UK NATIONAL MONITORING PLAN
REGIONAL REPORT FOR ENGLAND & WALES
ESTUARINE & INTERMEDIATE SITES (1991 to 1995)

ENVIRONMENT AGENCY
MARCH 1997

Note: This report has been produced to aid the construction of the National UK NMP (holistic) Report. It has not been written with the intention of being published in the public domain but to describe work in progress. During the course of its compilation several problems with the NMP came to light. These are described in *Italics.*

1. INTRODUCTION

The National Monitoring Plan (NMP) was set up in response to recommendations from Marine Pollution Monitoring Management Group (MPMMG) and the North Sea Task Force (NSTF). Both groups recommended that a series of offshore sites could serve as reference stations producing data for comparison with more heavily contaminated sites around the coast and in estuaries. They would also provide data on the natural variability of the marine environment which could then be used to filter out short term changes at the more heavily contaminated sites, thereby allowing a clearer definition of contamination trends in affected areas. The NMP is detailed in the MPMMG's document "UK National Monitoring Plan" (The Plan).

It was agreed that there should be a network of sampling sites around the UK coast comprising estuarine, intermediate and offshore localities and that there should be at least one estuarine and one intermediate site in each Environment Agency Region (then NRA) or SEPA Region (then River Purification Board) as appropriate. Responsibility for monitoring fell to the Environment Agency, RPB, MAFF, SOAFD, DANI or DoE(NI) depending on location. Some stations have been jointly monitored by two organisations.

The NMP is part of a larger framework of Environment Agency monitoring, encompassing statutory (e.g. EC Directives), mandatory (e.g. NWC scheme) and permissive programmes which have been in place many years. A significant amount of work has already been undertaken by the Agency to clean up polluted estuaries. In particular the Dangerous Substances Directive and Annex 1A and PARCOM load reduction programmes have been used to drive significant investment by industry and the water companies, resulting in significant improvements in the quality of the coastal aquatic environment.

The NMP was not intended to substitute for intensive sampling programmes. Rather, it was intended to produce a coordinated and reliable data set on nationally significant contaminants in inshore and coastal waters.

The NMP objectives are:

To establish the spatial distribution of contaminants in UK coastal waters and to define their current biological status, thus identifying areas of specific concern.

To detect with appropriate accuracy trends in contaminant concentrations and biological well being in areas identified as being of concern.

To measure long term natural trends in physical, biological and chemical parameters in selected areas.

The NMP strategy in summary is:

Conduct an initial spatial study of water, sediments, biota and biological effects and review existing information in order to direct annual monitoring effort.

Review the need for and then possibly conduct an annual monitoring programme for contaminants in water and other media (e.g. unfiltered water, surficial sediment, fish muscle etc.).

Form a national database for important contaminants, biological communities and biological response in UK coastal waters.

The aim of this report is to describe the progress of that part of the NMP administered by the Environment Agency and to briefly describe the monitoring data collected so far (1991 to 1995).

2. SAMPLING PROGRAMME

2.1 Sampling sites

Figure 2.1 shows the locations of 47 English and Welsh estuarine and intermediate NMP sites, 1 offshore site and 9 other sites for which there is additional data. All these sites are listed in Table 2.1. In all 13 estuaries are covered plus Cardigan Bay. Water quality samples were normally taken in the main channels of estuaries but biological and sediment sampling typically occurred at adjacent sites that provided reasonably easy access or avoided specific local problems.

The sites in Southern Region (essentially the Solent) do not meet the criteria for NMP site selection in terms of salinity ranges. Estuarine sites were supposed to be chosen to represent salinity regimes 0-10, 10-20 and 20-30 under normal flow conditions. The Solent sites were historic monitoring sites but were then adopted for NMP purposes. The salinity range for these sites is 22 to 35. The lowest salinity reported in the Dee Estuary off Shotton Breakwater, in North Wales, is 15, indicating that coverage was limited in this estuary as well.

There has been some confusion over the naming and location of some of the sites. Some site names have changed and positions have had to be moved over time (e.g. because of the construction of barrages on estuaries or shifting sediment banks) but most have stayed the same throughout the sampling programme. However, due to confusion over allocation of data to wrong sites, an updated list needs to be produced with standard site naming conventions as well.

The NMP site numbering system together with an appropriate grid reference (e.g. 10 or 12 characters) is still adequate for describing sites as it allows for different sample types to be taken at each location e.g. 265 Alexandra Bridge - water column; 266 Alexandra Bridge - sediment.

2.2 Determinands

The Plan specified which determinands should be analysed for and in which media and gave guidance on analytical methodologies to be used. The National Marine Analytical Quality Control Coordinating Committee advised on procedures to be adopted or discarded (see AQC below).

2.3 Sampling frequency

The Plan specified the following minimum sampling frequencies:

Media	Estuarine sites	Intermediate sites
Water column	4 per year (seasonally)	1 per year
Sediment	to be decided after spatial survey	to be decided after spatial survey
Biological tissue	to be decided after spatial survey	to be decided after spatial survey
Benthos	to be decided after spatial survey	to be decided after spatial survey
Oyster embryo bioassay	2 per year (winter & summer)	1 per year

