130	93	36 J	46 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	WLIS E5H LIS01WLE5HC1 N Far Field	WLIS E5H LIS01WLE5HC3 N Far Field	WLIS E5H LIS01WLE5HC5 N Far Field	WLIS E5H LIS01WLE5HCP SC Far Field	WLIS EB1 LIS01WLEB1C1 N Historic	WLIS EB1 LIS01WLEB1C3 N Historic
<b>Analyte Group - Analyte Name</b>	<b>Units</b>						
benzo(a)anthracene+	ppb dry	450	100	240	160	89	130
benzo(a)pyrene+	ppb dry	580 J	150 J	330 J	280 J	110 J	140 J
benzo(b)fluoranthene+	ppb dry	450	120	250	210	100	99
benzo(e)pyrene	ppb dry	350	94	200	170	73 J	87 J
benzo(g,h,i)perylene+	ppb dry	350	110	220	190	67 J	75 J
benzo(k)fluoranthene+	ppb dry	400 J	98 J	220 J	200 J	82	110
biphenyl	ppb dry	11 JM	27 U	27 U	27 U	19 U	19 U
chrysene+	ppb dry	430	110	240	180	100 J	130 J
dibenz[a,h]anthracene+	ppb dry	73	20	44	40	15 J	20 J
fluoranthene+	ppb dry	520 J	120 J	250 J	190 J	130 J	140 J
fluorene+	ppb dry	37	23 U	19 JM	10 JM	77 U	77 U
indeno[1,2,3-cd]pyrene+	ppb dry	370	110	220	190	83	98
naphthalene+	ppb dry	61	9 JM	18 JM	15 JM	12 JM	12 JM
perylene	ppb dry	140	36	79	67	24 J	29 J
phenanthrene+	ppb dry	330	77	200	130	79	87
pyrene+	ppb dry	730 J	150 J	340 J	330 J	150 J	180 J
Total PAH <sup>1</sup>	ppb dry	5272	1269	2839	2299	1081	1315
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>							
bis(2-ethylhexyl)phthalate	ppb dry	130 U	200 U	380 U	140 U	88 U	96 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 8*	ppb dry	2.8 J	0.7 U	4.1 J	3.5 J	4.2 U	4.2 U
bz 18*	ppb dry	2.6 U	2.6 U	3.9	2.6 U	6.2 U	6.2 U
bz 28*	ppb dry	2.0	0.7 U	7.5	3.1	13.5 U	1.1 JM
bz 44*	ppb dry	1.9 J	0.7 U	4.7 J	1.9 J	2.5 J	0.8 JM
bz 49	ppb dry	1.5	0.7 U	4.4	2.0	8.7 UJ	8.7 UJ
bz 52*	ppb dry	2.6	0.7 U	7.4	3.2	9.7 UJ	1.0 JM
bz 66*	ppb dry	2.7 J	0.7 U	6.5 J	3.2 J	2 JM	1.8 JM
bz 87	ppb dry	1.2 J	0.7 U	3.2 J	1.8 J	0.7 JM	0.9 JM
bz 101*	ppb dry	4.4 J	2.1 J	5.7	4.0 J	2.5 J	3.4 J
bz 105*	ppb dry	1.5 J	0.7 U	3.2 J	1.6 J	1 JM	1.0 JM
bz 118*	ppb dry	2.1	1.0 J	3.4 J	5.0 J	1.70 J	1.9 J
bz 128*	ppb dry	3.2 U	3.2 U	3.2 U	3.2 U	8.0 U	0.8 JM
bz 138*	ppb dry	2.3 J	1.5 J	5.6 J	2.9 J	2.4 J	2.1 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	WLIS E5H LIS01WLE5HC1 N Far Field	WLIS E5H LIS01WLE5HC3 N Far Field	WLIS E5H LIS01WLE5HC5 N Far Field	WLIS E5H LIS01WLE5HCP SC Far Field	WLIS EB1 LIS01WLEB1C1 N Historic	WLIS EB1 LIS01WLEB1C3 N Historic
Analyte Group - Analyte Name	Units						
bz 153*	ppb dry	2.0 J	R	3.6 J	R	16.9 UJ	16.9 UJ
bz 170*	ppb dry	11.1 U	11.1 UJ	11.0 UJ	11.1 UJ	0.90 JM	29.3 UJ
bz 180*	ppb dry	18 J	4.7 J	14 J	8.5 J	5.2 J	8.6 J
bz 183	ppb dry	6.4 U	6.4 U	1.3 JM	6.4 U	R	R
bz 184	ppb dry	2.8 U	2.8 U	2.8 U	2.8 U	4.2 U	4.2 U
bz 187*	ppb dry	2.4	1.4	3.9	2.3	2.3	2.3 J
bz 195*	ppb dry	R	R	R	R	R	R
bz 206*	ppb dry	2.6 J	R	3.0 J	0.9 J	R	R
bz 209*	ppb dry	4.9 J	1.3 J	2.6 J	2.7 J	1.70 J	2.7 J
Total PCBs <sup>2</sup>	ppb dry	109.8	24	176	93.2	45.8	56.8
<b>PESTICIDES, ppb dry (ug/kg)</b>							
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	ppb dry	3.4 U	1.7 U	3.8 U	2.6 U	3.1 U	2.6 U
2,4'-DDD	ppb dry	6.9 U	6.9 U	9.3 J	6.9 U	18.6 U	18.7 U
2,4'-DDE	ppb dry	5.8 U	5.8 U	1.4 JM	5.8 U	23.9 U	23.9 U
2,4'-DDT	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	6.7 U	6.7 U
4,4'-DDD	ppb dry	3.1	1.5	5.9	3.4	1.70 J	5.8 J
4,4'-DDE	ppb dry	2.9	1.5	4.2	3.1	2.3 J	2.8 J
4,4'-DDT	ppb dry	308.8 UJ	307.8 UJ	306.3 UJ	308.9 UJ	1.8 JM	8.0 U
total DDT	ppb dry	6	3	20.8	6.5	5.8	8.6
aldrin	ppb dry	12.3 U	12.3 U	12.2 U	12.3 U	4.8 U	4.8 U
alpha-bhc	ppb dry	8.2 U	8.2 U	8.1 U	8.2 U	4.4 U	4.4 U
alpha-chlordane	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	7.1 U	7.2 U
beta-bhc	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	9.6 U	9.6 U
delta-bhc	ppb dry	13.5 U	13.4 U	13.4 U	13.5 U	11.0 U	11.1 U
dieldrin	ppb dry	5.1 U	5.1 U	3.4 J	5.1 U	7.5 U	7.5 U
endosulfan i	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	8.7 U	8.7 U
endosulfan ii	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	6.3 U	6.3 U
endosulfan sulfate	ppb dry	0.7 U	0.7 U	1.3 JM	0.7 U	14.0 U	14.0 U
total endosulfans	ppb dry	ND	ND	1.3	ND	ND	ND
endrin	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	9.2 U	9.2 U
gamma-bhc	ppb dry	0.7 U	1.6	0.7 U	0.7 U	3.2 U	3.2 U
gamma-chlordane	ppb dry	6.3 U	6.3 U	3.1 J	6.3 U	9.0 U	9.0 U
heptachlor	ppb dry	0.7 U	0.7 U	0.7 U	0.7 U	10.9 U	10.9 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS E5H LIS01WLE5HC1 N Far Field	W LIS E5H LIS01WLE5HC3 N Far Field	W LIS E5H LIS01WLE5HC5 N Far Field	W LIS E5H LIS01WLE5HCP SC Far Field	W LIS EB1 LIS01WLEB1C1 N Historic	W LIS EB1 LIS01WLEB1C3 N Historic	
Analyte Group - Analyte Name	Units						
heptachlor epoxide	0.7 U	0.7 U	0.7 U	0.7 U	12.3 U	12.3 U	
toxaphene (camphechlor)	170.5 U	170.0 U	169.1 U	170.6 U	196.6 U	197.2 U	
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>							
2,3,7,8-tcdf (db225)	12 J	14	16	33 UI	20	18	
2,3,7,8-cl4-dibenzo-p-dioxin	3.4	4.6	6.0	3.3	1.2	1.2	
2,3,4,7,8-cl5-dibenzofuran	5.3	5.5	7.6	6.0	6.5	6.0	
2,3,4,6,7,8-cl6-dibenzofuran	5.5	5.9	7.6	5.7	6.7	6.3	
1,2,3,7,8-cl5-dibenzofuran	4.3	4.3	5.8	4.9	5.2	4.8	
1,2,3,7,8-cl5-dibenzo-p-dioxin	1.5	1.6	1.9	1.7	1.9	1.7	
1,2,3,7,8,9-cl6-dibenzofuran	0.27	0.24	0.34	0.34	0.29	0.23	
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	7.2 J	6.1 J	7.2 J	7.8 J	9.1 J	8.4 J	
1,2,3,6,7,8-cl6-dibenzofuran	4.8	3.8	5.8	4.3	4.5	4.3	
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	6.4	6.4	8.6	6.9	7.8	7.1	
1,2,3,4,7,8-cl6-dibenzofuran	10	7.7	15	10	9.7	9.1	
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	1.8	2.2	2.2	2.0	2.4	2.4	
1,2,3,4,7,8,9-cl7-dibenzofuran	2.7	2.2	4.2	2.8	2.5	2.3	
1,2,3,4,6,7,8-cl7-dibenzofuran	60 EB	58 EB	74 EB	65 EB	70 EB	64 EB	
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	150 JEB	140 EB	170 EB	140 EB	170 EB	160 EB	
octachlorodibenzo-p-dioxin	1600 EB	1600 EB	1700 EB	1600 EB	1900 EB	1800 EB	
octachlorodibenzofuran	150 EB	180 EB	180 EB	150 EB	220 EB	200 EB	
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 77	1.6 J	0.52 J	1.4	1.1	0.64	0.57	
bz 114	0.17 J	0.036 J	0.18	0.11	0.076	0.081	
bz 123	0.098 J	R	0.12 U	0.088	0.07	0.054	
bz 126	0.043 J	R	0.13 U	0.046	0.051	0.055	
bz 156/157	1.0 J	0.35 J	0.94	0.63	0.64	0.57	
bz 167	0.42 J	0.16 J	0.35	0.25	0.25	0.29	
bz 169	0.017 UJ	R	0.17 U	0.017 U	0.02 U	0.23 U	
bz 189	0.061 J	R	0.098	0.056 U	0.054 U	0.3	
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>							
TBT - TBT (ppb dry)	2.7 J	3.2	17	8.4	3.3	2.6	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS E5H LIS01WLE5HC1 N Far Field	W LIS E5H LIS01WLE5HC3 N Far Field	W LIS E5H LIS01WLE5HC5 N Far Field	W LIS E5H LIS01WLE5HCP SC Far Field	W LIS EB1 LIS01WLEB1C1 N Historic	W LIS EB1 LIS01WLEB1C3 N Historic	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.008 U	0.02 U	0.15 U	0.12 U	0.03 U	-0.02 U
cobalt 60	pCi/g dry	-0.03 U	-0.05 U	0.11 U	-0.007 U	0.03 U	-0.0003 U
strontium 90	pCi/g dry	0.45 U	0.41 U	0.19 U	0.52 U	-0.13 U	-0.23 U
uranium 234	pCi/g dry	0.76 J	0.85 J	1.02	1.17	0.84 J	0.84 J
uranium 235	pCi/g dry	0.045 U	0.067 U	0.072 J	0.16 J	0.059 U	-0.008 U
uranium 238	pCi/g dry	0.79 J	0.52 U	0.6 J	0.72 J	0.87 J	0.72 J
total uranium	pCi/g dry	1.55	0.85	1.692	2.05	1.71	1.56

