CATALOG DOCUMENTATION
NATIONAL COASTAL ASSESSMENT- NORTHEAST DATABASE
YEAR 2002 STATIONS
SEDIMENT CHEMISTRY DATA: "TISSCHEM"

TABLE OF CONTENTS

1. DATASET IDENTIFICATION

1.1 Title of Catalog document
National Coastal Assessment-Northeast Region Database
Year 2002 Stations
TISSUE CHEMISTRY DATA

1.2 Authors of the Catalog entry
John Kiddon, U.S. EPA NHEERL-AED
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1.3 Catalog revision date
August 2007

1.4 Dataset name
TISSCHEM

1.5 Task Group
National Coastal Assessment-Northeast

1.6 Dataset identification code
013

1.7 Version
001

1.8 Requested Acknowledgment
EMAP requests that all individuals who download EMAP data acknowledge the source of these data in any reports, papers, or presentations. If you publish these data, please include a statement similar to: "Some or all of the data described in this article were produced by the U. S. Environmental Protection Agency through its Environmental Monitoring and Assessment Program (EMAP)".

2. INVESTIGATOR INFORMATION (for full addresses see Section 13)

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3. DATASET ABSTRACT

3.1 Abstract of the Dataset

The TISSCHEM data set contains the results of chemical analyses performed on fish and crustacean composite samples collected during the 2002 NCA Northeast field season. Analyses were performed on whole-body composite samples prepared from 2 to 10 crustaceans or fish collected at a station. Tissue samples were analyzed for approximately 75 chemical constituents, including metals, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and pesticides. For concentration values smaller than the MDL (non-detects), results are reported as zero, the method detection limit (MDL) is listed, and the record is flagged (thereby giving the data user options for alternative treatment of non-detects, see Section 4.3). Each record also lists the station identifier; the organism's common name; the number, mean weight, and size of individuals contributing to the composite samples; and the percentages of moisture and lipids in the tissue. Concentrations are reported on a wet-weight basis. One record is presented per analyte per tissue type at a station. A list of the analyte codes and their full chemical names is available in the ANALYTES Table.

3.2 Keywords for the Dataset

Sediment chemical contaminants, method detection limit, MDL, inorganic and organic analytes, polynuclear aromatic hydrocarbons, PAH, polychlorinated biphenyls, PCB, organochlorine pesticides, DDT.

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The National Coastal Assessment (NCA) is a national monitoring and assessment program with the primary goal of providing a consistent evaluation of the estuarine condition in U.S. estuaries. It is an initiative of the Environmental Monitoring and Assessment Program (EMAP), and is a partnership of several federal and state environmental agencies, including: EPA's Regions, Office of Research and Development, and Office of Water; state environmental protection agencies in the 24 marine coastal states and Puerto Rico; and the United States Geological Survey (USGS) and the National Oceanic and Atmospheric Agency (NOAA). The NCA program was initiated in 2000, and known as the Coastal 2000 Program.

Stations were randomly selected using EMAP's probabilistic sampling framework and were sampled once during a summer index period (June to October). A consistent suite of indicators was used to measure conditions in the water, sediment, and in benthic and fish communities. The measured data may be used by the states to meet their reporting requirements under the Clean Water Act, Section 305(b). The data will also be used to generate a series of national reports characterizing the condition of the Nation's estuaries.

4.2 Dataset Objective

The objective of the tissue chemistry data file is to report the concentrations of chemical contaminants in tissue samples from organisms collected in the northeast NCA program in 2002.

4.3 Dataset Background Discussion

Refer to Section 4.4 for a list of dataset parameters. Additional information about selected parameters are discussed in this section.

The information collected in the fish surveys are reported in five data files. FTRAWL presents information regarding fish trawls and abundance of unique species per standard trawl. FISH_CNT contains the number of fish per species per standard trawl. FISH_LEN specifies fork length of individual fish and the frequency and location of pathologies observed in a ship-board inspection. CRAB_LOB presents size data for crustaceans caught in standard trawls. TISSCHEM reports the concentrations of about 75 chemical analytes measured in composites samples of fish, lobsters or crabs collected at a station. The lookup table FISH_TAX lists the common and scientific names of all fish identified in standard trawls.