Table 2.1: NMP Water Chemistry Sampling Sites

Region	Site Name	Site No.	Estuary/Inter/Offshore	GridRef.
ANGLIAN	NORTH SEA TASK FORCE - NORTH KILLINGHOLME	365	E	TA1620023300
ANGLIAN	NORTH SEA TASK FORCE - OFF SHORE	375	I	TA5460006600
ANGLIAN	NORTH SEA TASK FORCE - SPURN HEAD	335	E	TA3870009400
ANGLIAN	NORTH SEA TASK FORCE - TRENT FALLS	355	E	SE8680023700
ANGLIAN	R.OUSE BUOY 13A		E	TF5870028300
ANGLIAN	R.OUSE FREEBRIDGE KINGS LYNN	415	E	TF6120018500
ANGLIAN	R.OUSE STOW BRIDGE	405	E	TF6030007000
ANGLIAN	R.OUSE THE POINT KINGS LYNN	425	E	TF6010023400
ANGLIAN	THE WASH CORK HOLE TIDE GAUGE		I	TF6050031900
ANGLIAN	THE WASH N.SEA TASK FORCE OFFSHORE POINT	385	I	TF6580054100
NORTH EAST	GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)		E	NZ5410026500
NORTH EAST	SEA AT TEES	295	I	NZ7190038200
NORTH EAST	SEA OFF TYNE	245	I	NZ5540068500
NORTH EAST	TEES AT HAVERTON HILL SHIPYARD (SURFACE)		E	NZ4890022000
NORTH EAST	TEES AT PRESTON PARK (SURFACE)	305	E	NZ4310015800
NORTH EAST	TEES AT SMITHS DOCK (SURFACE)		E	NZ5280022100
NORTH EAST	TEES AT THE GARES (SURFACE)	325	E	NZ5520028400
NORTH EAST	TEES AT VICTORIA BRIDGE (SURFACE)	315	E	NZ4490018400
NORTH EAST	TYNE AT HEBBURN (SURFACE)	225	E	NZ3040065700
NORTH EAST	TYNE AT LLOYDS HAILING STATION (SURFACE)	235	E	NZ3640068300
NORTH EAST	TYNE AT SCOTSWOOD BRIDGE (SURFACE)	215	E	NZ1990063600
NORTH EAST	WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE)	265	E	NZ3820057800
NORTH EAST	WEAR AT SANDY POINT (SURFACE)	275	E	NZ4120058300
NORTH EAST	WEAR AT SOUTH HYLTON (SURFACE)	255	E	NZ3480056700
NORTH WEST	LIVERPOOL BAY BURBO BIGHT	705	I	SJ1640098000
NORTH WEST	MERSEY BROMBOROUGH E1 BUOY	745	E	SJ3571985623
NORTH WEST	MERSEY CHANNEL C1 BUOY	765	E	SD2400004400
NORTH WEST	MERSEY ESTUARY AT CROSBY SHIP		E	SD2720101861
NORTH WEST	MERSEY ESTUARY AT MONKS HALL	725	E	SJ5930087500
NORTH WEST	MERSEY ESTUARY AT SEACOMBE FERRY	755	E	SJ3303390903
NORTH WEST	MERSEY RUNCORN OLD QUAY	735	E	SJ5140083600
NORTH WEST	OFF LUNE / WYRE	785	I	SD3170052300
NORTH WEST	SOLWAY	15	I	NY0910054300
SOUTH WEST	OFF PLYMOUTH SOUND	585	O	SX3053017530
SOUTH WEST	OFF TAMAR	575	I	SX4601046200
SOUTH WEST	TAMAR ESTUARY, HALTON QUAY	545	E	SX4130065500
SOUTH WEST	TAMAR ESTUARY, HAMOAZE	565	E	SX4410056000
SOUTH WEST	TAMAR ESTUARY, WARREN POINT	555	E	SX4410060600
SOUTHERN	CALSHOT	525	E	SU4930002450
SOUTHERN	DOCK HEAD	505	E	SU4270009250
SOUTHERN	EAST BRAMBLES BUOY	515	E	SZ5455099150
SOUTHERN	SELSEY BILL	495	I	SZ8300085500
THAMES	CHAPMAN BUOY		E	TQ8140081300
THAMES	ERITH		E	TQ5170078600
THAMES	LONDON BRIDGE		E	TQ2140076300
THAMES	MUCKING	455	E	TQ5975076620
THAMES	THE WARP	465	I	TR0527083350
THAMES	WEST THURROCK	445	E	TQ7175080250
THAMES	WOOLWICH	435	E	TQ4330079550
WELSH	CARDIGAN BAY	655	I	SN5190075630
WELSH	DEE BUOY NO.2	695	E	SJ2020082100
WELSH	DEE DS FLINT CASTLE	4507	E	SJ2460074400
WELSH	DEE OFF SHOTTON BREAKWATER	4508	E	SJ2820071400
WELSH	SEVERN AT ENGLISH & WELSH GROUNDS	645	E	ST3040072661
WELSH	SEVERN AT NASH POINT	615	I	SS9200056800
WELSH	SEVERN AT NO.1 BEACON	635	E	ST5140084900
WELSH	SEVERN AT OLD SEVERN RAIL BRIDGE	625	E	SO6720004200

3. ANALYTICAL QUALITY CONTROL

Chemical aspects of the NMP were covered by the National Marine Analytical Quality Control scheme (NMAQC) and biological aspects by the National Marine Biological Analytical Control scheme (NMBAQC). These two schemes were coordinated by committees which reported to the Marine Pollution Monitoring Management Group (MPMMG).

Laboratory analysis was performed according to in-house AQC procedures with many labs subsequently involved in NMP AQC, NAMAS accreditation or QUASIMEME.

In addition a quality control exercise was undertaken by Environment Agency staff by comparing water chemistry data from all England and Wales NMP sites with Annex 1A and PARCOM data for the years 1991 to 1993 (and later 1994 to 1995). The comparison shows a good relationship between the different data sets, subject to the constraint that one data set reflects loads entering estuaries and the other measures concentrations in receiving waters. The conclusion from the exercise is that if there is any error bias introduced by laboratory analysis then it is probably systematic and consistent.

During the period 1991-93 no analytical quality control was advocated during the analysis of the macrobenthic samples derived from the benthic sampling at NMP sites. AQC was implicit in the guidance offered by the Plan in 1994. As a result the NMBAQC scheme was set up in 1994 under the NMAQC.

The NMBAQC Scheme has made considerable progress in improving standards for the analysis of macrobenthic samples. In general from the macrobenthic monitoring perspective of the programme the NMP has provided a focus for improving standards in this field. Important developments in chemistry and NMAQC have also focussed on improving standards and methodology.

There will be a fuller description of AQC in the UK NMP (holistic) report and so it is not considered further in this report.