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	WLIS EB1 LIS01WLEB1C5 N Historic	WLIS EB1 LIS01WLEB1CP SC Historic	WLIS MDI LIS01WLMDIC1 N Active	WLIS MDI LIS01WLMDIC3 N Active	WLIS MDI LIS01WLMDIC5 N Active	WLIS MDI LIS01WLMDICP SC Active
<b>Analyte Group - Analyte Name</b>							
% Fines	%	91.00	87.00	47.00	46.00	73.00	44.00
% Water	%	179.94	172.89	100.91	87.96	141.93	65.46
% TOC	%	2.55	2.6	1.45	1.35	2.05	1.2
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	19800	17000	10700	10500	17100	10100
arsenic	ppm dry	8.6 J	8.4 J	5.5 J	5.5 J	8.4 J	5.0 J
beryllium	ppm dry	0.86	0.87	0.45	0.42	0.63	0.44
cadmium	ppm dry	0.30 J	0.33 J	0.36 J	1.0 J	0.59 J	0.45 J
chromium	ppm dry	66.9 J	68.6 J	39.4 J	43.4 J	58.6 J	36.5 J
copper	ppm dry	70.9	66.2	55.3	74.0	75.8	48.8
iron	ppm dry	32100	28500	19200	18400	28000	17000
lead	ppm dry	46.7 J	43.3 J	37.6 J	68.4 J	54.1 J	37.3 J
mercury	ppm dry	0.17 J	0.18 J	0.15 J	0.33 J	2.5 J	0.19 J
nickel	ppm dry	27.2	25.8	15.9	17.9	24.7	15.4
selenium	ppm dry	0.50 J	0.47 J	0.28 J	0.34 J	0.44 J	0.27 J
silver	ppm dry	0.97	0.85	0.76	1.5	0.90	0.73
zinc	ppm dry	147 J	137 J	91.3 J	127 J	139 J	84.3 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	8.13E+00 J	1.77E+00 J	8.87E-01 J	5.38E+00 J	2.78E+01 J	8.91E+00 J
SEM cadmium	umol/g dry	3.11E-03 J	3.20E-03 J	4.18E-03 J	6.85E-03 J	6.32E-03 J	5.43E-03 J
SEM copper	umol/g dry	6.26E-01 EBJ	6.86E-01 EBJ	5.45E-01 EBJ	1.21E-01 EBJ	3.27E-01 EBJ	3.23E-01 EBJ
SEM lead	umol/g dry	2.48E-01 EBJ	2.51E-01 EBJ	1.74E-01 EBJ	2.39E-01 EBJ	2.25E-01 EBJ	1.73E-01 EBJ
SEM nickel	umol/g dry	1.01E-01 UJ	1.04E-01 UJ	7.16E-02 UJ	4.60E-02 UJ	8.52E-02 UJ	5.28E-02 UJ
SEM silver	umol/g dry	5.10E-03 UJ	4.26E-03 UJ	3.15E-03 UJ	2.97E-03 UJ	4.08E-03 UJ	3.15E-03 UJ
SEM zinc	umol/g dry	1.59E+00 J	1.68E+00 J	1.07E+00 J	1.20E+00 J	1.56E+00 J	1.06E+00 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	7 JM	41 U	88 UJ	7 JM	41 U	41 U
1-methylphenanthrene	ppb dry	28	18	54 J	35	44	19
2,6-dimethylnaphthalene	ppb dry	7 JM	20 U	44 UJ	14 JM	20 U	20 U
2-methylnaphthalene	ppb dry	8 JM	8 JM	65 UJ	10 JM	30 U	30 U
acenaphthene+	ppb dry	12 JM	7 JM	50 JM	26 JM	88 U	22 JM
acenaphthylene+	ppb dry	39	41	36 J	53	22	24
anthracene+	ppb dry	59 J	53 J	150 J	120 J	38 J	61 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	WLIS EB1 LIS01WLEB1C5 N Historic	WLIS EB1 LIS01WLEB1CP SC Historic	WLIS MDI LIS01WLMDIC1 N Active	WLIS MDI LIS01WLMDIC3 N Active	WLIS MDI LIS01WLMDIC5 N Active	WLIS MDI LIS01WLMDICP SC Active
<b>Analyte Group - Analyte Name</b>							
benzo(a)anthracene+	ppb dry	120	160	700 J	230	96	210
benzo(a)pyrene+	ppb dry	130 J	210 J	830 J	220 J	99 J	230 J
benzo(b)fluoranthene+	ppb dry	98	150	780 J	240	99	210
benzo(e)pyrene	ppb dry	81 J	130 J	540 J	170 J	72 J	150 J
benzo(g,h,i)perylene+	ppb dry	72 J	110 J	530 J	160 J	67 J	150 J
benzo(k)fluoranthene+	ppb dry	110	120	700 J	200	79	190
biphenyl	ppb dry	22 U	19 U	42 UJ	19 U	19 U	19 U
chrysene+	ppb dry	120 J	170 J	780 J	270 J	100 J	220 J
dibenz[a,h]anthracene+	ppb dry	18 J	25 J	120 J	35 J	14 J	45 J
fluoranthene+	ppb dry	170 J	170 J	810 J	470 J	150 J	320 J
fluorene+	ppb dry	8 JM	77 U	40 JM	29 JM	77 U	10 JM
indeno[1,2,3-cd]pyrene+	ppb dry	92	130	660 J	190	77	190
naphthalene+	ppb dry	11 JM	11 JM	16 JM	14 JM	8 JM	10 JM
perylene	ppb dry	27 J	39 J	240 J	59 J	31 J	60 J
phenanthrene+	ppb dry	120	110	450 J	280	98	130
pyrene+	ppb dry	190 J	210 J	800 J	490 J	170 J	290 J
Total PAH <sup>1</sup>	ppb dry	1369	1677	7452	3027	1117	2312
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>							
bis(2-ethylhexyl)phthalate	ppb dry	79 U	91 U	830 UJ	800 U	130 U	150 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 8*	ppb dry	4.2 U	4.2 U	4.2 U	1.5 J	4.2 U	4.1 U
bz 18*	ppb dry	6.3 U	6.2 U	6.1 U	1.3 JM	6.2 U	6.0 U
bz 28*	ppb dry	13.7 U	1.1 JM	13.5 U	2.4 JM	1 JM	1.2 JM
bz 44*	ppb dry	6.3 UJ	2.6 J	0.8 JM	4.5 J	1.2 JM	2.5 J
bz 49	ppb dry	8.8 UJ	8.7 U	8.6 UJ	2.3 JM	8.7 UJ	8.4 UJ
bz 52*	ppb dry	9.8 UJ	1.1 JM	1.5 JM	3.6 J	1.5 JM	1.9 JM
bz 66*	ppb dry	1.5 JM	2.0 JM	1.9 JM	5.2 J	1.4 JM	2.5 JM
bz 87	ppb dry	5.4 U	0.7 JM	1.1 JM	2.3 J	1.4 JM	1.5 JM
bz 101*	ppb dry	1.8 J	2.5 J	2.6 J	6.2 J	3.4 J	2.9 J
bz 105*	ppb dry	13.6 U	1.1 JM	1.1 JM	3.5 JM	1.5 JM	1.5 JM
bz 118*	ppb dry	1.4 J	1.8 J	1.8 J	4.5 J	2.3 J	2.2 J
bz 128*	ppb dry	8.2 U	8.1 U	8.0 U	1.4 JM	8.1 U	7.8 U
bz 138*	ppb dry	1.60 J	2 J	2.2 J	7.6 J	2.6 J	3 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	WLIS EB1 LIS01WLEB1C5 N Historic	WLIS EB1 LIS01WLEB1CP SC Historic	WLIS MDI LIS01WLMDC1 N Active	WLIS MDI LIS01WLMDC3 N Active	WLIS MDI LIS01WLMDC5 N Active	WLIS MDI LIS01WLMDCP SC Active
<b>Analyte Group - Analyte Name</b>							
bz 153*	ppb dry	17.1 UJ	17.0 UJ	16.8 UJ	17.0 UJ	16.9 UJ	16.4 UJ
bz 170*	ppb dry	29.6 UJ	29.4 UJ	29.1 UJ	1 JM	29.3 UJ	28.4 UJ
bz 180*	ppb dry	4.3 J	4.3 P	4.1 J	5.7 J	5.1 J	3.4 J
bz 183	ppb dry	R	R	R	0.7 JM	R	R
bz 184	ppb dry	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.1 U
bz 187*	ppb dry	1.3	1.8	1.3	2.3	1.9	1.5
bz 195*	ppb dry	R	R	R	R	R	R
bz 206*	ppb dry	R	R	R	R	0.7 JM	R
bz 209*	ppb dry	1.5 J	2.0 J	1.8 J	1.60 J	2.1 J	1.5 J
Total PCBs <sup>2</sup>	ppb dry	26.8	46	40.4	115.2	52.2	51.2
<b>PESTICIDES, ppb dry (ug/kg)</b>							
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	ppb dry	2.2 U	2.9 U	2.4 U	3.8 U	5.6 U	5.0 U
2,4'-DDD	ppb dry	18.9 U	18.7 U	1.3 JM	7.4 J	18.7 U	18.1 U
2,4'-DDE	ppb dry	24.2 U	24.0 U	23.7 U	24.0 U	24.0 U	23.2 U
2,4'-DDT	ppb dry	6.8 U	6.8 U	6.7 U	6.8 U	6.8 U	6.5 U
4,4'-DDD	ppb dry	1.5 J	1.5 J	6.5 J	4.3 J	2.8 J	2.1 J
4,4'-DDE	ppb dry	2 J	2.3 J	2.6 J	5.1 J	3.3 J	2.8 J
4,4'-DDT	ppb dry	8.1 U	8.0 U	8.2 J	1.0 JM	8.0 U	7.8 U
total DDT	ppb dry	3.5	3.8	18.6	17.8	6.1	4.9
aldrin	ppb dry	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.6 U
alpha-bhc	ppb dry	4.5 U	4.4 U	4.4 U	4.4 U	4.4 U	4.3 U
alpha-chlordane	ppb dry	7.2 U	7.2 U	7.1 U	2.0 JM	7.2 U	0.8 JM
beta-bhc	ppb dry	9.7 U	9.6 U	9.5 U	9.6 U	9.6 U	9.3 U
delta-bhc	ppb dry	11.2 U	11.1 U	11.0 U	11.1 U	11.1 U	10.7 U
dieldrin	ppb dry	7.6 U	7.5 U	7.5 U	4.2 J	3.6 J	7.3 U
endosulfan i	ppb dry	8.8 U	8.7 U	8.6 U	8.7 U	8.7 U	8.4 U
endosulfan ii	ppb dry	6.4 U	6.4 U	6.3 U	6.4 U	6.3 U	6.1 U
endosulfan sulfate	ppb dry	14.2 U	14.1 U	13.9 U	14.1 U	14.1 U	13.6 U
total endosulfans	ppb dry	ND	ND	ND	ND	ND	ND
endrin	ppb dry	9.3 U	9.2 U	9.1 U	9.2 U	9.2 U	8.9 U
gamma-bhc	ppb dry	3.2 U	3.2 U	3.1 U	3.2 U	3.2 U	3.1 U
gamma-chlordane	ppb dry	9.1 U	9.0 U	0.90 JM	3.8 J	1.2 JM	1.4 JM
heptachlor	ppb dry	11.1 U	11.0 U	10.9 U	11.0 U	11.0 U	10.6 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS EB1 LIS01WLEB1C5 N Historic	W LIS EB1 LIS01WLEB1CP SC Historic	W LIS MDI LIS01WLMDIC1 N Active	W LIS MDI LIS01WLMDIC3 N Active	W LIS MDI LIS01WLMDIC5 N Active	W LIS MDI LIS01WLMDICP SC Active
Analyte Group - Analyte Name	Units					
heptachlor epoxide	ppb dry	12.4 U	12.3 U	12.2 U	12.3 U	11.9 U
toxaphene (camphechlor)	ppb dry	199.2 U	197.6 U	195.6 U	197.7 U	191.2 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>						
2,3,7,8-tcdf (db225)	pptr dry	16	20	39 UI	50 UI	15
2,3,7,8-cl4-dibenzo-p-dioxin	pptr dry	1.3	1.6	1.8	1.7 J	0.90 J
2,3,4,7,8-cl5-dibenzofuran	pptr dry	5.7	7.2	4.4	5.3 J	3.5 J
2,3,4,6,7,8-cl6-dibenzofuran	pptr dry	5.9	7.3	4.2	4.5 J	2.9
1,2,3,7,8-cl5-dibenzofuran	pptr dry	4.5	5.8	3.6	4 J	2.4 J
1,2,3,7,8-cl5-dibenzo-p-dioxin	pptr dry	1.7	1.9	1.6	1.7 J	1.0 J
1,2,3,7,8,9-cl6-dibenzofuran	pptr dry	0.23	0.26	0.2	0.11U	0.12U
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	pptr dry	8.0 J	9.7 J	8.1 J	7.7 J	4.7 J
1,2,3,6,7,8-cl6-dibenzofuran	pptr dry	4.0	5.1	3.1	3.5 J	2.2
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	pptr dry	6.7	8.4	5.6	6.8 J	3.8
1,2,3,4,7,8-cl6-dibenzofuran	pptr dry	8.2	11	8.0	8 J	4.9
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	pptr dry	2.2	2.7	2.5	2.1 J	1.3
1,2,3,4,7,8,9-cl7-dibenzofuran	pptr dry	2.1	2.9	1.6	1.9 J	1.1
1,2,3,4,6,7,8-cl7-dibenzofuran	pptr dry	61 EB	79 EB	44 EB	53 JEB	29 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	pptr dry	150 EB	180 EB	120 JEB	190 JEB	97 EB
octachlorodibenzo-p-dioxin	pptr dry	1700 EB	2100 EB	1200 EB	2200 JEB	1400 JEB
octachlorodibenzofuran	pptr dry	190 EB	240 EB	110 JEB	96 JEB	71 JEB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 77	ppb dry	0.51	0.66	0.46	0.89	6.1
bz 114	ppb dry	0.041	0.054	0.057	0.24	2.6
bz 123	ppb dry	0.037 U	0.045	0.065	1.6	20
bz 126	ppb dry	0.044 U	0.053	0.027 U	0.017 U	1.5
bz 156/157	ppb dry	0.37	0.51	0.48	1.8	17
bz 167	ppb dry	0.17	0.23	0.21	2.6	28
bz 169	ppb dry	0.017 U	0.023 U	0.012 U	0.033 U	0.095
bz 189	ppb dry	0.04 U	0.061 U	0.04 U	0.15	1.3
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>						
TBT - TBT (ppb dry)	ppb dry	2.8	2.4	13	51	18