A subset of fish, crabs, or lobster were randomly chosen for chemical analysis. These test organisms were tagged and frozen individually, then combined into groups of 2-10 organisms of same species for later processing as composite samples. Each group was assigned a composite ID and sent to the analytical lab for chemical analysis. This datafile reports four characteristics regarding the composite sample: the number of organisms in the homogenate (NUM_MOM), the mean size of the organisms included (MN_SIZE), and the percent lipid (PCTLIPD) and wet weight (WERWGHT)of the sample. Chemical analyses were performed on whole organisms (ST_COOP = CT and CT_FSH also analyzed fillet and offal components at some stations in 2000****, as is indicated by the parameter TISS_TYPE).

The suite of analytes measured are very similar to the contaminants measured by EPA's Environmental Monitoring and Assessment Program (EMAP) and NOAA's National Status and Trends program. Four classes of analytes are measured: polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organo-chlorine pesticides, and metals. Twenty-two PAHs are measured, consisting of the 16 priority pollutants defined by the Superfund program and several alkylated derivatives that prove to be useful in identifying sources of these compounds. The concentrations of 20 PCBs and 20 pesticides, all Superfund priority pollutants, are also measured.

Concentration values smaller than the method detection limit ('non-detects') are reported as zero in this file and the QACODE is set to "CHM-A" to indicate the assignment. While the concentration of the analyte is

clearly small, it is not strictly zero. The method detection limit (MDL) is therefore listed as a guideline to users who wish to substitute values other than zero, e.g., by setting the non-detect value to the MDL value, half the MDL value, etc. Results of organic analytes may routinely show non-zero values that are less than the MDL. This apparent inconsistency is possible because, by convention, the MDLs for organic analyses are calculated to indicate the threshold of reliable measurements, rather than the stricter limit of instrumental detection. In these cases, the best estimate of the concentration is reported (i.e., the value reported by the analytical laboratory), the QACODE is set to "CHM-B", and the MDL is listed. The user can be confident that the analyte is present, but there is a high degree of uncertainty in the reported concentration. Note that the value of the MDL depends on the dilution history of the sample; therefore, its magnitude can differ widely among samples. Most results in this file are larger than the MDL and are reported directly without MDL values or QACODEs. Finally, records flagged with "CHM-C" indicate that the concentration value is uncertain because an interference was noted in the blank analysis performed with the sample; caution is advised in interpreting these results. To summarize:

QACODE	INTERPRETATION	CONC reported	MDL reported
<none>	result is detectable and > MDL	as measured	<none>
CHM-A	result is ≤ MDL and undetectable	zero	MDL is listed
CHM-B	result is ≤ MDL but detectable	best estimate	MDL is listed
CHM-C	result may be affected by interference	best estimate	<none>

NCA planners provide two alternate locations for a station location in the event that the original location cannot be sampled. The parameter STA_ALT indicates whether the station location was the original site, first alternate, or second alternate—STA_ALT = "A", "B", or "C", respectively. Also refer to discussion in the STATIONS metadata file regarding use of this parameter during analysis of the data.

Massachusetts did not participate in the NCA program in 2002. Rhode Island conducted fish trawls only in 2002, and collected physical water parameters in conjunction with the trawls. Connecticut collected all parameters, but at an abbreviated group of in-shore stations (stations in the Long Island Sound intended for sampling in 2002 were sampled in 2003).

4.4 Summary of Dataset Parameters

* denotes parameters that should be used as key fields when merging data files

*STATION	Station name
*STAT_ALT	Alternate site code (A, B, C)
*EVNTDATE	Event date
*FCOMNAME	Fish taxa common name
*TISS_TYPE	Type of tissue analyzed
MN_SIZE	Mean Size of animals in homogenate
NUM_HOM	Number of animals in homogenate
PCTLIPID	Percent lipid content
WETWGHT	Sample wet weight
*ANALYTE	Name of analyte measured (see Section 7.1.3.)
CONC	Concentration of analyte. Results fall into one of three categories: 1) the analyte concentration was large and reliably reported; 2) the analyte was below the method detection level, but the best estimate of the concentration is reported; and 3) and the analyte was not detected and is

reported as zero. See Section 4.3 for further discussion.