4. BENTHOS

4.1 Introduction

Monitoring of the macrobenthic community in the marine environment is the most widely used method for detecting and monitoring the biological effects of both man-made and natural variability in the marine environment. Community attributes such as the number of species and numbers of individuals are determined and used to characterise the community ecology of the sediments. Changes in the number of species and the number of individuals are monitored over time and space and related to potentially causal environmental variables.

Implicit in the need for quantitative comparisons between estuaries is the need to standardise the method of collecting macrobenthic samples. The additional requirements for benthic monitoring are:

- The macrofauna need to be identified to species level after sieving through a 0.5 mm mesh.
- Sites may need to be located outside of the main channel to obtain a representative sample because of local factors such as dredging.
- A separate sample should be collected at the same site for granulometric analysis and elemental analysis of carbon and nitrogen.
- Samples should be collected between February and May (prior to 1992 the sampling window was November to April).

Most subtidal sites were sampled using a $0.1m^2$ Day grab and at least one site was sampled using an anchor dredge. Intertidal sites were sampled using a $0.1m^2$ or $0.01m^2$ corer. All sites were to be sieved at 1mm mesh size and estuarine samples were to be sieved using a mesh size of 0.5mm where grain size permitted. The recommended number of replicates was 5. Most regions chose 4 or 5.

4.2 Programme implementation

The Environment Agency has sole responsibility for 35 benthic monitoring sites and a further 13 jointly with MAFF. Sampling began in 1991 over the winter of 1990/91 (approx. Nov. to March) as stipulated in the original Baseline Estuaries and Coastal Waters Monitoring Programme.

Table 4.1 Number of sites sampled for macrobenthos to date

Year	Estuarine Sites	Intermediate Sites
1991	13	2 *
1992	31	3
1993	25	6
1994	Spatial survey data - not collated	Spatial survey data - not collated
1995	8 (optional survey year)	3 (optional survey year)

* An offshore site (responsibility of MAFF) was also monitored.

Table 4.1 illustrates the number of benthic sites sampled in each year. The spatial survey macrobenthic data has yet to be collated. In the most complete data sets (1992 and 1993) 70% of the sites under the responsibility of the Agency were surveyed in 1992 and 65% in 1993. Biomass measurement was undertaken at approximately half of the sites surveyed. The analysis and interpretation is confined to the years 1992 and 1993 as these represent the most complete data sets collated so far.

In 1995 there was no requirement to sample the benthos for NMP though South West and Welsh Regions continued sampling at some sites for continuity. Southern Region continued to carry out the spatial survey (for biota and sediments) in 1995 and 1996 and plans to continue this work through 1997. No further sampling was advocated in the Plan until the spatial survey data from 1994 had been analysed. *The task of considering all the data is to be taken on by the National Marine Biology AQC committee and is yet to be started. A deadline needs to be set, as do objectives etc. by NMP client group.*

A decision was taken to restart the programme at the pre-spatial survey sites in early 1996 to maintain a minimum core programme. The 1996 samples are presently being analysed.

Regions generally took different numbers of replicate samples, ranging from 4 in Thames and North East Regions to 10 in Welsh Region for the Severn. It was agreed that 4 replicates (the lowest common number of replicates between sites) be used to determine the number of replicates used to calculate the primary derived parameters of number of species, number of individuals and the Shannon Weiner diversity index (an index which incorporates both species richness and equitability, i.e. the number of species present and how evenly the individuals are distributed among the species. A higher index number indicates more diversity).

In some cases it was not practical to survey estuarine sites remotely from a survey vessel using the standard methodology. In which case sites were sampled intertidally. In 1992, 10 of the 31 estuarine sites were sampled intertidally and in 1993, 6 of the 25 sites were sampled intertidally.

4.2.2 Issues arising

Since the monitoring programme was set up prior to the publication of the Plan there has been a large degree of inconsistency between the Environment Agency site names and those listed in the Plan. This is yet to be addressed.

In some Regions there are significant differences between the location of the benthic sites and those of the water quality sites. As mentioned above there are usually sound reasons for relocating benthic sampling sites due to, for example, the proximity of dredged channels or difficulty in procuring soft sediment from a site. It was also recommended that samples were taken from stable communities away from important sources of pollution. The benthic site numbers were allocated with 1 added to the adjacent water quality site numbers, to differentiate the benthic sites from the water quality sites, in line with the Anglian Region numbering.

Data omissions range from whole estuaries to individual determinands such as biomass.

The NMP programme began at the chosen sites in the Winter of 1990/91. The original NRA Baseline Estuaries and Coastal Monitoring Programme guidance and the subsequent Plan lacked detailed guidance. Confusion over the requirements of the programme were commonplace. The Plan did not appear until 1993, by which time most Regions had been sampling at the allocated sites for two years (with the exception of North West Region on the Mersey and Anglian Region on the Ouse).

Data for the Ouse and Mersey for the period covered by this analysis (1992-93) is absent. The Dee Estuary in Welsh Region was sampled in 1992 with only one replicate sample taken at each site. Biomass was not analysed in this period at any of the North East, South West and some of the Welsh Region sites. Some of the 1992 and 1993 North East Region data has been generated using an alternative sampling methodology due to sample preservation problems with very organic samples. The Environment Agency will provide details to the NMBAQC group on any consequent difficulties that may occur in interpretation.

4.3 Results

The summary data sets for 1992 and 1993 are presented in Table 4.2.

Spatial variations in the number of species, individuals and Shannon Weiner diversity index for 1992 and 1993 are shown in Figures 4.1 to 4.6.

A typical pattern of increasing diversity from the sites at the head of each estuary to those at the mouth was measured, with the greatest diversity occurring at the intermediate sites in fully marine conditions.

1992 Results

The greatest diversity was encountered in the Solent at Calshot 2.1 (Shannon Weiner = 2.68) with the greatest number of species (41) recorded in the Tees at No. 23 Buoy. The largest

number of individuals (76280) were also found at this site.