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS EB1 LIS01WLEB1C5 N Historic	W LIS EB1 LIS01WLEB1CP SC Historic	W LIS MDI LIS01WLM DIC1 N Active	W LIS MDI LIS01WLM DIC3 N Active	W LIS MDI LIS01WLM DIC5 N Active	W LIS MDI LIS01WLM DICP SC Active	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	-0.09 U	-0.3 U	-0.1 U	-0.12 U	-0.39 U	0.05 U
cobalt 60	pCi/g dry	0.06 U	0.12 U	0.09 U	0.042 U	-0.1 U	-0.02 U
strontium 90	pCi/g dry	0.46 U	0.61 U	0.41 U	0.01 U	0.1 U	0.47 U
uranium 234	pCi/g dry	0.72 J	0.9 J	0.69 J	1 J	0.7 J	0.73 J
uranium 235	pCi/g dry	0.06 U	0.1 U	0.06 U	-0.0038 U	0.051 U	0.019 U
uranium 238	pCi/g dry	0.89 J	0.78 J	0.64 J	0.69 J	0.71 J	0.59 J
total uranium	pCi/g dry	1.61	1.68	1.33	1.69	1.41	1.32

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	WLIS STH LIS01WLSTHC1 N Reference	WLIS STH LIS01WLSTHC3 N Reference	WLIS STH LIS01WLSTHC5 N Reference	WLIS STH LIS01WLSTHCP SC Reference	WLIS SWR LIS01WLSWRC1 N Reference	WLIS SWR LIS01WLSWRC3 N Reference
<b>Analyte Group - Analyte Name</b>							
% Fines	%	28.00	26.00	25.00	27.00	22.00	22.00
% Water	%	49.65	44.08	46.95	47.77	37.56	39.16
% TOC	%	1.1	1.5	0.96	0.99	0.845	3.05
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	7060	7960	6830	8290	6100	6300
arsenic	ppm dry	4.4 J	3.6 J	3.3 J	3.4 J	5.1 J	3.8 J
beryllium	ppm dry	0.50	0.36	0.26	0.35	0.29	0.35
cadmium	ppm dry	0.30 J	0.20 J	0.18 J	0.21 J	0.18 J	0.18 J
chromium	ppm dry	46.2 J	28.5 J	20.8 J	27.4 J	20.9 J	23.3 J
copper	ppm dry	88.3	32.6	25.7	38.6	24.8	25.0
iron	ppm dry	18000	14200	12700	14800	12500	13200
lead	ppm dry	57.1 J	19.9 J	17.5 J	23.2 J	16.0 J	15.8 J
mercury	ppm dry	0.35 J	0.14 J	0.11 J	0.10 J	0.071 J	0.079 J
nickel	ppm dry	20.2	13.4	10.2	12.2	10.3	11.3
selenium	ppm dry	0.18 J	0.18 J	0.13 J	0.17 J	0.13 J	0.17 J
silver	ppm dry	0.50	0.36	0.32	0.42	0.31	0.27
zinc	ppm dry	448 J	69.5 J	58.1 J	124 J	55.9 J	59.8 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	4.97E+00 J	4.19E+00 J	1.48E+00 J	1.50E+00 J	9.00E-01 J	1.16E+00 J
SEM cadmium	umol/g dry	3.11E-03 J	2.76E-03 J	2.49E-03 JM	3.20E-03 J	1.33E-03 JM	3.11E-03 J
SEM copper	umol/g dry	2.71E-01 EBJ	2.00E-01 EBJ	2.17E-01 EBJ	2.66E-01 EBJ	2.03E-01 EBJ	1.40E-01 EBJ
SEM lead	umol/g dry	1.48E-01 EBJ	8.49E-02 EBJ	9.27E-02 EBJ	1.08E-01 EBJ	9.70E-02 EBJ	1.10E-01 EBJ
SEM nickel	umol/g dry	5.79E-02 UJ	3.58E-02 UJ	4.43E-02 UJ	5.79E-02 UJ	5.62E-02 UJ	5.79E-02 UJ
SEM silver	umol/g dry	2.41E-03 UJ	2.69E-03 UJ	2.32E-03 UJ	2.78E-03 UJ	2.69E-03 UJ	2.41E-03 UJ
SEM zinc	umol/g dry	1.73E+00 J	8.73E-01 J	6.94E-01 J	8.93E-01 J	6.75E-01 J	5.80E-01 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	34 U	34 U	34 U	34 U	34 U	34 U
1-methylphenanthrene	ppb dry	16	14	13	12	8	6
2,6-dimethylnaphthalene	ppb dry	17 U	17 U	17 U	17 U	17 U	17 U
2-methylnaphthalene	ppb dry	25 U	25 U	25 U	5 JM	25 U	25 U
acenaphthene+	ppb dry	73 U	73 U	73 U	73 U	73 U	73 U
acenaphthylene+	ppb dry	16	24	24	25	14	10
anthracene+	ppb dry	26 J	29 J	33 J	36 J	18 J	11 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS STH LIS01WLSTHC1 N Reference	W LIS STH LIS01WLSTHC3 N Reference	W LIS STH LIS01WLSTHC5 N Reference	W LIS STH LIS01WLSTHCP SC Reference	W LIS SWR LIS01WLSWRC1 N Reference	W LIS SWR LIS01WLSWRC3 N Reference
Analyte Group - Analyte Name	Units					
benzo(a)anthracene+	91	88	81	80 EB	47	39
benzo(a)pyrene+	96 J	100 J	90 J	97 JEB	53 J	43 J
benzo(b)fluoranthene+	78	73	71	71 EB	42	32
benzo(e)pyrene	62 J	63 J	55 J	57 J	33 J	25 J
benzo(g,h,i)perylene+	53 J	57 J	53 J	53 JEB	32 J	21 J
benzo(k)fluoranthene+	71	71	67	73 EB	40	29
biphenyl	16 U	16 U	16 U	16 U	16 U	16 U
chrysene+	94 J	90 J	82 J	81 JEB	48 J	39 J
dibenz[a,h]anthracene+	12 J	13 J	12 J	13 JEB	7 J	5 J
fluoranthene+	89 J	91 J	97 J	92 J	61 J	37 J
fluorene+	64 U	64 U	64 U	64 U	64 U	64 U
indeno[1,2,3-cd]pyrene+	62	65	63	66 EB	37	26
naphthalene+	28 UJ	7 JM	7 JM	8 JM	28 UJ	5 JM
perylene	22 J	20 J	20 J	21 J	12 J	9 J
phenanthrene+	59	47	49	45	36	19
pyrene+	110 J	120 J	110 J	100 J	71 J	49 J
Total PAH <sup>1</sup>	857	875	839	840	506	365
<b>BIS(2-ETHYLHEXYL)PHthalate, ppb dry (ug/kg)</b>						
bis(2-ethylhexyl)phthalate	56 U	60 U	50 U	76 U	54 U	57 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 8*	3.5 U	3.3 U	3.3 U	3.4 U	3.2 U	3.2 U
bz 18*	5.1 U	4.9 U	4.9 U	5.0 U	4.7 U	4.8 U
bz 28*	11.1 U	10.6 U	10.6 U	11.0 U	10.2 U	10.4 U
bz 44*	5.1 UJ	4.9 UJ	4.9 UJ	5.0 UJ	4.7 UJ	4.8 UJ
bz 49	7.1 UJ	6.8 UJ	6.8 UJ	7.0 UJ	6.6 UJ	6.7 UJ
bz 52*	8.0 UJ	7.6 UJ	7.6 UJ	7.8 UJ	7.3 UJ	7.5 UJ
bz 66*	11.2 U	10.7 U	10.7 U	11.0 U	10.3 U	10.5 U
bz 87	4.4 U	4.2 U	4.2 U	4.3 U	4.0 U	4.1 U
bz 101*	1.2 J	0.8 J	0.5 U	0.7 J	0.5 U	0.5 U
bz 105*	11.1 U	10.6 U	10.6 U	10.9 U	10.2 U	10.4 U
bz 118*	0.7 J	0.7 J	0.5 U	0.6 J	0.5 U	0.5 U
bz 128*	6.6 U	6.3 U	6.3 U	6.5 U	6.1 U	6.2 U
bz 138*	1.4 J	0.8 J	0.7 J	0.8 J	0.5 J	0.5 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS STH LIS01WLSTHC1 N Reference	W LIS STH LIS01WLSTHC3 N Reference	W LIS STH LIS01WLSTHC5 N Reference	W LIS STH LIS01WLSTHCP SC Reference	W LIS SWR LIS01WLSWRC1 N Reference	W LIS SWR LIS01WLSWRC3 N Reference
Analyte Group - Analyte Name	Units					
bz 153*	13.9 UJ	13.3 UJ	13.3 UJ	13.7 UJ	0.6 JM	13.0 UJ
bz 170*	24.1 UJ	23.0 UJ	23.0 UJ	23.7 UJ	22.1 UJ	22.5 UJ
bz 180*	2.5 J	1.70 J	1.3 J	0.90 J	0.5 U	1.60 J
bz 183	R	R	R	R	R	R
bz 184	3.5 U	3.3 U	3.3 U	3.4 U	3.2 U	3.2 U
bz 187*	1.4	0.7	0.5 U	0.5 U	0.5 U	0.5 U
bz 195*	R	R	R	R	R	R
bz 206*	R	R	R	R	R	R
bz 209*	1.4 J	0.9 J	0.6 J	0.8 J	0.7 J	0.8 J
Total PCBs <sup>2</sup>	17.2	11.2	5.2	7.6	3.6	4.8
<b>PESTICIDES, ppb dry (ug/kg)</b>						
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	1.9 U	2.3 U	2.7 U	30	1.8 U	1.60 U
2,4'-DDD	15.4 U	14.7 U	14.7 U	15.1 U	14.1 U	14.4 U
2,4'-DDE	19.7 U	18.8 U	18.8 U	19.4 U	18.0 U	18.4 U
2,4'-DDT	5.5 U	5.3 U	5.3 U	5.5 U	5.1 U	5.2 U
4,4'-DDD	1.4 J	0.9 J	1.2 J	0.9 J	0.6 J	0.90 J
4,4'-DDE	1.0 J	0.9 J	0.8 J	0.8 J	0.6 J	0.7 J
4,4'-DDT	6.6 U	6.3 U	6.3 U	6.5 U	6.0 U	6.2 U
total DDT	2.4	1.8	2	1.7	1.2	1.6
aldrin	3.9 U	3.8 U	3.8 U	3.9 U	3.6 U	3.7 U
alpha-bhc	3.6 U	3.5 U	3.5 U	3.6 U	3.3 U	3.4 U
alpha-chlordane	5.9 U	5.6 U	5.6 U	5.8 U	5.4 U	5.5 U
beta-bhc	7.9 U	7.5 U	7.5 U	7.8 U	7.2 U	7.4 U
delta-bhc	9.1 U	8.7 U	8.7 U	8.9 U	8.3 U	8.5 U
dieldrin	6.2 U	5.9 U	5.9 U	6.1 U	5.7 U	5.8 U
endosulfan i	7.1 U	6.8 U	6.8 U	7.0 U	6.6 U	6.7 U
endosulfan ii	5.2 U	5.0 U	5.0 U	5.1 U	4.8 U	4.9 U
endosulfan sulfate	11.5 U	11.0 U	11.0 U	11.4 U	10.6 U	10.8 U
total endosulfans	ND	ND	ND	ND	ND	ND
endrin	7.5 U	7.2 U	7.2 U	7.4 U	6.9 U	7.1 U
gamma-bhc	2.6 U	2.5 U	2.5 U	2.6 U	2.4 U	2.4 U
gamma-chlordane	7.4 U	7.1 U	7.1 U	7.3 U	6.8 U	6.9 U
heptachlor	9.0 U	8.6 U	8.6 U	8.9 U	8.3 U	8.4 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS STH LIS01WLSTHC1 N Reference	W LIS STH LIS01WLSTHC3 N Reference	W LIS STH LIS01WLSTHC5 N Reference	W LIS STH LIS01WLSTHCP SC Reference	W LIS SWR LIS01WLSWRC1 N Reference	W LIS SWR LIS01WLSWRC3 N Reference	
Analyte Group - Analyte Name	Units						
heptachlor epoxide	ppb dry	10.1 U	9.7 U	9.7 U	10.0 U	9.3 U	9.5 U
toxaphene (camphechlor)	ppb dry	162.1 U	154.7 U	154.8 U	159.6 U	148.8 U	151.7 U
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>							
2,3,7,8-tcdf (db225)	pptr dry	7.1	4.1	4.1	4.3	9.4 UI	20 UI
2,3,7,8-cl4-dibenzo-p-dioxin	pptr dry	0.55	0.43	0.38	0.43	0.35 U	0.33
2,3,4,7,8-cl5-dibenzofuran	pptr dry	2.6	1.8	1.8	1.9	1.6	1.8
2,3,4,6,7,8-cl6-dibenzofuran	pptr dry	2.5	1.9	1.9	2.2	1.4	1.6
1,2,3,7,8-cl5-dibenzofuran	pptr dry	2.1	1.4	1.4	1.6	1.2	1.6
1,2,3,7,8-cl5-dibenzo-p-dioxin	pptr dry	0.69 B	0.59 B	0.56 B	0.67 B	0.51	0.44 U
1,2,3,7,8,9-cl6-dibenzofuran	pptr dry	0.16	0.082U	0.12	0.13	0.094U	0.23
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	pptr dry	2.9 J	2.3 J	2.4 J	3.2 J	1.8 J	2.0 J
1,2,3,6,7,8-cl6-dibenzofuran	pptr dry	1.8	1.4	1.3	1.5	1.1	1.1
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	pptr dry	2.4	1.9	1.9	2.4	1.6	1.6
1,2,3,4,7,8-cl6-dibenzofuran	pptr dry	3.9	2.9	2.6	3.0	2.1	2.4
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	pptr dry	0.80	0.71 B	0.70 B	0.89	0.51	0.60
1,2,3,4,7,8,9-cl7-dibenzofuran	pptr dry	1.1	0.90	0.73	0.86	0.68	0.57
1,2,3,4,6,7,8-cl7-dibenzofuran	pptr dry	26 EB	19 EB	19 EB	22 EB	14 EB	14 EB
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	pptr dry	52 EB	43 EB	43 EB	50 EB	32 EB	32 EB
octachlorodibenzo-p-dioxin	pptr dry	580 EB	1500 EB	500 EB	570 EB	380 EB	400 EB
octachlorodibenzofuran	pptr dry	68 EB	53 EB	43 EB	63 EB	41 EB	42 EB
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 77	ppb dry	0.2	0.21	0.17	0.16	0.12	0.13
bz 114	ppb dry	0.02 U	0.019 U	0.01 U	0.012 U	0.009 U	0.011 U
bz 123	ppb dry	0.021 U	0.017 U	0.011 U	0.012 U	0.011 U	0.013 U
bz 126	ppb dry	0.0080 UJ	0.013 U	0.011 U	0.0070 U	0.008 U	0.009 U
bz 156/157	ppb dry	0.24	0.15	0.11 U	0.15	0.11 U	0.11 U
bz 167	ppb dry	0.11	0.17	0.054 U	0.064	0.051 U	0.052 U
bz 169	ppb dry	0.0090 U	0.0030 U	0.0010 U	0.0030 U	0.004 U	0.0010 U
bz 189	ppb dry	0.044 U	0.021 U	0.013 U	0.018 U	0.012 U	0.013 U
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>							
TBT - TBT (ppb dry)	ppb dry	0.92	0.71	0.81	0.89	0.57 J	0.6 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Analyte Group - Analyte Name	Units	W LIS STH LIS01WLSTHC1 N Reference	W LIS STH LIS01WLSTHC3 N Reference	W LIS STH LIS01WLSTHC5 N Reference	W LIS STH LIS01WLSTHCP SC Reference	W LIS SWR LIS01WLSWRC1 N Reference	W LIS SWR LIS01WLSWRC3 N Reference
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.113 U	0.033 U	-0.07 U	0.058 U	0.014 U	0.013 U
cobalt 60	pCi/g dry	0.021 U	-0.012 U	0.013 U	-0.013 U	-0.026 U	0.006 U
strontium 90	pCi/g dry	0.29 U	0.22 U	0.58 U	-0.27 U	0.18 U	0.08 U
uranium 234	pCi/g dry	0.47 U	0.5 U	0.51 U	0.32 U	0.42 U	0.23 U
uranium 235	pCi/g dry	0.068 J	0.098 J	0.109 U	0.034 U	0.028 U	0.08 J
uranium 238	pCi/g dry	0.57 J	0.33 U	0.23 U	0.38 U	0.21 U	0.27 U
total uranium	pCi/g dry	0.638	0.098	ND	ND	ND	0.08