CHMUNITS — Concentration units used to report results, reported as the mass of analyte per mass of tissue:

Metals	ug/g
PAHs, PCBs, Pesticides	ng/g

MDL — Method Detection Limit; reported only when measured concentration is < MDL

QACODE — QA/QC codes:

<blank>	CONC > MDL; concentration value is reliable
CHM-A	CONC is undetectable; value set to zero (user may wish to substitute another value)
CHM-B	CONC ≤ MDL, but is detectable; best estimate is reported
CHM-C	failed QA criteria: an interference was noted in the blank analysis performed with the sample; caution is advised in interpreting the result

LABCODE — Code identifying laboratory responsible for performing chemical analyses

NY	State laboratory for NY samples
NAT_ERI	National contract lab (ERI)
NAT_GPL	National contract lab (GPL)

ANALTYPE — Code identifying type of analysis

PEST	Pesticides
PAHs	Polynuclear aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
METALS	Metals

5. DATA ACQUISITION AND PROCESSING METHODS

5.1.1 Sampling Objective

To collect a representative sample of fish at a station using a standard trawl. Additional nonstandard trawls were conducted when necessary to collect enough fish for chemical analyses.

5.1.2 Sample Collection and Ship-Board Processing: Methods Summary

The EPA standard fish trawl was conducted using a funnel-shaped net that filters fish from the near bottom waters. Fish were herded into the net by ground wire and an overhanging panel. Standard trawls were 10 ± 2 minutes in duration with a towing speed of 2-3 knots through the water against the prevailing current (1-3 knots relative to the bottom). An auxiliary, nonstandard trawl was performed to collect fish for tissue chemistry samples if an insufficient quantity were obtained in the standard trawl. Fish from the auxiliary trawls were used for chemical analyses only, and were not included in the standardized survey counts used to characterize the fish community structure.

All fish caught in a standard trawl were counted on board ship and immediately identified using the scientific and common names listed in the FTAXON file. Fork lengths (carapace widths for crabs and lobster) in mm were measured on approximately the first 30 individuals of each species found at a station. A visual inspection for obvious signs of pathology was conducted on all fish measured for length. A subset of fish, crabs, or lobster were randomly chosen for chemical analysis. These

test organisms were tagged and frozen individually, then combined into groups of 2-10 organisms of same species for later processing as composite samples. Each group was assigned a composite ID (SAMPLEID) and sent to the analytical lab for chemical analysis.

5.1.3 Beginning Sampling Dates
25 June 2002

5.1.4 Ending Sampling Dates
31 October 2002

5.1.5 Sampling Platform
All program partners collected samples from various gasoline or diesel powered boats, 25 to 27 feet in length.

5.1.6 Sampling Equipment
The trawl net consisted of a funnel-shaped high-rise sampling trawl. The net includes a 16 meter tow line, a chain sweep, 5 cm mesh wings, and a 2.5 cm cod end.

5.1.7 Manufacturer of Sampling Equipment
Not applicable

5.1.8 Key Variables
Not applicable

5.1.9 Sample Collection: Calibration
The sampling gear does not require calibration.

5.1.10 Sample Collection: Quality Control
A trawl was considered void if one or more of the following conditions occurred:

1. Trawl could not be completed because of boat malfunction, vessel traffic, or major disruption of gear
2. Boat speed exceeded the prescribed range
3. The cod-end became untied
4. The net was filled with mud or debris
5. A portion of the catch was lost prior to processing
6. The tow lines became separated
7. The net was torn in a way that significantly altered net efficiency

If a successful trawl could not be performed within 1½ hours, the site was considered unsampleable. Quality assurance audits were performed to verify the identification and measurement techniques of the field crew.

5.1.11 Sample Collection: References
Strobel, C.J. 2000. Coastal 2000-Northeast Component: Field Operations Manual U. S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division, Narragansett, RI. EPA/620/R-00/002.

5.1.12 Sample Collection: Alternate Methods

Trawl records with the following Trawl Codes did not follow NCA standards.