The lowest diversity (Shannon Weiner = 0) was encountered in the Dee Estuary upstream of Flint. However, only one replicate sample was taken intertidally. The lowest number of species (1) and individuals (1) was also encountered at this site. Of those sites with the standard number of replicates the lowest diversity (Shannon Weiner = 0.79) was recorded in the Wear at Alexandra Bridge. The lowest number of species (3) was recorded at the top of the Tamar at Halton Quay and at Dockhead in the Solent. The lowest number of individuals (8) was also encountered at Dockhead.

The lower number of species (3 taxa) at Dockhead in 1992 reflects a disturbed site. An intensive survey in 1993 carried out at 9 sites close to Dockhead had a mean number of taxa per site of 19. The minimum number of taxa per site was 6, the maximum 29.

1993 Results

In 1993 the greatest diversity (Shannon Weiner = 3.63) was measured at the intermediate Tees site with the greatest number of species (91) also being found there. The largest number of individuals (89854) was recorded at Hebburn in the Tyne.

The lowest diversity (Shannon Weiner = 0.33) was encountered at the head of the Tees. However, a smaller (non-standard) corer was used to generate the subtidal data from this site making it incomparable with the other data. A site at the head of the Tyne Estuary (Scotswood) had the next lowest diversity (Shannon Weiner = 0.56). The lowest number of species (1) and individuals (3) were encountered in the upper Humber Estuary.

Biomass

The North East, South West and to a large extent Welsh Regions did not undertake biomass analysis. There was no clear indication in the Plan that biomass was required other than in Appendix 3 on the data record sheet and this requirement was overlooked. Therefore no comment is made on the limited data return for biomass.

4.4 Discussion

The estuarine and intermediate coastal sites surveyed show a general pattern of low diversity at the heads of the estuaries increasing toward the fully marine intermediate sites. This pattern is to be expected and can primarily be attributed to the hydrophysical regime encountered in estuaries with variations in salinity (and other physical conditions such as temperature). Environmental stress in estuaries inhibits all but the most stress tolerant invertebrate species. Those that are able to tolerate environmental stress may proliferate in large numbers taking advantage of the abundance of naturally occurring or anthropogenic sources of organic material in estuaries.

From the summary data it is not possible to determine whether the species found, and their abundance, are typical of the conditions encountered at any of the sites, irrespective of their

pollution status. The data set has been described but the reasons for the particularly low diversity at some sites, such as the head of the Humber estuary in 1993, and the high number of individuals at some north east estuary sites cannot be explained without further data collection, local investigation and more comprehensive data analysis. The summary data set cannot be used to draw firm comparisons between estuaries without reference to additional ancillary data such as particle size analysis, water depth and sample depth.

Some of the estuarine sites do not fall into the salinity bands stipulated in the Plan. In practice salinity variations are often much broader than the nominal bands assigned (0-10, 10-20, 20-30) and the range of variation will vary from estuary to estuary. It is therefore not possible to compare estuarine sites in all cases. For example, the uppermost site in the Solent has no measured salinities below 20.

The Shannon-Weiner diversity index has been applied to the data sets generated from the surveys and, whilst this is a useful measure by which to compare sites, the application of such indices on their own have been criticised since they are insensitive to changes in community structure (Warwick and Clarke, 1991). Two communities with a completely different composition could have the same diversity index. For this reason multivariate statistical techniques are usually employed during routine analysis of macrobenthic data. This type of analysis allows comparison of sites based on the identity of the component species as well as their relative importance in terms of abundance and should be considered for future NMP reporting.

Table 4.2: NMP Benthic community summary data for 1992 and 1993.