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	W LIS SWR LIS01WLSWRC5 N Reference	W LIS SWR LIS01WLSWRCP SC Reference	W LIS W5H LIS01WLW5HC1 N Far Field	W LIS W5H LIS01WLW5HC3 N Far Field	W LIS W5H LIS01WLW5HC5 N Far Field	W LIS W5H LIS01WLW5HCP SC Far Field
<b>Analyte Group - Analyte Name</b>							
% Fines	%	23.00	25.00	81.00	88.00	89.00	74.00
% Water	%	39.15	41.05	91.53	127.61	120.30	153.73
% TOC	%	1.1	0.825	2.4	2.4	2.7	2.55
<b>METALS, ppm dry (mg/kg)</b>							
aluminum	ppm dry	7020	6820	18000	17600	17600	17100
arsenic	ppm dry	4.0 J	5.6 J	7.5 J	7.3 J	8.2 J	7.4 J
beryllium	ppm dry	0.35	0.35	0.76	0.70	0.94	0.79
cadmium	ppm dry	0.19 J	0.18 J	0.66 J	0.49 J	0.57 J	0.53 J
chromium	ppm dry	25.7 J	25.0 J	73.2 J	64.1 J	80.9 J	66.8 J
copper	ppm dry	28.3	28.9	75.0	75.1	83.2	75.4
iron	ppm dry	16400	16800	30100	29300	29300	27600
lead	ppm dry	18.9 J	24.2 J	51.3 J	46.3 J	50.9 J	48.3 J
mercury	ppm dry	0.083 J	0.077 J	0.22 J	0.23 J	0.32 J	0.34 J
nickel	ppm dry	12.3	13.3	27.4	27.1	29.6	26.7
selenium	ppm dry	0.16 J	0.18 J	0.43 J	0.44 J	0.51 J	0.44 J
silver	ppm dry	0.35	0.33	1.0	1.0	1.1	1.0
zinc	ppm dry	65.5 J	66.7 J	148 J	146 J	163 J	144 J
<b>AVS/SEM, umol/g dry</b>							
AVS	umol/g dry	1.66E+00 J	3.75E+00 J	2.42E+01 J	2.51E+01 J	1.79E+01 J	1.48E+01 J
SEM cadmium	umol/g dry	1.42E-03 JM	2.85E-03 J	5.87E-03 J	4.72E-03 J	8.90E-03 J	8.72E-03 J
SEM copper	umol/g dry	1.73E-01 EBJ	1.79E-01 EBJ	3.82E-01 EBJ	4.66E-01 EBJ	6.55E-01 EBJ	5.63E-01 EBJ
SEM lead	umol/g dry	7.34E-02 EBJ	8.06E-02 EBJ	1.85E-01 EBJ	2.22E-01 EBJ	2.82E-01 EBJ	7.38E-01 EBJ
SEM nickel	umol/g dry	7.33E-02 UJ	3.58E-02 UJ	7.67E-02 UJ	1.93E-01 EBJ	2.66E-01 EBJ	1.99E-01 EBJ
SEM silver	umol/g dry	2.60E-03 UJ	2.69E-03 UJ	2.04E-02 J	4.73E-03 UJ	4.91E-03 UJ	3.99E-03 UJ
SEM zinc	umol/g dry	6.97E-01 J	7.54E-01 J	1.29E+00 J	1.58E+00 J	2.71E+00 J	2.05E+00 J
<b>PAH Compounds, ppb dry (ug/kg)</b>							
1-methylnaphthalene	ppb dry	34 U	34 U	41 U	41 U	48 U	14 JM
1-methylphenanthrene	ppb dry	6	6	24	23	25	110
2,6-dimethylnaphthalene	ppb dry	17 U	17 U	20 U	20 U	24 U	16
2-methylnaphthalene	ppb dry	25 U	25 U	7 JM	8 JM	7 JM	19 JM
acenaphthene+	ppb dry	73 U	73 U	8 JM	8 JM	8 JM	32 JM
acenaphthylene+	ppb dry	14	10	46	40	54	94
anthracene+	ppb dry	13 J	15 J	72 J	64 J	74 J	330 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS SWR LIS01WLSWRC5 N Reference	W LIS SWR LIS01WLSWRCP SC Reference	W LIS W5H LIS01WLW5HC1 N Far Field	W LIS W5H LIS01WLW5HC3 N Far Field	W LIS W5H LIS01WLW5HC5 N Far Field	W LIS W5H LIS01WLW5HCP SC Far Field
Analyte Group - Analyte Name	Units					
benzo(a)anthracene+	ppb dry	33	30	170	150	640
benzo(a)pyrene+	ppb dry	41 J	41 J	180 J	160 J	550 J
benzo(b)fluoranthene+	ppb dry	31	28	150	120	440
benzo(e)pyrene	ppb dry	24 J	26 J	120 J	96 J	310 J
benzo(g,h,i)perylene+	ppb dry	21 J	26 J	120 J	91 J	290 J
benzo(k)fluoranthene+	ppb dry	28	33	150	120	420
biphenyl	ppb dry	16 U	16 U	19 U	19 U	6 JM
chrysene+	ppb dry	34 J	34 J	180 J	150 J	550 J
dibenz[a,h]anthracene+	ppb dry	5 J	6 J	26 J	21 J	79 J
fluoranthene+	ppb dry	34 J	36 J	220 J	200 J	870 J
fluorene+	ppb dry	64 U	64 U	77 U	6 JM	26 JM
indeno[1,2,3-cd]pyrene+	ppb dry	26	31	140	110	370
naphthalene+	ppb dry	28 UJ	28 UJ	10 JM	11 JM	43 J
perylene	ppb dry	9 J	9 J	44 J	35 J	130 J
phenanthrene+	ppb dry	16	23	100	100	350
pyrene+	ppb dry	44 J	46 J	260 J	220 J	870 J
Total PAH <sup>1</sup>	ppb dry	340	359	1832	1571	5954
<b>BIS(2-ETHYLHEXYL)PHTHALATE, ppb dry (ug/kg)</b>						
bis(2-ethylhexyl)phthalate	ppb dry	54 U	53 U	78 U	100 U	120 U
<b>PCB CONGENERS, ppb dry (ug/kg)</b>						
bz 8*	ppb dry	3.2 U	3.3 U	4.2 U	4.3 U	4.2 U
bz 18*	ppb dry	4.8 U	4.9 U	6.2 U	6.3 U	6.2 U
bz 28*	ppb dry	10.5 U	10.7 U	1.5 JM	1.0 JM	1.7 JM
bz 44*	ppb dry	4.8 U	4.9 UJ	2.3 J	3.1 J	6.2 U
bz 49	ppb dry	6.7 U	6.9 UJ	1.9 JM	0.9 JM	1.2 JM
bz 52*	ppb dry	7.5 U	7.7 UJ	3.9 J	1.2 JM	9.6 UJ
bz 66*	ppb dry	10.5 U	10.8 U	4.8 J	2.0 JM	13.6 U
bz 87	ppb dry	4.1 U	4.2 U	2.4 J	2.1 J	1.7 JM
bz 101*	ppb dry	0.8 J	0.5 U	5.7 J	2.5 J	3.7 J
bz 105*	ppb dry	10.4 U	10.7 U	3.4 JM	1.2 JM	1.60 JM
bz 118*	ppb dry	0.5 U	0.6 J	4.9 J	1.7 J	2.2 J
bz 128*	ppb dry	6.2 U	6.4 U	1.3 JM	8.2 U	8.0 U
bz 138*	ppb dry	0.7 J	0.7 J	5.9 J	2.6 J	2.7 J

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	Units	W LIS SWR LIS01WLSWRC5 N Reference	W LIS SWR LIS01WLSWRCP SC Reference	W LIS W5H LIS01WLW5HC1 N Far Field	W LIS W5H LIS01WLW5HC3 N Far Field	W LIS W5H LIS01WLW5HC5 N Far Field	W LIS W5H LIS01WLW5HCP SC Far Field
<b>Analyte Group - Analyte Name</b>							
bz 153*	ppb dry	0.7 JM	13.4 UJ	17.0 UJ	17.1 UJ	17.1 UJ	16.8 UJ
bz 170*	ppb dry	22.7 U	23.2 UJ	29.4 UJ	29.7 UJ	29.7 UJ	29.2 UJ
bz 180*	ppb dry	3.5 J	1.9 J	6.3 J	5 J	5.3 J	9 J
bz 183	ppb dry	R	R	R	R	R	R
bz 184	ppb dry	3.2 U	3.3 U	4.2 U	4.3 U	4.3 U	4.2 U
bz 187*	ppb dry	0.5 U	0.5 U	2.5 J	1.6	1.5 J	2.2
bz 195*	ppb dry	R	R	R	R	R	R
bz 206*	ppb dry	R	R	R	R	R	1.1 JM
bz 209*	ppb dry	1.2 J	0.90 J	1.8 J	1.5 J	1.7 J	2.7 J
Total PCBs <sup>2</sup>	ppb dry	13.8	8.2	97.2	52.8	39.8	59.6
<b>PESTICIDES, ppb dry (ug/kg)</b>							
1,1,1-trichloro-2,2-bis (p-methoxyphenyl)-ethane	ppb dry	1.3 U	2.5 U	2.0 U	1.8 U	2.4 U	8 U
2,4'-DDD	ppb dry	14.5 U	14.8 U	18.7 U	18.9 U	18.9 U	18.6 U
2,4'-DDE	ppb dry	18.5 U	18.9 U	24.0 U	24.2 U	24.2 U	23.8 U
2,4'-DDT	ppb dry	5.2 U	5.3 U	6.8 U	6.8 U	6.8 U	6.7 U
4,4'-DDD	ppb dry	0.5 U	0.8 J	2.8 J	2.6 J	1.60 J	2.9 J
4,4'-DDE	ppb dry	0.8 J	0.9 J	3.3 J	2.2 J	2.1 J	2.8 J
4,4'-DDT	ppb dry	6.2 U	6.3 U	1.3 JM	8.1 U	0.8 JM	0.7 JM
total DDT	ppb dry	0.8	1.7	7.4	4.8	4.5	6.4
aldrin	ppb dry	3.7 U	3.8 U	4.8 U	4.9 U	4.9 U	4.8 U
alpha-bhc	ppb dry	3.4 U	3.5 U	4.4 U	4.5 U	4.5 U	4.4 U
alpha-chlordane	ppb dry	5.5 U	5.7 U	7.2 U	7.2 U	7.2 U	7.1 U
beta-bhc	ppb dry	7.4 U	7.6 U	9.6 U	9.7 U	9.7 U	9.5 U
delta-bhc	ppb dry	8.6 U	8.7 U	11.1 U	11.2 U	11.2 U	11.0 U
dieldrin	ppb dry	5.8 U	5.9 U	7.5 U	7.6 U	7.6 U	7.5 U
endosulfan i	ppb dry	6.7 U	6.9 U	8.7 U	8.8 U	8.8 U	8.7 U
endosulfan ii	ppb dry	4.9 U	5.0 U	6.4 U	6.4 U	6.4 U	6.3 U
endosulfan sulfate	ppb dry	10.9 U	11.1 U	1.2 JM	0.8 JM	14.2 U	14.0 U
total endosulfans	ppb dry	ND	ND	1.2	0.8	ND	ND
endrin	ppb dry	7.1 U	7.3 U	9.2 U	9.3 U	9.3 U	9.1 U
gamma-bhc	ppb dry	2.5 U	2.5 U	3.2 U	3.2 U	3.2 U	3.2 U
gamma-chlordane	ppb dry	7.0 U	7.1 U	0.7 JM	9.1 U	9.1 U	8.9 U
heptachlor	ppb dry	8.5 U	8.7 U	11.0 U	11.1 U	11.1 U	10.9 U