TRLTYPE	Name	Description

CT	Connecticut Fish Survey Trawl	20 minutes standard
RI	Rhode Island Fish Survey Trawl	20 minutes standard
MA	Massachusetts Fish Survey Trawl	20 minutes standard
NH	New Hampshire modified Standard	4 minutes standard

5.2 Data Preparation and Sample Processing

The processing methods used by USEPA contracts will be described here (LABCODE = NAT). Any significant variations by other NCA partners are noted in Section 5.2.6.

5.2.1 Sample Processing Objective

Sediment samples were analyzed for total metals, PAHs, PCBs and pesticides.

5.2.2 Sample Processing: Methods Summary

All analyses were performed on samples that were stored frozen. Tissue analyzed for total metals were dried and completely digested in nitric/ hydrofluoric acids (acid persulfate for mercury). The analytical methods used to measure analyte concentrations were: cold vapor atomic analysis (AA) for mercury; graphite furnace AA for silver, arsenic, cadmium, lead, antimony, tin and thallium; hydride generation atomic fluorescence for selenium; and optical-emission ionically coupled plasma (ICP) for the remaining metals. For the organic analyses, sediments were extracted using the procedures of NOAA National Status and Trends Program (Lauenstein *et al.*, 1993). The PAHs were analyzed by gas-chromatography/ mass-spectrometry (GC/MS); pesticides and PCBs were analyzed by GC/ECD (electron capture detector).

5.2.3 Sample Processing: Calibration

The analytical instruments were calibrated by standard laboratory procedures including: constructing calibration curves, running blank and spiked quality control samples, and analyzing standard reference materials.

5.2.4 Sample Processing: Quality Control

Each batch of samples was accompanied by QC analyses consisting of method blanks, matrix spikes, matrix spike duplicates, and standard reference materials (SRMs). In total, approximately 5% of all analyses were QC analyses. Processing quality was considered acceptable if the following criteria were met: blanks were less than three times the minimum detection limit; accuracy, as determined by analysis of certified reference materials, was within 30% for organic analytes and within 15% for inorganic analytes; and precision, as determined by replicate analyses, was within 30% for organic analytes and within 15% for inorganic analytes. Additional specifications and guidelines are presented in Valente and Strobel (1993).

5.2.5 Sample Processing: References

Lauenstein, G. G. and A. Y. Cantillo (eds.). 1993. Sampling and analytical methods of the National Status and Trends Program National Benthic Surveillance and Mussel Watch Projects 1984-1992: Comprehensive descriptions of trace organic analytical methods, Volume IV NOAA Technical Memorandum NOS ORCA 71, Silver Spring, MD. 182 pp.

Texas A & M University, Geochemical and Environmental Research Group. 1990. NOAA Status and Trends, Mussel Watch Program, Analytical Methods. Submitted to NOAA. Rockville (MD): U.S. Dept. of Commerce, National Oceanic & Atmospheric Administration, Ocean Assessment Division.

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U.S. EPA. 2001. Environmental Monitoring and Assessment Program (EMAP): National Coastal Assessment Quality Assurance Project Plan 2001-2004. U.S. Environmental Protection Agency, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL. EPA/620/R-01/002. 189 p

5.2.6 Sample Processing: Alternate Methods
Not applicable

6. DATA ANALYSIS AND MANIPULATIONS

6.1 Name of New or Modified Values
Not applicable

6.2 Data Manipulation Description
Concentrations of metallic analytes smaller than the method detection limit were reported as zero (see Section 4.3 for details).

7. DATA DESCRIPTION

7.1 Description of Parameters

7.1.1 Components of the Dataset

NAME	TYPE	LENGTH	LABEL
STATION	2	9	Station Identifier
STAT_ALT	2	1	Station Location (A, B or C)
EVNTDATE	1	8	Event Date
FCOMNAME	2	30	Fish Taxa Common Name
MN_SIZE	1	8	Average Size of Animals in Homogenate
NUM_HOM	1	8	Number of Individuals in Homogenate
WETWGHT	1	8	Sample Wet Weight
PCTLIPID	1	8	Percent Lipid Content
ANALYTE	2	8	Analyte Code
CONC	1	8	Concentration of Analyte in Sample
CHMUNITS	2	10	Unit of Measure
QACODE	2	10	QA Code
MDL	1	8	Detection Limit
LABCODE	2	3	Analytical Lab Code
TISSTYPE	2	5	Tissue Type

7.1.2 Precision of Reported Values

All values have been rounded to three significant digits. To accommodate the wide range of values, all concentration values have been formatted to the thousandth unit (0.001). The actual precision is as listed above.