Region	EIO	Sample Loc	ST/IT	NMP No.	Location	Sample Date	Number of Taxa
North East	E	Scotswood	ST	218	448520/522150	11-Feb-92	11
North East	E	Scotswood	ST	218	448520/522150	14-Apr-93	10
North East	E	Hebburn	ST	228	453033/522477	11-Feb-92	15
North East	E	Hebburn	ST	228	453033/522477	14-Apr-93	15
North East	E	Lloyd's Hailing	ST	236	436592/568271	14-Apr-93	52
North East	E	Lloyd's Hailing	ST	236	436592/568271	06-Feb-92	34
North East	I	Off Tyne	ST	246	455502/568534	15-Jun-93	63
North East	E	South Hylton	ST	256	434773/556425	22-Apr-92	10
North East	E	South Hylton	ST	256	434773/556425	15-Apr-93	12
North East	E	Alexandra Bridge	ST	266	438001/557820	15-Apr-93	12
North East	E	Alexandra Bridge	ST	266	438001/557820	22-Apr-92	17
North East	E	Sandy Point	ST	276	440656/558155	15-Apr-93	27
North East	E	Sandy Point	ST	276	440656/558155	21-Apr-92	35
North East	I	Off Tees	ST	296	472003/538184	15-Jun-93	81
North East	E	Bamlett's Bight	ST	306	448520/522150	17-Jun-93	14
North East	E	Bamlett's Bight	ST	306	448520/522150	18-Feb-92	7
North East	E	No. 23 Buoy	ST	316	453033/522477	18-Feb-92	41
North East	E	No. 23 Buoy	ST	316	453033/522477	17-Jun-93	23
North East	E	Phillip's Approach	ST	326	454130/526370	17-Jun-93	41
North East	E	Phillip's Approach	ST	326	454130/526370	18-Feb-92	40
Anglian	E	Humber Estuary Outer	ST	336	539261/405563	14-Apr-92	23
Anglian	E	Humber Estuary Outer	ST	336	539261/405563	13-Apr-93	31
Anglian	E	Humber Upper Estuary	ST	356	492736/425748	22-Apr-92	5
Anglian	E	Humber Upper Estuary	ST	356	492736/425748	14-Apr-93	1
Anglian	E	Humber Estuary Middle	ST	366	517050/423565	13-Apr-93	7
Anglian	E	Humber Estuary Middle	ST	366	517050/423565	22-Apr-92	5
Thames	E	Woolwich	ST	436	TQ4330079600	25-May-93	7
Thames	E	Woolwich	ST	436	TQ4330079600	31-Mar-92	4
Thames	E	West Thurrock	ST	446	TQ5980076600	31-Mar-92	10
Thames	E	West Thurrock	ST	446	TQ5980076600	25-May-93	9
Thames	E	Mucking	ST	456	TQ7180060200	27-May-93	16
Thames	E	Mucking	ST	456	TQ7180060200	23-Apr-92	14
Thames	I	The Warp	ST	466	TR0580063600	27-May-93	42
Thames	I	The Warp	ST	466	TR0580063600	23-Apr-92	25
Southern	I	SELSEY BILL site 4.1	ST	496	50° 40.00 N, 0° 50.00 W	13-May-92	14
Southern	I	SELSEY BILL site 4.1	ST	496	50° 40.00 N, 0° 50.00 W	27-Apr-93	15
Southern	E	DOCKHEAD site 1.1	ST	506	50° 52.90 N, 1° 23.50 W	12-May-92	3
Southern	E	DOCKHEAD site 1.1	ST	506	50° 52.90 N, 1° 23.50 W	11-May-93	27
Southern	E	EAST BRAMBLES site 3.1	ST	516	50° 47.20 N, 1° 13.55 W	13-May-92	30
Southern	E	EAST BRAMBLES site 3.1	ST	516	50° 47.20 N, 1° 13.55 W	27-Apr-93	15
Southern	E	Calshot 2.1	ST	526	50° 49.20 N, 1° 18.00 W	11-May-93	33
Southern	E	Calshot 2.1	ST	526	50° 49.20 N, 1° 18.00 W	11-May-93	33
Southern	E	Calshot 2.1	ST	526	50° 49.20 N, 1° 18.00 W	12-May-92	36
Southern	E	Calshot 2.1	ST	526	50° 49.20 N, 1° 18.00 W	12-May-92	38
South West	E	Halton Quay	IT	546	SX41300655000	01-Apr-93	3
South West	E	Halton Quay	IT	546	SX41300655000	01-Apr-92	3
South West	E	Warren Point	IT	556	SX44100606000	01-Apr-92	9
South West	E	Warren Point	IT	556	SX44100606000	01-Apr-93	14
South West	E	Hamoaze	IT	566	SX44100560000	01-Apr-93	12
South West	E	Hamoaze	IT	566	SX44100560000	01-Apr-92	12
South West	I	Plymouth Sound	ST	576	50° 17.697 N, 04° 09.729 W	01-Apr-93	84
South West	O	Off Plymouth Sound	ST	586	50° 02.00 N, 4° 22.00 W	01-Apr-92	69
Welsh	E	Nash Passage (Right Bank)	ST	616	SS8961970378	31-Mar-92	4
Welsh	E	Nash Passage (Right Bank)	IT	616	SS8961970378	24-Feb-93	5
Welsh	E	Nash Passage (Right Bank)	ST	616	SS8961970378	14-Jan-92	5
Welsh	E	Sharpness (Left Bank)	IT	626	SO6781803481	21-Apr-92	15
Welsh	E	Sharpness (Left Bank)	IT	626	SO6781803481	05-May-93	7
Welsh	E	Bedwin Sands	IT	636	ST4572785624	24-Feb-93	24
Welsh	E	Bedwin Sands	ST	636	ST4572785624	08-Jan-92	13
Welsh	E	Bedwin Sands	ST	636	ST4572785624	26-Feb-92	15
Welsh	E	Peterstone Flats	ST	646	ST2692775869	26-Feb-92	12
Welsh	E	Peterstone Flats	ST	646	ST2692775869	24-Feb-93	12
Welsh	I	The Gutter	ST	656	52° 02.29 N, 04° 10.32 W	21-May-93	32
Welsh	E	Hewarden Bridge	IT	676	SJ 2726 7199	13-Feb-92	4
Welsh	E	upstream of Flint	IT	686	SJ 2395 7448	13-Feb-92	1
Welsh	E	Buoy No. 2	ST	696	SJ 2000 8249	13-Feb-92	5