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS SWR LIS01WLSWRC5 N Reference	W LIS SWR LIS01WLSWRCP SC Reference	W LIS W5H LIS01WLW5HC1 N Far Field	W LIS W5H LIS01WLW5HC3 N Far Field	W LIS W5H LIS01WLW5HC5 N Far Field	W LIS W5H LIS01WLW5HCP SC Far Field	
Analyte Group - Analyte Name	Units						
heptachlor epoxide	9.5 U	9.7 U	12.3 U	12.5 U	12.5 U	12.2 U	
toxaphene (camphechlor)	152.5 U	156.0 U	197.7 U	199.7 U	199.8 U	196.2 U	
<b>DIOXIN AND FURAN CONGENERS, pptr dry</b>							
2,3,7,8-tcdf (db225)	9.3 UI	14 UI	54 UI	83 UI	57 UI	65 UI	
2,3,7,8-cl4-dibenzo-p-dioxin	0.73	0.58	1.5	8.8	25	3.7	
2,3,4,7,8-cl5-dibenzofuran	1.6	1.7	6.1	8.0	9.2	6.9	
2,3,4,6,7,8-cl6-dibenzofuran	1.7	1.8	5.7	7.7	8.9	6.4	
1,2,3,7,8-cl5-dibenzofuran	1.5	1.9	5.5	9.9	7.1	5.5	
1,2,3,7,8-cl5-dibenzo-p-dioxin	0.40 U	0.48	1.8	2.5	2.5	1.6 U	
1,2,3,7,8,9-cl6-dibenzofuran	0.11U	0.13U	0.18	0.24	0.26	0.23	
1,2,3,7,8,9-cl6-dibenzo-p-dioxin	2.0 J	2.2 J	7.7 J	11 J	12 J	8.4 J	
1,2,3,6,7,8-cl6-dibenzofuran	1.1	1.2	3.9	5.4	6.0	4.2	
1,2,3,6,7,8-cl6-dibenzo-p-dioxin	1.8	1.8	6.3	8.9	10	7.4	
1,2,3,4,7,8-cl6-dibenzofuran	2.5	2.7	9.5	15	15	10	
1,2,3,4,7,8-cl6-dibenzo-p-dioxin	0.55	0.62	2.2	3.4	3.2	2.1	
1,2,3,4,7,8,9-cl7-dibenzofuran	0.72	0.57	2.1	2.9	3.6	2.5	
1,2,3,4,6,7,8-cl7-dibenzofuran	16 EB	15 EB	62 EB	81 EB	100 EB	69 EB	
1,2,3,4,6,7,8-cl7-dibenzo-p-dioxin	36 EB	36 EB	160 EB	190 EB	230 EB	160 EB	
octachlorodibenzo-p-dioxin	410 EB	470 EB	1800 EB	2100 EB	2600 EB	1800 EB	
octachlorodibenzofuran	40 EB	42 EB	170 EB	220 EB	300 EB	200 EB	
<b>DIOXIN-LIKE PCB CONGENERS, ppb dry (ug/kg)</b>							
bz 77	0.13	0.19	0.65	0.87	1.3	0.77	
bz 114	0.010 U	0.0080 U	0.073	0.085	0.14	0.052	
bz 123	0.014 U	0.015 U	0.066	0.076	0.11	0.027 U	
bz 126	0.0080 U	0.0080 U	0.054	0.050	0.068	0.039 U	
bz 156/157	0.12 U	0.12 U	0.67	0.73	1.0	0.52	
bz 167	0.056	0.056	0.28	0.31	0.43	0.21	
bz 169	0.0060 U	0.0040 U	0.022 U	0.018 U	0.026 U	0.0090 U	
bz 189	0.014 U	0.013 U	0.061 U	0.075	0.095	0.061	
<b>TRIBUTYL TIN, ppb dry (ug/kg)</b>							
TBT - TBT (ppb dry)	1.2	0.59 J	5.3 J	4.6 J	5.6	4.8	

**Table 4-1. Long Island Sound Study Sediment Chemistry and Grainsize Results**

Site ID Station Code Field Sample ID Type Designation	W LIS SWR LIS01WLSWRC5 N Reference	W LIS SWR LIS01WLSWRCP SC Reference	W LIS W5H LIS01WLW5HC1 N Far Field	W LIS W5H LIS01WLW5HC3 N Far Field	W LIS W5H LIS01WLW5HC5 N Far Field	W LIS W5H LIS01WLW5HCP SC Far Field	
Analyte Group - Analyte Name	Units						
<b>RADIONUCLIDES, pCi/g dry</b>							
cesium 137	pCi/g dry	0.019 U	0.014 U	0.09 U	0.16 U	0.14 U	0.18 U
cobalt 60	pCi/g dry	0.018 U	-0.012 U	-0.08 U	-0.03 U	-0.26 U	-0.06 U
strontium 90	pCi/g dry	0.09 U	0.28 U	0.28 U	0.16 U	0.09 U	0.03 U
uranium 234	pCi/g dry	0.41 U	0.5 U	0.61 U	0.86 J	0.77 J	0.69 J
uranium 235	pCi/g dry	0.06 J	0.23 J	0.18 J	0.068 U	0.15 J	0.25 J
uranium 238	pCi/g dry	0.41 U	0.39 U	0.7 J	0.87 J	0.47 U	0.77 J
total uranium	pCi/g dry	0.06	0.23	0.88	1.73	0.92	1.71

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

Qualifier Explanation:

EB = Analyte is detected in 1 or more program equipment blank.

U = Analyte is not detected above reporting limit.

J = Value is estimated.

JM = Value is below the verified reporting limit associated with the sample batch

R = Data point is rejected.

ND = Analyte is not detected.

B = Congener was identified in the laboratory method blank.

I = Interferences were observed.

N = Sample was lost or damaged and not analyzed.

<sup>1</sup> Total PAH = Sum of the program compounds only, compounds not detected are not included in the sum.

<sup>2</sup> Total PCB = 2\*Sum of the NOAA 18 congeners only. EPA Draft Protocol, 1998; compounds not detected are not included in the sum.

\* NOAA 18 Congener

<sup>†</sup> Included in the total PAH calculation

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	CLIS 1KW LIS01CL1KWC1 N Far Field	CLIS 1KW LIS01CL1KWC3 N Far Field	CLIS 1KW LIS01CL1KWC5 N Far Field	CLIS 1KW LIS01CL1KWCP SC Far Field	CLIS 25W LIS01CL25WC1 N Reference	CLIS 25W LIS01CL25WC3 N Reference	CLIS 25W LIS01CL25WC5 N Reference	CLIS 25W LIS01CL25WCP SC Reference
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.463	0.464	0.524	0.459	0.426	0.390	0.357	0.362
Metals - beryllium (--)	0.039	0.041	0.050	0.039	0.040	0.034	0.033	0.033
Metals - cadmium (--)	0.016	0.014	0.011	0.015	0.010	0.010	0.008	0.008
Metals - chromium (--)	4.275	4.371	4.659	4.030	3.469	3.122	3.042	3.254
Metals - copper (--)	3.563	3.729	3.619	3.652	3.395	3.122	3.024	2.932
Metals - iron (--)	1650.000	1778.571	1833.333	1740.741	1765.432	1691.860	1720.238	1655.367
Metals - lead (--)	2.388	2.450	2.159	2.444	2.031	1.907	1.839	1.768
Metals - mercury (--)	0.008	0.009	0.010	0.008	0.009	0.009	0.008	0.008
Metals - nickel (--)	1.525	1.636	1.675	1.481	1.519	1.355	1.315	1.260
Metals - selenium (--)	0.018	0.017	0.026	0.019	0.027	0.022	0.023	0.021
Metals - silver (--)	0.051	0.051	0.047	0.046	0.045	0.044	0.040	0.040
Metals - zinc (--)	7.375	7.714	7.817	7.378	7.469	6.919	6.607	6.158
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	606.061	562.249	545.455	574.468	566.434	591.065	581.315	604.096
Metals - arsenic (--)	0.280	0.261	0.286	0.264	0.241	0.230	0.208	0.218
Metals - beryllium (--)	0.024	0.023	0.027	0.022	0.023	0.020	0.019	0.020
Metals - cadmium (--)	0.009	0.008	0.006	0.009	0.006	0.006	0.005	0.005
Metals - chromium (--)	2.591	2.458	2.541	2.315	1.965	1.845	1.768	1.966
Metals - copper (--)	2.159	2.096	1.974	2.098	1.923	1.845	1.758	1.771
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	1.447	1.378	1.177	1.404	1.150	1.127	1.069	1.068
Metals - mercury (--)	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005
Metals - nickel (--)	0.924	0.920	0.913	0.851	0.860	0.801	0.765	0.761
Metals - selenium (--)	0.011	0.010	0.014	0.011	0.015	0.013	0.013	0.013
Metals - silver (--)	0.031	0.029	0.026	0.026	0.026	0.026	0.023	0.024
Metals - zinc (--)	4.470	4.337	4.264	4.238	4.231	4.089	3.841	3.720

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	CLIS 2KW LIS01CL2KWC1 N Far Field	CLIS 2KW LIS01CL2KWC3 N Far Field	CLIS 2KW LIS01CL2KWC5 N Far Field	CLIS 2KW LIS01CL2KWCP SC Far Field	CLIS FVP LIS01CLFVPC1 N Historic	CLIS FVP LIS01CLFVPC3 N Historic	CLIS FVP LIS01CLFVPC5 N Historic	CLIS FVP LIS01CLFVPCP SC Historic
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.468	0.463	0.442	0.380	0.420	0.388	0.408	0.408
Metals - beryllium (--)	0.044	0.047	0.038	0.033	0.033	0.032	0.037	0.034
Metals - cadmium (--)	0.009	0.012	0.010	0.009	0.109	0.063	0.020	0.045
Metals - chromium (--)	4.361	4.389	4.024	3.525	10.580	6.803	4.395	6.099
Metals - copper (--)	3.373	3.329	3.394	2.968	15.870	9.524	3.966	6.158
Metals - iron (--)	1721.519	1718.121	1721.212	1632.911	1659.420	1734.694	1734.694	1697.368
Metals - lead (--)	2.222	2.168	2.291	2.019	3.993	2.592	2.122	2.388
Metals - mercury (--)	0.008	0.008	0.007	0.007	0.016	0.013	0.022	0.011
Metals - nickel (--)	1.532	1.617	1.497	1.285	1.870	1.585	1.585	1.586
Metals - selenium (--)	0.022	0.022	0.019	0.018	0.022	0.020	0.024	0.022
Metals - silver (--)	0.041	0.041	0.041	0.041	0.123	0.082	0.059	0.072
Metals - zinc (--)	7.405	7.248	7.091	6.304	11.014	8.571	7.483	8.487
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	580.882	582.031	580.986	612.403	602.620	576.471	576.471	589.147
Metals - arsenic (--)	0.272	0.270	0.257	0.233	0.253	0.224	0.235	0.240
Metals - beryllium (--)	0.026	0.027	0.022	0.020	0.020	0.018	0.021	0.020
Metals - cadmium (--)	0.006	0.007	0.006	0.005	0.066	0.036	0.011	0.027
Metals - chromium (--)	2.533	2.555	2.338	2.159	6.376	3.922	2.533	3.593
Metals - copper (--)	1.960	1.938	1.972	1.818	9.563	5.490	2.286	3.628
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	1.290	1.262	1.331	1.236	2.406	1.494	1.224	1.407
Metals - mercury (--)	0.004	0.005	0.004	0.004	0.010	0.007	0.013	0.007
Metals - nickel (--)	0.890	0.941	0.870	0.787	1.127	0.914	0.914	0.934
Metals - selenium (--)	0.013	0.013	0.011	0.011	0.013	0.011	0.014	0.013
Metals - silver (--)	0.024	0.024	0.024	0.025	0.074	0.047	0.034	0.043
Metals - zinc (--)	4.301	4.219	4.120	3.860	6.638	4.941	4.314	5.000