7.1.3 Minimum and Maximum Value in Dataset

ND indicates that all values were non-detects (below method detection limit)

Metals	Analyte Name	min	max
AG	Silver	0.01	3.33
AL	Aluminum	5.8	140
AS	Arsenic	0.31	10
CD	Cadmium	0.011	1.55
CR	Chromium	0.15	3.17
CU	Copper	0.4	325
FE	Iron	4.8	164
HG	Mercury	0.01	0.22
MN	Manganese	0.6	66.2
NI	Nickel	0.052	9.72
PB	Lead	0.037	8.86
SB	Antimony	0.075	0.2
SE	Selenium	0.41	2.3
SN	Tin	0.06	255
ZN	Zinc	8.31	138

PAHs	Analyte Name	min	max
ACENTHE	Acenaphthene	0.014	82
ACENTHY	Acenaphthylene	0.01	0.15
ANTHRA	Anthracene	0.01	0.28
BENANTH	Benz(a)anthracene	0.01	0.66
BENAPY	Benz(a)pyrene	0.18	21
BENEPY	Benzo[e]pyrene	0.009	0.009
BENZOBFL	Benzo(b)fluoranthene	0.009	0.68
BENZOKFL	Benzo(k)fluoranthene	0.009	0.28
BENZOP	Benzo(g,h,i)perylene	0.009	0.39
BIPHENYL	Biphenyl	0.009	0.42
CHRYSENE	Chrysene	0.02	0.61
DIBENTP	Dibenzothiophene	0.15	0.15
DIMETH	2,6-dimethylnaphthalene	0.14	0.29
FLUORANT	Fluoranthene	0.009	92
FLUORENE	Fluorene	0.02	0.21
INDENO	Indeno (1,2,3-c,d) pyrene	0.009	0.32
MENAP1	1-methylnaphthalene	0.01	0.28
MENAP2	2-methylnaphthalene	0.01	0.5
MEPHEN1	1-methylphenanthrene	0.03	0.26
NAPH	Naphthalene	0.01	3.43
PHENANTH	Phenanthrene	0.009	66
PYRENE	Pyrene	0.009	49

PCBs	Analyte Name	min	max
PCB101	2,2',4,5,5'-pentachlorobiphenyl	1.18	350
PCB105	2,3,3',4,4'-pentachlorobiphenyl	0.61	34
PCB110	PCB110	0.67	120
PCB118	2,3',4,4',5-pentachlorobiphenyl	0.32	360
PCB126	3,3',4,4',5-pentachlorobiphenyl	0.21	72
PCB128	2,2',3,3',4,4'-hexachlorobiphenyl	0.28	310
PCB138	2,2',3,4,4',5'-hexachlorobiphenyl	0.61	130
PCB153	2,2',4,4',5,5'-hexachlorobiphenyl	0.78	177
PCB170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.22	33.5
PCB18	2,2',5-trichlorobiphenyl	0.14	110
PCB180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.26	220
PCB187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.34	130
PCB195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.26	17
PCB206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.41	20.4
PCB209	decachlorobiphenyl	2	12.6
PCB28	2,4,4'-trichlorobiphenyl	0.33	110
PCB44	2,2',3,5'-tetrachlorobiphenyl	1.4	180
PCB52	2,2',5,5'-tetrachlorobiphenyl	0.65	38.3
PCB66	2,3',4,4'-tetrachlorobiphenyl	0.91	72.3
PCB77	3,3',4,4'-tetrachlorobiphenyl	0.23	3.2
PCB8	2,4'-dichlorobiphenyl	0.28	77