KEY: ST - Subtidal
IT - Intertidal

Number of Individuals	Total Biomass	Shannon Weiner Index	Comments:
53		1.76	1992 data generated from subtidal cores.
1254		0.56	
2610		1.32	1992 data generated from subtidal cores approx 1km d/s 1993 site
89854		1.1	
3041		1.85	
4800		1.28	1992 site location: E436879 N568676 approx. 0.5km d/s of 1993 site
853		2.92	1mm mesh sieve
229		1.27	
2404		1.27	
87894		1.23	Site location different in 1992: E437366 N558181 approx. 1km u/s of above location.
5694		0.79	Site location different in 1992: E437366 N558181 approx. 1km u/s of above location.
14197		1.16	
6879		1.69	
589		3.63	1mm mesh sieve
15504		0.33	1993 data generated from subtidal cores at same location.
3542		0.47	
76280		1.18	
18968		1.42	1993 data generated from subtidal cores.
41209		1.69	1993 data generated from subtidal cores
33806		1.27	
1018	3.3343	1.288	
1750	4.4828	1.358	
22	0.002	1.491	
3	0.0466	0	
25	0.0504	1.655	
22	0.002	1.491	
340	0.12	0.692	
145	0.26	0.815	
102	1.41	1.81	
262	0.26	1.52	
3261	7.57	0.682	
642	10.23	0.865	
1251	5.13	2.59	
184	5.3	2.074	
34		2.29	0.5mm mesh
167		1.77	0.5mm
8		1.04	
835		1.92	
175		1.91	
94		1.97	
448		2.63	
448		2.63	
239		2.68	
239		2.68	
356		2.087	
129		2.023	Intertidal samples. Dates approximate (i.e. November 1990).
92		1.829	Intertidal samples. Dates approximate (i.e. November 1990).
487		1.803	
420		1.533	
115		1.099	Intertidal samples. Dates approximate (i.e.November 1990).
510		3.388	Subtidal. Three reps (0.1 m2 Day Grab). Relocation of intermediate site to more appropriate position
195		3.929	Subtidal 1x anchor dredge. Site relocated due to impracticability of this one for 1993 survey.
12		1.06	1st 4 replicates of 10. 0.5 mm sieve. 0.1 m2 Day Grab. Usually fine-coarse sand. 94 omitted spat.sur
19		1.32	1st 4 replicates of 10. 0.5 mm sieve. 0.1 m2 Day Grab. Usually fine-coarse sand. 94 omitted spat.sur
20		1.33	1st 4 replicates of 10. 0.5 mm sieve. 0.1 m2 Day Grab. Usually fine-coarse sand. 94 omitted spat.sur
258		1.71	1st 4 replicates of 10. 90-92 0.1m2 Day Grab 93-95 0.1m2 Box Corer. Sandy Mud usually. 94 omitted.
19		1.76	1st 4 replicates of 10. 90-92 0.1m2 Day Grab 93-95 0.1m2 Box Corer. Sandy Mud usually. 94 omitted.
1317		1.85	1st 4 replicates of 10. Sieved to 0.5mm. 0.1m2 Day Grab. Usually sandy mud. Spat survey 94 omitted.
2887		1.52	1st 4 replicates of 10. Sieved to 0.5mm. 0.1m2 Day Grab. Usually sandy mud. Spat survey 94 omitted.
2122		1.94	1st 4 replicates of 10. Sieved to 0.5mm. 0.1m2 Day Grab. Usually sandy mud. Spat survey 94 omitted.
175		0.952	1st 4 replicates of 10. Sieved to 0.5mm. 0.1m2 Day Grab. Usually sandy mud. 94 spat surv omitted
156		1.64	1st 4 replicates of 10. Sieved to 0.5mm. 0.1m2 Day Grab. Usually sandy mud. 94 spat surv omitted
186	18.963	2.96	93 1 replicate only. 95 spatial survey 1 rep middle site. 0.1 m2 Dey Grab. 0.5mm sieve. Muddy sand.
31	0.6618	0.863	92 Grid Ref SJ 275 723. 1 rep only. 95 spat survey mid site. 0.1 m2 core Sand 0.5 mm sieve.
1	0.0016	0	92 grid ref SJ 207 772. 1 rep. only. 95 spatial survey middle site. 0.5mm sieve. 0.1m2 core. Sand.
83	0.1825	0.308	92 Grid Ref SJ 160 817 1 rep only. 95 spatial survey 1 rep only. 0.1 m2 Dey Grab. 0.5 mm sieve. Sand

5. BIOLOGICAL EFFECTS

5.1 Introduction

Samples as part of the NMP were first assessed for their toxicity in 1993 using the Oyster Embryo-Larval (OEL) bioassay. The OEL test measures the effects of substances in the water samples on the ability of oyster embryos to develop normally.

In 1993 samples were sent independently by the Regions to MAFF for testing. In 1994 and 1995 the collection of samples was coordinated by Welsh Region, NRA with WRc performing the testing in 1994 and Northumbria & Yorkshire Region, NRA in 1995. In the current survey year the coordination and testing is being performed by the Environment Agency Direct Toxicity Assessment (DTA) National Centre Newcastle Laboratory, North East Region, which is aiming for NAMAS accreditation by April 1997.

5.2 Sampling

The carefully controlled collection and subsequent transportation of samples is essential when testing for toxicity. The sampling strategy is particularly important when collecting surface waters from estuaries. These are typically dynamic environments, which exhibit widely varying characteristics due to local topography and hydrodynamics. These factors can make it difficult to get a representative sample from an estuary and this may account for some of the variation in toxicity that has been observed.

As spot sampling is the current method it is important that samplers endeavour to take samples from the same position and at the same tidal state on each sampling occasion. The Plan states that samples should be taken at a depth of 1m at or near to high tide. As part of a current Environment Agency R&D project (703) - Toxicity-based Criteria for Assessing the General Quality Assessment (GQA) of Receiving Waters, the differences between sampling at different states of the tide is being assessed. Work locally on the River Tyne has shown there to be significant differences between neap and spring tides as well as at different times within the tidal cycle.

Sampling is required twice per year, in winter (January to April) and summer (June to September). By adhering tightly to these windows assessing differences in quality between sites should be easier.

5.3 Sample omission

The 1993 survey did not result in a full set of data. Samples were independently submitted to MAFF for analysis and samples were not collected from all the sites.

In 1994 samples from the Ouse and the Mersey were only collected in the summer.

In 1995 samples from the Severn were only collected in the winter and samples from the Tyne were only collected in the summer.

In the above cases it was not feasible for the regions to resample these sites within the sampling window, due to operational and practical considerations.

5.4 Methodology

The current method used for the OEL bioassay follows the guidelines specified by the ICES TIMES No.11 protocol (ICES, 1991). The *method has limitations because of the lack of any consistent advice on salinity correction procedures. Oyster embryos have a minimum salinity threshold of 20. Samples requiring salinity correction have always been adjusted by the three different contractors that performed the testing. However, different correction methods have been used. The implications of the different methods of salinity correction to the interpretation of the data shall be discussed later. The Environment Agency DTA Method Guidelines, which resolve the salinity correction issue, are soon to be released and adoption of this method for the OEL bioassay should be considered for future use in the NMP survey.*

It was recommended in an internal NMP report (Waters, 1996) from work performed at the Newcastle laboratory, that a standard analytical grade of sea salt, such as Sea Salts - Sigma product no. S-0131, be used for the correction of samples with salinity less than 20. This product is intended for use in the culture of marine algae and is plant cell culture tested. Every time a sample is adjusted using sea salts, results of a control of distilled or deionised water made to full salinity (~34) with the sea salts shall be provided. The Newcastle laboratory has routinely used this artificial sea water as the standard control, thus providing a standard reference, and the sea salts were used to correct salinity in the 1996 survey.