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	CLIS N74 LIS01CLN74C1 N Historic	CLIS N74 LIS01CLN74C3 N Historic	CLIS N74 LIS01CLN74C5 N Historic	CLIS N74 LIS01CLN74CP SC Historic	CLIS N93 LIS01CLN93C1 N Active	CLIS N93 LIS01CLN93C3 N Active	CLIS N93 LIS01CLN93C5 N Active	CLIS N93 LIS01CLN93CP SC Active
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.444	0.482	0.485	0.515	0.464	0.438	0.537	0.447
Metals - beryllium (--)	0.036	0.034	0.040	0.040	0.033	0.032	0.036	0.033
Metals - cadmium (--)	0.044	0.013	0.013	0.017	0.042	0.033	0.039	0.035
Metals - chromium (--)	3.944	2.767	3.089	3.223	5.304	4.759	5.515	4.855
Metals - copper (--)	10.556	2.998	2.936	3.422	4.994	4.549	5.403	4.591
Metals - iron (--)	1740.741	1968.553	1828.255	1827.243	1726.190	1777.778	1865.672	1773.585
Metals - lead (--)	2.583	2.285	2.368	2.442	2.786	2.747	3.164	2.717
Metals - mercury (--)	0.012	0.009	0.008	0.008	0.013	0.012	0.014	0.013
Metals - nickel (--)	1.528	1.279	1.454	1.528	1.488	1.414	1.627	1.453
Metals - selenium (--)	0.027	0.025	0.018	0.016	0.021	0.022	0.025	0.020
Metals - silver (--)	0.061	0.040	0.039	0.043	0.083	0.086	0.090	0.082
Metals - zinc (--)	8.398	6.897	7.327	7.492	8.929	8.457	9.851	8.553
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	574.468	507.987	546.970	547.273	579.310	562.500	536.000	563.830
Metals - arsenic (--)	0.255	0.245	0.265	0.282	0.269	0.247	0.288	0.252
Metals - beryllium (--)	0.021	0.017	0.022	0.022	0.019	0.018	0.019	0.018
Metals - cadmium (--)	0.025	0.006	0.007	0.009	0.024	0.019	0.021	0.020
Metals - chromium (--)	2.266	1.406	1.689	1.764	3.072	2.677	2.956	2.738
Metals - copper (--)	6.064	1.523	1.606	1.873	2.893	2.559	2.896	2.589
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	1.484	1.161	1.295	1.336	1.614	1.545	1.696	1.532
Metals - mercury (--)	0.007	0.005	0.005	0.005	0.007	0.007	0.008	0.007
Metals - nickel (--)	0.878	0.650	0.795	0.836	0.862	0.795	0.872	0.819
Metals - selenium (--)	0.015	0.013	0.010	0.009	0.012	0.012	0.013	0.011
Metals - silver (--)	0.035	0.020	0.021	0.024	0.048	0.049	0.048	0.046
Metals - zinc (--)	4.824	3.504	4.008	4.100	5.172	4.757	5.280	4.823

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	CLIS REF LIS01CLREFC1 N Reference	CLIS REF LIS01CLREFC3 N Reference	CLIS REF LIS01CLREFC5 N Reference	CLIS REF LIS01CLREFCP SC Reference
Analyte Group - Analyte Name (units)				
<b>Normalized to Aluminum Concentration (X1000)</b>				
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.421	0.413	0.440	0.376
Metals - beryllium (--)	0.047	0.043	0.046	0.036
Metals - cadmium (--)	0.008	0.008	0.008	0.008
Metals - chromium (--)	3.689	3.545	3.776	3.199
Metals - copper (--)	2.530	2.469	2.520	2.270
Metals - iron (--)	1701.220	1699.301	1720.000	1617.021
Metals - lead (--)	1.872	1.804	1.872	1.723
Metals - mercury (--)	0.005	0.006	0.006	0.006
Metals - nickel (--)	1.726	1.622	1.664	1.454
Metals - selenium (--)	0.020	0.020	0.020	0.016
Metals - silver (--)	0.034	0.034	0.034	0.035
Metals - zinc (--)	7.195	6.874	7.080	6.305
<b>Normalized to Iron Concentration (X1000)</b>				
Metals - aluminum (--)	587.814	588.477	581.395	618.421
Metals - arsenic (--)	0.247	0.243	0.256	0.232
Metals - beryllium (--)	0.028	0.025	0.027	0.022
Metals - cadmium (--)	0.005	0.005	0.005	0.005
Metals - chromium (--)	2.168	2.086	2.195	1.978
Metals - copper (--)	1.487	1.453	1.465	1.404
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	1.100	1.062	1.088	1.066
Metals - mercury (--)	0.003	0.004	0.004	0.004
Metals - nickel (--)	1.014	0.955	0.967	0.899
Metals - selenium (--)	0.011	0.012	0.012	0.010
Metals - silver (--)	0.020	0.020	0.020	0.022
Metals - zinc (--)	4.229	4.045	4.116	3.899

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	CSDS 2KW LIS01CS2KWC1 N Far Field	CSDS 2KW LIS01CS2KWC3 N Far Field	CSDS 2KW LIS01CS2KWC5 N Far Field	CSDS 2KW LIS01CS2KWCP SC Far Field	CSDS 4KW LIS01CS4KWC1 N Far Field	CSDS 4KW LIS01CS4KWC3 N Far Field	CSDS 4KW LIS01CS4KWC5 N Far Field	CSDS 4KW LIS01CS4KWCP SC Far Field
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.905	1.053	0.661	0.739	1.093	0.974	1.084	0.579
Metals - beryllium (--)	0.039	0.049	0.032	0.033	0.039	0.034	0.040	0.041
Metals - cadmium (--)	R	R	R	R	R	R	R	R
Metals - chromium (--)	2.081	2.794	1.751	2.007	2.146	1.648	1.767	1.533
Metals - copper (--)	0.860	1.417	0.934	1.021	0.810	0.712	0.964	1.252
Metals - iron (--)	3746.606	3117.409	3385.214	3767.606	3801.619	3232.210	3156.627	2504.673
Metals - lead (--)	1.448	2.308	1.518	1.338	0.810	0.974	1.406	0.860
Metals - mercury (--)	0.001	0.004	0.002	0.002	0.001	0.001	0.001	0.001
Metals - nickel (--)	2.308	2.753	1.751	2.148	2.389	2.172	2.651	1.963
Metals - selenium (--)	0.020	0.018	0.014	0.014	0.009	0.016	0.018	0.013
Metals - silver (--)	0.013	0.019	0.016	0.014	0.012	0.024	0.011	0.010
Metals - zinc (--)	7.421	8.462	6.070	5.986	4.534	4.157	6.426	4.318
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	266.908	320.779	295.402	265.421	263.046	309.386	316.794	399.254
Metals - arsenic (--)	0.242	0.338	0.195	0.196	0.288	0.301	0.344	0.231
Metals - beryllium (--)	0.010	0.016	0.009	0.009	0.010	0.010	0.013	0.016
Metals - cadmium (--)	R	R	R	R	R	R	R	R
Metals - chromium (--)	0.556	0.896	0.517	0.533	0.564	0.510	0.560	0.612
Metals - copper (--)	0.229	0.455	0.276	0.271	0.213	0.220	0.305	0.500
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	0.386	0.740	0.448	0.355	0.213	0.301	0.445	0.343
Metals - mercury (--)	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000
Metals - nickel (--)	0.616	0.883	0.517	0.570	0.628	0.672	0.840	0.784
Metals - selenium (--)	0.005	0.006	0.004	0.004	0.002	0.005	0.006	0.005
Metals - silver (--)	0.003	0.006	0.005	0.004	0.003	0.007	0.003	0.004
Metals - zinc (--)	1.981	2.714	1.793	1.589	1.193	1.286	2.036	1.724

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	CSDS B92 LIS01CSB92C1 N Active	CSDS B92 LIS01CSB92C3 N Active	CSDS B92 LIS01CSB92C5 N Active	CSDS B92 LIS01CSB92CP SC Active	CSDS RF3 LIS01CSRF3C1 N Reference	CSDS RF3 LIS01CSRF3C3 N Reference	CSDS RF3 LIS01CSRF3C5 N Reference	CSDS RF3 LIS01CSRF3CP SC Reference
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.951	1.121	0.884	0.876	0.682	0.784	0.675	0.924
Metals - beryllium (--)	0.034	0.042	0.044	0.044	0.045	0.044	0.041	0.043
Metals - cadmium (--)	R	R	R	R	R	R	R	R
Metals - chromium (--)	1.939	2.332	2.279	3.347	3.161	2.571	2.658	2.772
Metals - copper (--)	0.837	0.987	0.986	1.275	2.045	1.536	1.460	1.630
Metals - iron (--)	2897.338	3112.108	2945.578	2992.032	2396.694	2830.721	2549.020	2771.739
Metals - lead (--)	1.293	1.614	1.259	1.673	2.438	2.226	2.004	2.065
Metals - mercury (--)	0.002	0.002	0.002	0.004	0.005	0.003	0.003	0.004
Metals - nickel (--)	2.129	2.556	2.245	3.307	2.169	2.320	1.895	2.690
Metals - selenium (--)	0.017	0.017	0.011	0.016	0.025	0.025	0.026	0.020
Metals - silver (--)	0.009	0.027	0.011	0.013	0.033	0.020	0.019	0.030
Metals - zinc (--)	6.008	6.996	7.041	7.809	7.645	7.586	6.863	7.880
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	345.144	321.326	339.492	334.221	417.241	353.267	392.308	360.784
Metals - arsenic (--)	0.328	0.360	0.300	0.293	0.284	0.277	0.265	0.333
Metals - beryllium (--)	0.012	0.013	0.015	0.015	0.019	0.016	0.016	0.016
Metals - cadmium (--)	R	R	R	R	R	R	R	R
Metals - chromium (--)	0.669	0.749	0.774	1.119	1.319	0.908	1.043	1.000
Metals - copper (--)	0.289	0.317	0.335	0.426	0.853	0.543	0.573	0.588
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	0.446	0.519	0.427	0.559	1.017	0.786	0.786	0.745
Metals - mercury (--)	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001
Metals - nickel (--)	0.735	0.821	0.762	1.105	0.905	0.819	0.744	0.971
Metals - selenium (--)	0.006	0.005	0.004	0.005	0.010	0.009	0.010	0.007
Metals - silver (--)	0.003	0.009	0.004	0.004	0.014	0.007	0.008	0.011
Metals - zinc (--)	2.073	2.248	2.390	2.610	3.190	2.680	2.692	2.843

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	CSDS RF4 LIS01CSRF4C1 N Reference	CSDS RF4 LIS01CSRF4C3 N Reference	CSDS RF4 LIS01CSRF4C5 N Reference	CSDS RF4 LIS01CSRF4CP SC Reference	CSDS S94 LIS01CSS94C1 N Active	CSDS S94 LIS01CSS94C3 N Active	CSDS S94 LIS01CSS94C5 N Active	CSDS S94 LIS01CSS94CP SC Active
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.407	0.858	0.601	0.625	0.827	0.906	0.526	0.747
Metals - beryllium (--)	0.044	0.033	0.042	0.043	0.031	0.035	0.029	0.036
Metals - cadmium (--)	R	R	R	R	R	R	0.015	0.012
Metals - chromium (--)	2.481	1.717	2.189	2.227	1.617	1.993	1.842	2.013
Metals - copper (--)	1.963	1.073	1.974	1.836	0.827	0.906	1.237	1.169
Metals - iron (--)	2555.556	3828.326	3334.764	3132.813	3609.023	3068.841	2402.632	2785.714
Metals - lead (--)	1.556	1.888	1.073	1.875	1.504	1.558	1.421	1.591
Metals - mercury (--)	0.003	0.001	0.001	0.003	0.002	0.003	0.004	0.004
Metals - nickel (--)	3.444	2.017	3.476	3.125	1.729	2.029	1.711	1.786
Metals - selenium (--)	0.020	0.017	0.021	0.021	0.018	0.018	0.012	0.009
Metals - silver (--)	0.017	0.015	0.009	0.017	0.009	0.008	0.026	0.018
Metals - zinc (--)	5.407	5.193	5.107	6.406	5.301	6.051	4.974	6.006
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	391.304	261.211	299.871	319.202	277.083	325.856	416.210	358.974
Metals - arsenic (--)	0.159	0.224	0.180	0.200	0.229	0.295	0.219	0.268
Metals - beryllium (--)	0.017	0.009	0.013	0.014	0.009	0.011	0.012	0.013
Metals - cadmium (--)	R	R	R	R	R	R	0.006	0.004
Metals - chromium (--)	0.971	0.448	0.656	0.711	0.448	0.649	0.767	0.723
Metals - copper (--)	0.768	0.280	0.592	0.586	0.229	0.295	0.515	0.420
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	0.609	0.493	0.322	0.599	0.417	0.508	0.591	0.571
Metals - mercury (--)	0.001	0.000	0.000	0.001	0.000	0.001	0.002	0.001
Metals - nickel (--)	1.348	0.527	1.042	0.998	0.479	0.661	0.712	0.641
Metals - selenium (--)	0.008	0.004	0.006	0.007	0.005	0.006	0.005	0.003
Metals - silver (--)	0.007	0.004	0.003	0.005	0.003	0.003	0.011	0.006
Metals - zinc (--)	2.116	1.357	1.532	2.045	1.469	1.972	2.070	2.156