Pesticides	Analyte Name	min	max
ABHC	alpha-Hexachlorocyclohexane	1.19	1.19
CISCHL	Alpha-Chlordane	0.61	180
CNONCHL	Cis-Nonachlor	0.74	13.5
DIELDRIN	Dieldrin	1.7	53
ENDOSUI	Endosulfan I	3	5.7
ENDOSUII	Endosulfan II	2	6.7
ENDOSULF	Endosulfan Sulfate	2	2
ENDRIN	Endrin	2	240
ENDRINK	Endrin Ketone	0.97	0.97
HEPTACHL	Heptachlor	0.8	2
HEPTAEPO	Heptachlor epoxide	2	2
HEXACHL	Hexachlorobenzene	0.55	13
LINDANE	Lindane (gamma-BHC)	0.99	6.9
MIREX	Mirex	2	2
OPDDD	2,4'-DDD	1.3	89.6
OPDDE	2,4'-DDE	2	96
OPDDT	2,4'-DDT	1	2

OXYCHL	Oxychlordane	4.17	4.17
PPDDD	4,4'-DDD	0.8	210
PPDDE	4,4'-DDE	0.54	376
PPDDT	4,4'-DDT	0.86	230
TNONCHL	Trans-Nonachlor	0.77	170

7.1.4 Maximum Value in Dataset
See Section 7.1.3

7.2 Data Record Example

7.2.1 Column Names for Example Records

7.2.2 Example Data Records

station	stat_alt	evntdate	fcomname	tisstype	rep_num	mn_size	num_hom
DE02-0053	A	8/1/2002	BLUE CRAB	Whole		136.57	7
DE02-0053	A	8/1/2002	BLUE CRAB	Whole		136.57	7
DE02-0053	A	8/1/2002	BLUE CRAB	Whole		136.57	7

wetwght	pctlipid	analyte	conc	chmunits	qacode	mdl	labcode	analtype
4.47	1.972	ABHC	0	ng/g	CHM-A	0.25	NAT_ERI	PEST
4.47	1.972	ACENTHE	0	ng/g	CHM-A	0.01	NAT_ERI	PAHs
4.47	1.972	ACENTHY	0	ng/g	CHM-A	0.01	NAT_ERI	PAHs

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude (Westernmost)
-75.7737 decimal degrees

8.2 Maximum Longitude (Easternmost)
-67.0939 decimal degrees

8.3 Minimum Latitude (Southernmost)
38.4521 decimal degrees

8.4 Maximum Latitude (Northernmost)
44.9456 decimal degrees

8.5 Name of area or region
The NCA Northeast Region- includes all contiguous estuaries on the East coast from the Canadian border to the south shore of Delaware Bay.

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Measurement Quality Objectives
Measure replicate grain size of samples to within a precision of 10% (see

U.S. EPA 2001).

9.2 Data Quality Assurance Procedures

9.3 Actual Measurement Quality

10. DATA ACCESS

10.1 Data Access Procedures
Data can be downloaded from the web
http://www.epa.gov/emap/nca/html/regions/index.html

10.2 Data Access Restrictions
None

10.3 Data Access Contact Persons
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10.4 Dataset Format
ASCII (CSV) and SAS Export files

10.5 Information Concerning Anonymous FTP
Not available

10.6 Information Concerning WWW
No gopher access, see Section 10.1 for WWW access

10.7 EMAP CD-ROM Containing the Dataset
Data not available on CD-ROM

11. REFERENCES

Lauenstein, G. G. and A. Y. Cantillo (eds.). 1993. Sampling and analytical methods of the National Status and Trends Program National Benthic Surveillance and Mussel Watch Projects 1984-1992: Comprehensive descriptions of trace organic analytical methods, Volume IV NOAA Technical Memorandum NOS ORCA 71, Silver Spring, MD. 182 pp.

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12. TABLE OF ACRONYMS

AED	Atlantic Ecology Division
CSC	Computer Sciences Corporation
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency
MDL	Method Detection Limit
NCA	National Coastal Assessment
ng/g	Nano gram per gram
NHEERL	National Health and Environmental Effects Research Laboratory
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
ppb	parts per billion
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
SRM	Standard Reference Material
TOC	Total Organic Carbon
ug/g	Micro gram per gram
WWW	World Wide Web

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