Adopting the Environment Agency DTA Method Guidelines (1996), as a replacement for ICES TIMES No.11 protocol, should not cause problems in making inter-year comparisons. The baseline methodology will remain the same, but because the Guidelines are stricter it will make comparisons for future years easier.

Analytical quality control (AQC) is an important factor in controlling the quality of the test data produced. The DTA National Centre has recently completed an R&D project on the performance standard and AQC of toxicity tests. A major UK ring-test was performed to establish the precision of toxicity tests including the OEL test. The project recommended that as part of each toxicity test a reference toxicant test is run. The data is then plotted onto a control chart against the consensus mean derived from the ring-test. Action and warning limits allow the trends in the variability of the test to be observed and remedial action to be taken where necessary.

In 1993 there was no AQC data, whereas both the 1994 and 1995 surveys had accompanying reference toxicity data. It is the policy of the DTA National Centre to produce high quality data and to implement its own quality assurance programme to ensure a minimum standard of analytical quality control is complied with at all times. The process of the laboratory gaining NAMAS accreditation will ensure that these procedures are adhered to.

5.5 Interpretation of 1993-1995 data

Percent net response (PNR) value is a relative measure of the toxicity of water samples with

the abnormality in test samples being compared to a control from an 'uncontaminated' site. PNR values can vary from a small negative value up to 100%. Negative values indicate that the embryos in the sample developed better than they did in the control. Positive values show that there was abnormal development of some of the embryos. A PNR value of 100% indicates that all the embryos developed abnormally. A PNR value of >25% is considered to be significantly different from the control (WRc, 1995)

To date three different methods of salinity adjustment have been used. In 1993 Tropic Marine salt was used. Additional controls were run but the results not reported. It is not believed that the salinity adjustment in this case led to spuriously high toxicity levels, as some samples of very low salinity resulted in low (PNR) values.

The 1994 survey and the winter phase of the 1995 survey used 'Analar' sodium chloride to adjust the samples. In 1995 concerns were raised over the use of sodium chloride especially for the adjustment of samples of low salinity. Following further study, it has been recommended that samples with an initial salinity of less than 20, corrected with sodium chloride, be highlighted and the value questioned.

The summer phase of the 1995 survey used air dried sea salts, prepared from reference seawater. It was demonstrated that this could be successfully reconstituted with distilled or deionised water to avoid spuriously high levels of abnormal embryo development.

Differences in test results that could have occurred as a result of changes in methods over time mean that there may be difficulties in making comparisons of the data where samples required salinity adjustment. Data from 1993, 1994 and winter 1995 where salinity was corrected in samples of an initial salinity of less than 20‰, should be viewed cautiously. Data derived from salinity adjusted samples in the summer phase of the 1995 survey, and all non-adjusted samples from the period 1993-1995 present no such problems in their interpretation.

Table 5.1 contains the full NMP OEL bioassay data set collected so far. Figure 5.1 shows a snapshot of OEL bioassay results from summer 1995. Some geographical areas of concern can be identified from the 1993-1995 data, subject to the reservations expressed in the last paragraph:

Tees - Bamletts Bight resulted in all of the embryos developing abnormally in 1994 and 1995. It is difficult to make a comparison to 1993 as this was pre-barrage and the site positioning was different. Mid-Tees site also resulted in 100% embryo abnormality.

Mersey - Monks Hall has also been shown to be highly toxic to the oyster embryos, although there may be questions over the 1994 and winter 1995 data due to samples being adjusted with sodium chloride.

Ouse - Stowe Bridge has resulted in 100% PNR, with the same proviso as samples for the Mersey.

Tamar - Halton Quay and Warren Point exhibited a toxic effect to the oysters in the summer phase of the 1995 survey.

Although toxicity 'hot-spots' have been identified on the Tees, Mersey, Ouse and Tamar, it will be necessary to conduct more comprehensive studies of the areas, including the analysis of chemical data, to identify the possible causes and sources of the toxicity. The data collected to date are only a snapshot, both temporally and spatially, of the sites. The current method of measuring the toxicity of the water column means that effects have not been integrated with time as would occur with sediment samples. This fact can make it difficult to ascertain if the measured effect is a temporary or constant one. For this reason the survey best serves its purpose in highlighting where there may be areas of concern that merit further investigation. Examples of this approach can be found on the Tyne and the Tees in North East Region.