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	NLDS 1KE LIS01NL1KEC1 N Far Field	NLDS 1KE LIS01NL1KEC3 N Far Field	NLDS 1KE LIS01NL1KEC5 N Far Field	NLDS 1KE LIS01NL1KECP SC Far Field	NLDS 2KE LIS01NL2KEC1 N Far Field	NLDS 2KE LIS01NL2KEC3 N Far Field	NLDS 2KE LIS01NL2KEC5 N Far Field	NLDS 2KE LIS01NL2KECP SC Far Field
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.509	0.438	0.466	0.441	0.492	0.495	0.439	0.444
Metals - beryllium (--)	0.039	0.042	0.037	0.036	0.043	0.042	0.039	0.038
Metals - cadmium (--)	0.014	0.013	0.012	0.011	0.012	0.012	0.013	0.013
Metals - chromium (--)	2.598	2.734	2.413	2.466	2.794	2.630	2.556	2.586
Metals - copper (--)	1.729	1.765	1.732	1.731	1.727	1.914	1.729	1.698
Metals - iron (--)	1728.526	1730.104	1816.010	1708.145	1822.542	1835.938	1779.449	1799.747
Metals - lead (--)	1.888	2.018	1.947	2.048	2.014	2.148	2.231	1.926
Metals - mercury (--)	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Metals - nickel (--)	1.559	1.580	1.446	1.437	1.547	1.549	1.504	1.584
Metals - selenium (--)	0.031	0.032	0.024	0.025	0.029	0.027	0.028	0.025
Metals - silver (--)	0.009	0.033	0.005	0.006	0.006	0.006	0.007	0.006
Metals - zinc (--)	5.960	6.263	5.627	5.679	6.511	6.406	6.328	6.185
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	578.528	578.000	550.658	585.430	548.684	544.681	561.972	555.634
Metals - arsenic (--)	0.294	0.253	0.257	0.258	0.270	0.270	0.246	0.246
Metals - beryllium (--)	0.023	0.024	0.020	0.021	0.024	0.023	0.022	0.021
Metals - cadmium (--)	0.008	0.007	0.006	0.007	0.007	0.006	0.007	0.007
Metals - chromium (--)	1.503	1.580	1.329	1.444	1.533	1.433	1.437	1.437
Metals - copper (--)	1.000	1.020	0.954	1.013	0.947	1.043	0.972	0.944
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	1.092	1.167	1.072	1.199	1.105	1.170	1.254	1.070
Metals - mercury (--)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Metals - nickel (--)	0.902	0.913	0.796	0.841	0.849	0.844	0.845	0.880
Metals - selenium (--)	0.018	0.019	0.013	0.015	0.016	0.015	0.015	0.014
Metals - silver (--)	0.005	0.019	0.003	0.004	0.003	0.003	0.004	0.004
Metals - zinc (--)	3.448	3.620	3.099	3.325	3.572	3.489	3.556	3.437

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	NLDS LRF LIS01NLLRFC1 N Reference	NLDS LRF LIS01NLLRFC3 N Reference	NLDS LRF LIS01NLLRFC5 N Reference	NLDS LRF LIS01NLLRFCP SC Reference	NLDS RLC LIS01NLRCC1 N Historic	NLDS RLC LIS01NLRCC3 N Historic	NLDS RLC LIS01NLRCC5 N Historic	NLDS RLC LIS01NLRCCP SC Historic
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.470	0.559	0.414	0.467	0.602	0.520	0.622	0.544
Metals - beryllium (--)	0.040	0.039	0.034	0.040	0.041	0.045	0.037	0.042
Metals - cadmium (--)	0.013	0.014	R	0.013	0.021	R	0.021	0.014
Metals - chromium (--)	2.500	2.387	2.126	2.526	3.721	2.685	3.050	3.000
Metals - copper (--)	1.728	1.505	1.541	1.661	3.064	3.054	2.905	2.947
Metals - iron (--)	1812.081	1963.441	1811.698	1868.512	1764.706	1694.631	1811.203	1824.561
Metals - lead (--)	2.131	2.043	1.897	2.024	3.858	4.899	3.797	4.754
Metals - mercury (--)	0.004	0.004	0.004	0.003	0.009	0.005	0.007	0.006
Metals - nickel (--)	1.426	1.312	1.198	1.419	1.778	1.711	1.660	2.105
Metals - selenium (--)	0.029	0.022	0.029	0.021	0.018	0.027	0.018	0.023
Metals - silver (--)	0.004	0.003	0.006	0.005	0.025	0.011	0.006	0.003
Metals - zinc (--)	6.611	6.602	5.706	6.471	8.263	9.581	6.701	11.351
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	551.852	509.310	551.969	535.185	566.667	590.099	552.119	548.077
Metals - arsenic (--)	0.259	0.285	0.228	0.250	0.341	0.307	0.344	0.298
Metals - beryllium (--)	0.022	0.020	0.019	0.021	0.023	0.027	0.021	0.023
Metals - cadmium (--)	0.007	0.007	R	0.007	0.012	R	0.011	0.008
Metals - chromium (--)	1.380	1.216	1.173	1.352	2.109	1.584	1.684	1.644
Metals - copper (--)	0.954	0.767	0.850	0.889	1.736	1.802	1.604	1.615
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	1.176	1.041	1.047	1.083	2.186	2.891	2.096	2.606
Metals - mercury (--)	0.002	0.002	0.002	0.002	0.005	0.003	0.004	0.003
Metals - nickel (--)	0.787	0.668	0.661	0.759	1.008	1.010	0.916	1.154
Metals - selenium (--)	0.016	0.011	0.016	0.011	0.010	0.016	0.010	0.013
Metals - silver (--)	0.002	0.001	0.004	0.003	0.014	0.007	0.003	0.002
Metals - zinc (--)	3.648	3.363	3.150	3.463	4.682	5.653	3.700	6.221

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	NLDS SEA LIS01NLSEAC1 N Active	NLDS SEA LIS01NLSEAC3 N Active	NLDS SEA LIS01NLSEAC5 N Active	NLDS SEA LIS01NLSEACP SC Active	NLDS WRF LIS01NLWRF1 N Reference	NLDS WRF LIS01NLWRF3 N Reference	NLDS WRF LIS01NLWRF5 N Reference	NLDS WRF LIS01NLWRF3 N Reference	NLDS WRF LIS01NLWRF5 N Reference
Analyte Group - Analyte Name (units)									
<b>Normalized to Aluminum Concentration (X1000)</b>									
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.650	0.616	0.727	0.690	0.568	0.474	0.430	0.460	0.460
Metals - beryllium (--)	0.042	0.036	0.040	0.040	0.041	0.038	0.035	0.038	0.038
Metals - cadmium (--)	0.016	0.012	0.058	0.027	0.013	R	R	R	R
Metals - chromium (--)	2.825	2.370	6.664	3.457	2.806	2.338	2.166	2.397	2.397
Metals - copper (--)	2.083	1.181	5.000	2.509	1.847	1.611	1.513	1.587	1.587
Metals - iron (--)	2000.000	1956.522	1963.636	2034.483	1936.057	2006.319	1831.210	1857.143	1857.143
Metals - lead (--)	1.925	0.971	7.364	5.595	2.167	1.912	1.831	1.889	1.889
Metals - mercury (--)	0.003	0.002	0.033	0.009	0.004	0.003	0.003	0.003	0.003
Metals - nickel (--)	1.908	1.500	1.827	1.690	1.794	1.485	1.385	1.540	1.540
Metals - selenium (--)	0.031	0.023	0.032	0.033	0.013	0.021	0.021	0.021	0.021
Metals - silver (--)	0.019	0.014	0.057	0.028	0.007	0.001	0.001	0.003	0.003
Metals - zinc (--)	6.217	4.290	8.573	5.879	6.909	6.066	5.637	6.127	6.127
<b>Normalized to Iron Concentration (X1000)</b>									
Metals - aluminum (--)	500.000	511.111	509.259	491.525	516.514	498.425	546.087	538.462	538.462
Metals - arsenic (--)	0.325	0.315	0.370	0.339	0.294	0.236	0.235	0.248	0.248
Metals - beryllium (--)	0.021	0.018	0.020	0.019	0.021	0.019	0.019	0.021	0.021
Metals - cadmium (--)	0.008	0.006	0.030	0.013	0.007	R	R	R	R
Metals - chromium (--)	1.413	1.211	3.394	1.699	1.450	1.165	1.183	1.291	1.291
Metals - copper (--)	1.042	0.604	2.546	1.233	0.954	0.803	0.826	0.855	0.855
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	0.963	0.496	3.750	2.750	1.119	0.953	1.000	1.017	1.017
Metals - mercury (--)	0.002	0.001	0.017	0.005	0.002	0.001	0.002	0.001	0.001
Metals - nickel (--)	0.954	0.767	0.931	0.831	0.927	0.740	0.757	0.829	0.829
Metals - selenium (--)	0.015	0.012	0.016	0.016	0.007	0.010	0.011	0.011	0.011
Metals - silver (--)	0.010	0.007	0.029	0.014	0.004	0.000	0.000	0.002	0.002
Metals - zinc (--)	3.108	2.193	4.366	2.890	3.569	3.024	3.078	3.299	3.299

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	WLIS E5H LIS01WLE5HC1 N Far Field	WLIS E5H LIS01WLE5HC3 N Far Field	WLIS E5H LIS01WLE5HC5 N Far Field	WLIS E5H LIS01WLE5HCP SC Far Field	WLIS EB1 LIS01WLEB1C1 N Historic	WLIS EB1 LIS01WLEB1C3 N Historic	WLIS EB1 LIS01WLEB1C5 N Historic	WLIS EB1 LIS01WLEB1CP SC Historic
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.744	0.422	0.615	0.473	0.406	0.503	0.434	0.494
Metals - beryllium (--)	0.040	0.037	0.043	0.040	0.034	0.053	0.043	0.051
Metals - cadmium (--)	0.045	0.028	0.061	0.031	0.013	0.020	0.015	0.019
Metals - chromium (--)	3.445	3.168	5.077	4.117	3.166	3.842	3.379	4.035
Metals - copper (--)	5.043	3.741	5.517	3.910	3.342	3.921	3.581	3.894
Metals - iron (--)	1737.805	1670.270	2013.986	1750.000	1598.930	1768.362	1621.212	1676.471
Metals - lead (--)	4.848	2.319	3.993	2.564	2.209	2.667	2.359	2.547
Metals - mercury (--)	0.048	0.010	0.055	0.020	0.010	0.010	0.009	0.011
Metals - nickel (--)	1.634	1.351	1.783	1.468	1.203	1.514	1.374	1.518
Metals - selenium (--)	0.025	0.024	0.020	0.027	0.022	0.028	0.025	0.028
Metals - silver (--)	0.079	0.050	0.091	0.059	0.048	0.050	0.049	0.050
Metals - zinc (--)	9.878	7.784	10.350	8.404	6.684	8.362	7.424	8.059
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	575.439	598.706	496.528	571.429	625.418	565.495	616.822	596.491
Metals - arsenic (--)	0.428	0.252	0.306	0.271	0.254	0.284	0.268	0.295
Metals - beryllium (--)	0.023	0.022	0.022	0.023	0.021	0.030	0.027	0.031
Metals - cadmium (--)	0.026	0.017	0.030	0.018	0.008	0.011	0.009	0.012
Metals - chromium (--)	1.982	1.896	2.521	2.353	1.980	2.173	2.084	2.407
Metals - copper (--)	2.902	2.239	2.740	2.234	2.090	2.217	2.209	2.323
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	2.789	1.388	1.983	1.465	1.381	1.508	1.455	1.519
Metals - mercury (--)	0.028	0.006	0.027	0.012	0.006	0.006	0.005	0.006
Metals - nickel (--)	0.940	0.809	0.885	0.839	0.753	0.856	0.847	0.905
Metals - selenium (--)	0.014	0.015	0.010	0.015	0.014	0.016	0.016	0.016
Metals - silver (--)	0.046	0.030	0.045	0.033	0.030	0.028	0.030	0.030
Metals - zinc (--)	5.684	4.660	5.139	4.802	4.181	4.728	4.579	4.807

Sample Types:

N = Normal (individual replicate)

SC = Station Composite

R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	WLIS MDI LIS01WLMDIC1 N Active	WLIS MDI LIS01WLMDIC3 N Active	WLIS MDI LIS01WLMDIC5 N Active	WLIS MDI LIS01WLMDICP SC Active	WLIS STH LIS01WLSTHC1 N Reference	WLIS STH LIS01WLSTHC3 N Reference	WLIS STH LIS01WLSTHC5 N Reference	WLIS STH LIS01WLSTHCP SC Reference
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.514	0.524	0.491	0.495	0.623	0.452	0.483	0.410
Metals - beryllium (--)	0.042	0.040	0.037	0.044	0.071	0.045	0.038	0.042
Metals - cadmium (--)	0.034	0.095	0.035	0.045	0.042	0.025	0.026	0.025
Metals - chromium (--)	3.682	4.133	3.427	3.614	6.544	3.580	3.045	3.305
Metals - copper (--)	5.168	7.048	4.433	4.832	12.507	4.095	3.763	4.656
Metals - iron (--)	1794.393	1752.381	1637.427	1683.168	2549.575	1783.920	1859.444	1785.283
Metals - lead (--)	3.514	6.514	3.164	3.693	8.088	2.500	2.562	2.799
Metals - mercury (--)	0.014	0.031	0.146	0.019	0.050	0.018	0.016	0.012
Metals - nickel (--)	1.486	1.705	1.444	1.525	2.861	1.683	1.493	1.472
Metals - selenium (--)	0.026	0.032	0.026	0.027	0.025	0.023	0.019	0.021
Metals - silver (--)	0.071	0.143	0.053	0.072	0.071	0.045	0.047	0.051
Metals - zinc (--)	8.533	12.095	8.129	8.347	63.456	8.731	8.507	14.958
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	557.292	570.652	610.714	594.118	392.222	560.563	537.795	560.135
Metals - arsenic (--)	0.286	0.299	0.300	0.294	0.244	0.254	0.260	0.230
Metals - beryllium (--)	0.023	0.023	0.023	0.026	0.028	0.025	0.020	0.024
Metals - cadmium (--)	0.019	0.054	0.021	0.026	0.017	0.014	0.014	0.014
Metals - chromium (--)	2.052	2.359	2.093	2.147	2.567	2.007	1.638	1.851
Metals - copper (--)	2.880	4.022	2.707	2.871	4.906	2.296	2.024	2.608
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	1.958	3.717	1.932	2.194	3.172	1.401	1.378	1.568
Metals - mercury (--)	0.008	0.018	0.089	0.011	0.019	0.010	0.009	0.007
Metals - nickel (--)	0.828	0.973	0.882	0.906	1.122	0.944	0.803	0.824
Metals - selenium (--)	0.015	0.018	0.016	0.016	0.010	0.013	0.010	0.011
Metals - silver (--)	0.040	0.082	0.032	0.043	0.028	0.025	0.025	0.028
Metals - zinc (--)	4.755	6.902	4.964	4.959	24.889	4.894	4.575	8.378

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Table 4-2. Long Island Sound Study - Metals Normalized to Aluminum and Iron.**

Site ID Station Code Field Sample ID Type Designation	WLIS SWR LIS01WLSWRC1 N Reference	WLIS SWR LIS01WLSWRC3 N Reference	WLIS SWR LIS01WLSWRC5 N Reference	WLIS SWR LIS01WLSWRCP SC Reference	WLIS W5H LIS01WLW5HC1 N Far Field	WLIS W5H LIS01WLW5HC3 N Far Field	WLIS W5H LIS01WLW5HC5 N Far Field	WLIS W5H LIS01WLW5HCP SC Far Field
Analyte Group - Analyte Name (units)								
<b>Normalized to Aluminum Concentration (X1000)</b>								
Metals - aluminum (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - arsenic (--)	0.836	0.603	0.570	0.821	0.417	0.415	0.466	0.433
Metals - beryllium (--)	0.048	0.056	0.050	0.051	0.042	0.040	0.053	0.046
Metals - cadmium (--)	0.030	0.029	0.027	0.026	0.037	0.028	0.032	0.031
Metals - chromium (--)	3.426	3.698	3.661	3.666	4.067	3.642	4.597	3.906
Metals - copper (--)	4.066	3.968	4.031	4.238	4.167	4.267	4.727	4.409
Metals - iron (--)	2049.180	2095.238	2336.182	2463.343	1672.222	1664.773	1664.773	1614.035
Metals - lead (--)	2.623	2.508	2.692	3.548	2.850	2.631	2.892	2.825
Metals - mercury (--)	0.012	0.013	0.012	0.011	0.012	0.013	0.018	0.020
Metals - nickel (--)	1.689	1.794	1.752	1.950	1.522	1.540	1.682	1.561
Metals - selenium (--)	0.021	0.027	0.023	0.026	0.024	0.025	0.029	0.026
Metals - silver (--)	0.051	0.043	0.050	0.048	0.056	0.057	0.063	0.058
Metals - zinc (--)	9.164	9.492	9.330	9.780	8.222	8.295	9.261	8.421
<b>Normalized to Iron Concentration (X1000)</b>								
Metals - aluminum (--)	488.000	477.273	428.049	405.952	598.007	600.683	600.683	619.565
Metals - arsenic (--)	0.408	0.288	0.244	0.333	0.249	0.249	0.280	0.268
Metals - beryllium (--)	0.023	0.027	0.021	0.021	0.025	0.024	0.032	0.029
Metals - cadmium (--)	0.014	0.014	0.012	0.011	0.022	0.017	0.019	0.019
Metals - chromium (--)	1.672	1.765	1.567	1.488	2.432	2.188	2.761	2.420
Metals - copper (--)	1.984	1.894	1.726	1.720	2.492	2.563	2.840	2.732
Metals - iron (--)	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
Metals - lead (--)	1.280	1.197	1.152	1.440	1.704	1.580	1.737	1.750
Metals - mercury (--)	0.006	0.006	0.005	0.005	0.007	0.008	0.011	0.012
Metals - nickel (--)	0.824	0.856	0.750	0.792	0.910	0.925	1.010	0.967
Metals - selenium (--)	0.010	0.013	0.010	0.011	0.014	0.015	0.017	0.016
Metals - silver (--)	0.025	0.020	0.021	0.020	0.033	0.034	0.038	0.036
Metals - zinc (--)	4.472	4.530	3.994	3.970	4.917	4.983	5.563	5.217

Sample Types:  
 N = Normal (individual replicate)  
 SC = Station Composite  
 R = Data point is rejected

**Figure 4-1. LIS Sediment Grainsize Summary**

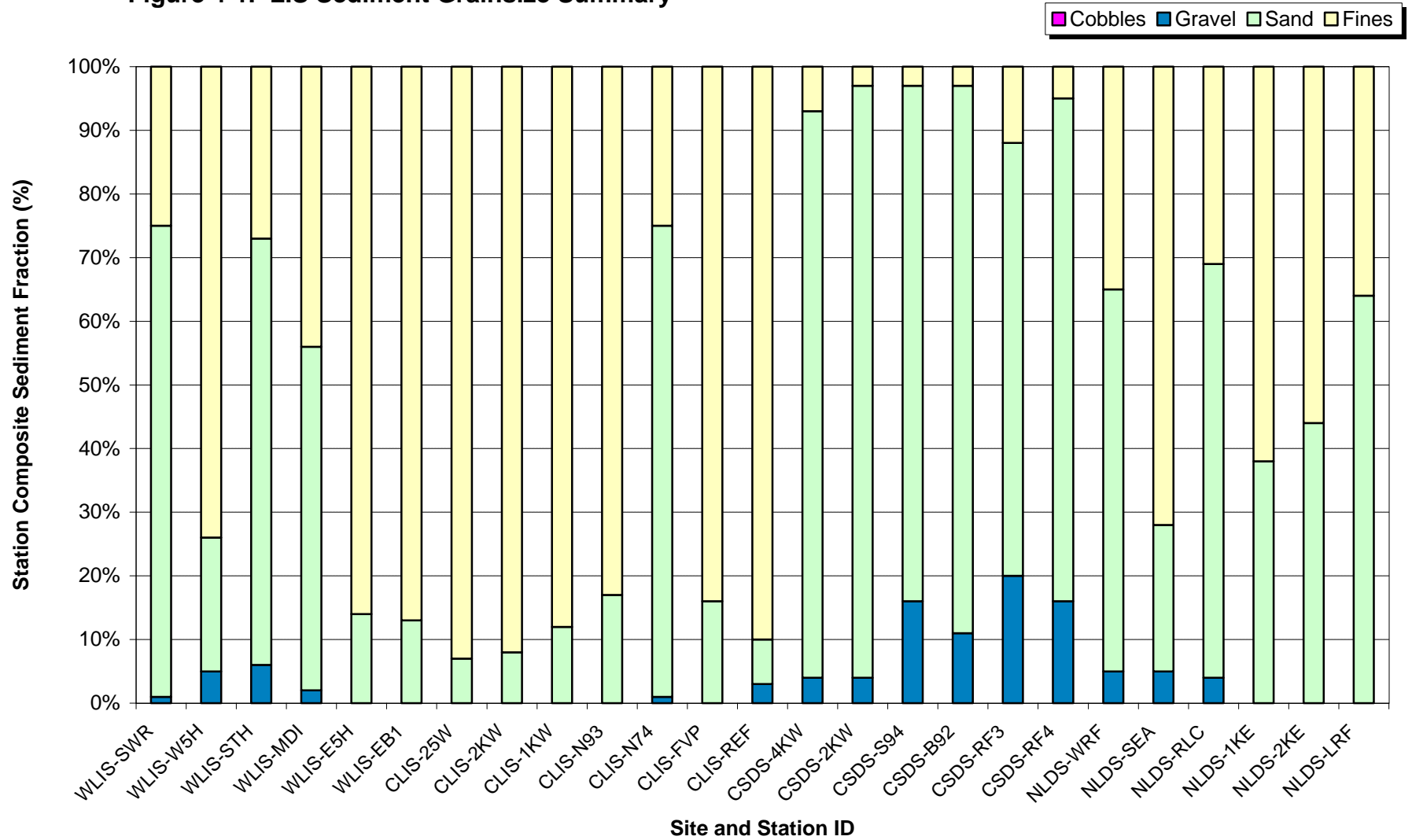
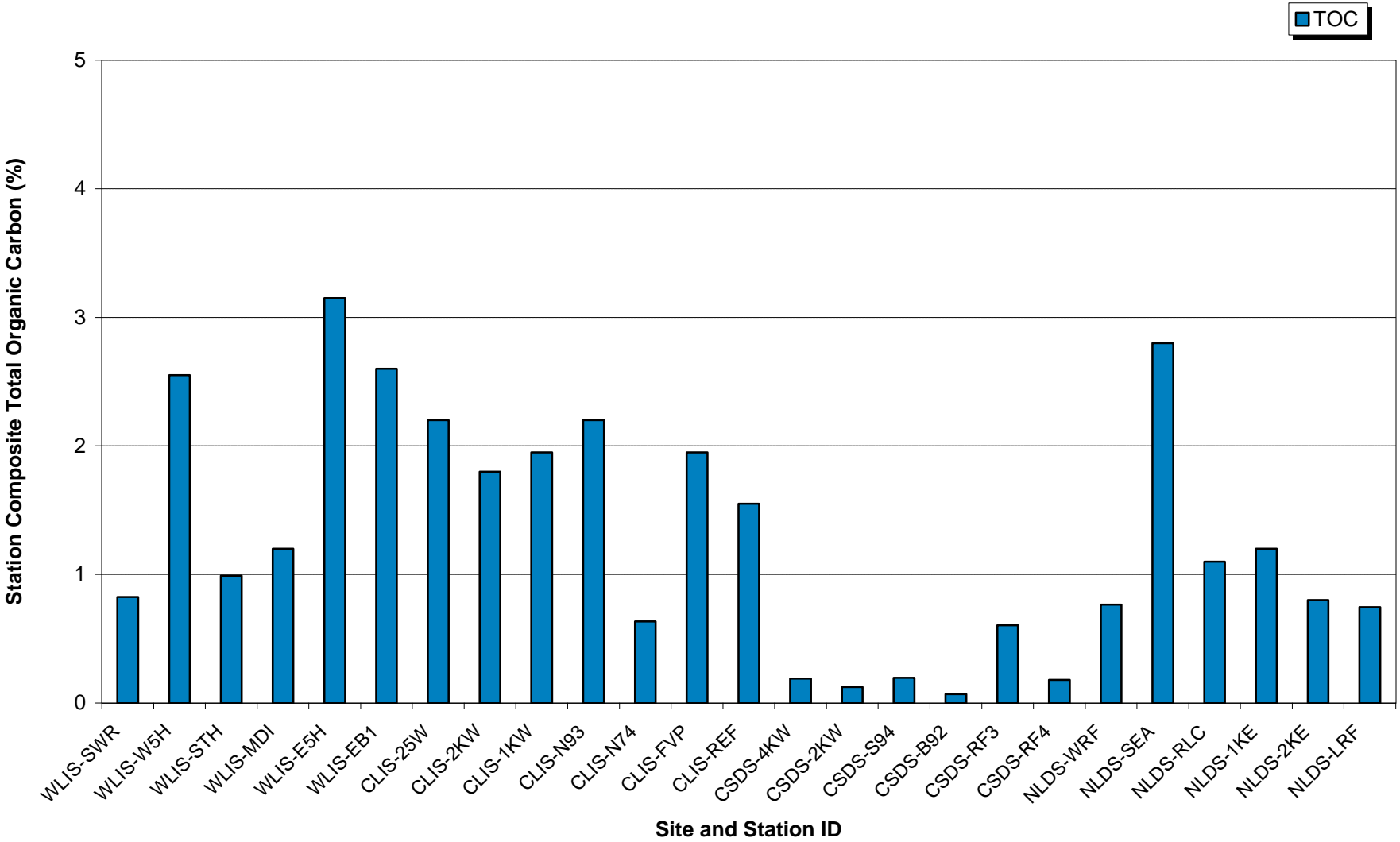


Figure 4-2. LIS Sediment TOC Summary



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