Table 5.1: NMP Oyster Embryo-Larval Bioassay Data

Region	MP Site No	NMP Site Type	Sample/Site	Grid Reference	Date Sampled	Date Received	Date Tested
North East	245	I	Sea off Tyne			18/08/93	23/08/93
North East	235	E	Tyne - Lloyds Hailing Stn			w/e 18/04/93	22/04/93
North East	225	E	Tyne - Hebburn			w/e 18/04/93	22/04/93
North East	215	E	Tyne - Scotswood Bridge			w/e 18/04/93	22/04/93
North East	295	I	Sea - Tees			18/08/93	23/08/93
North East		E	Lower Tees - Pre Barrage			w/e 07/05/93	06/05/93
North East		E	Mid Tees - Pre Barrage			w/e 07/05/93	28/05/93
North East		E	Upper Tees - Pre Barrage			w/e 07/05/93	28/05/93
North East	275	E	Wear - Sandy Point			w/e 07/05/93	28/05/93
North East	265	E	Wear - Queen Alexandra Bridge			w/e 07/05/93	28/05/93
North East	255	E	Wear - South Hylton			w/e 07/05/93	28/05/93
Anglian	405	E	R.Ouse Stow Bridge				'93
Anglian	415	E	R.Ouse Freebridge Kings Lynn				'93
Anglian	425	E	R.Ouse The Point Kings Lynn				'93
Anglian		I	W38	TF5980043000			'93
Anglian		I	W42	TF5670045400			'93
Anglian	336	E	Humber 7728				'93
Anglian	358	E	Humber Site III				'93
Anglian	368	E	Humber 7702				'93
Anglian	375	I	Humber Station NSTF				'93
Thames	485	I	The Warp			w/e 07/05/93	06/05/93
Thames	455	E	Mucking			w/e 07/05/93	06/05/93
Thames		E	Erith			w/e 07/05/93	27/05/93
Thames	445	E	West Thurrock			w/e 07/05/93	27/05/93
South West	565	E	Tamar Estuary - Hamoaze			14/05/93	04/06/93
South West	545	E	Tamar Estuary - Halton Quay			14/05/93	04/06/93
South West	555	E	Tamar Estuary - Warren Point			Broken in Transit	
South West	585	O	Off Plymouth Sound			14/05/93	04/06/93
Southern	525	E	Calshot			13/05/93	04/06/93
Southern	505	E	Dock Head			13/05/93	04/06/93
Southern	515	E	East Brambles Buoy			13/05/93	04/06/93
Southern	495	I	Selsey Bill			13/05/93	04/06/93
Welsh	645	E	Severn - English & Welsh Grounds			25/05/93	28/05/93
Welsh	695	E	Dee U/S Flint			25/05/93	28/05/93
Welsh	*4507	E	Dee DS Flint Castle			25/05/93	28/05/93
Welsh	*4508	E	Dee off Shotton Brasiwater			25/05/93	28/05/93
North West	15	I	Solway			13/05/93	28/05/93
North West	755	E	Mersey Estuary - Seacombe Ferry			11/08/93	23/08/93
Welsh	695	E	Dee Buoy No. 2			11/08/93	23/08/93
North West	755	E	Mersey Estuary - Seacombe Ferry			11/08/93	23/08/93
Anglian	356	E	Humber Site III	E492738 N425748	21/03/94		25/03/94
Anglian	358	E	Humber Site III	53 32.18N 00 35.67W	28/09/94		06/10/94
Anglian	368	E	Humber 7702	E517050 N423565	21/03/94		25/03/94
Anglian	366	E	Humber 7702	53 41.71N 00 13.62W	27/09/94		06/10/94
Anglian	366	E	Humber 7702	53 41.71N 00 13.62W	27/09/94		06/10/94
Anglian	336	E	Humber 7728	E539261 N405563	21/03/94		25/03/94
Anglian	336	E	Humber 7728	E539261 N405563	21/03/94		25/03/94
Anglian	338	E	Humber 7728	53 31.68N 00 06.07E	26/09/94		06/10/94
Anglian	375	I	Humber Station NSTF	53 32.00N 00 20.00E	21/03/94		25/03/94
Anglian	405	E	R. Ouse Stow Bridge	52 38.20N 00 22.15E	18/08/94		19/08/94
Anglian	425	E	R. Ouse The Point Kings Lynn	52 47.04N 00 22.45E	18/08/94		19/08/94
Anglian	425	E	R. Ouse The Point Kings Lynn	52 47.04N 00 22.45E	18/08/94		19/08/94
Anglian	415	E	R. Ouse Freebridge Kings Lynn	52 44.38N 00 23.28E	18/08/94		19/08/94
North East	215	E	Tyne - Scotswood Bridge	54 57.89N 01 41.34W	26/04/94		28/04/94
North East	215	E	Tyne - Scotswood Bridge	54 57.99N 01 41.34W	12/09/94		14/09/94
North East	225	E	Tyne - Hebburn	54 58.09N 01 31.49W	12/09/94		14/04/94
North East	235	E	Tyne - Lloyds Hailing Stn	55 00.47N 0125.84W	26/04/94		28/04/94
North East	235	E	Tyne - Lloyds Hailing Stn	55 00.47N 01 5.84W	26/04/94		28/04/94
North East	235	E	Tyne - Lloyds Hailing Stn	55 00.47N 01 25.84W	12/09/94		14/09/94
North East	245	I	Sea off Tyne	55 00.50N 01 08.00W	29/04/94		10/05/94
North East	255	E	Wear - South Hylton	55 54.22N 01 27.43W	05/05/94		10/05/94
North East	255	E	Wear - South Hylton	55 54.22N 01 27.43W	05/05/94		10/05/94
North East	255	E	Wear - South Hylton	54 54.22N 01 27.43W	28/09/94		06/10/94
North East	265	E	Wear - Queen Alexandra Bridge	54 54.80N 01 24.24W	05/05/94		10/05/94
North East	265	E	Wear - Queen Alexandra Bridge	54 54.80N 01 24.24W	05/05/94		10/05/94
North East	265	E	Wear - Queen Alexandra Bridge	54 54.80N 01 24.24W	28/09/94		06/10/94
North East	265	E	Wear - Queen Alexandra Bridge	54 54.80N 01 24.24W	28/09/94		06/10/94
North East	275	E	Wear - Sandy Point	54 55.05N 01 21.43W	28/09/94		06/10/94
North East	275	E	Wear - Sandy Point	54 55.05N 01 21.43W	28/09/94		06/10/94
North East	295	I	Tees - Sea	54 44.00N 00 53.00W	21/04/94		10/05/94
North East	325	E	Tees - Phillips Approach		23/08/94		29/08/94
North East	325	E	Tees - Phillips Approach		03/11/94		09/11/94
North East	305	E	Tees - Bamletts Right		23/08/94		29/08/94
North East	305	E	Tees - Bamletts Right		03/11/94		09/11/94
North East	315	E	Tees - No 23 Buoy		23/08/94		29/08/94

Initial Salinity	DO%	pH	Salinity Altered to 30	Corrected Salinity	PNR	Different to controls	Salinity adjusted PNR	WRc Sample Code No
15.10	117	7.6	No		28.1	*		
30.00	111	8.8	No		32.3	*		
0.00	113	8.2	Yes	30	100	*		
0.00	115	8.5	Yes	30	100	*		
35.00	109	7.6	No		24.1	*		
24.90	53	7.3	No		17.6	*		
0.50	96	8.3	Yes	30	100	*		
0.00	97	8.4	Yes	30	21.1	*		
17.70	92	7.8	Yes	30	38.2	*		
7.10	87	8.4	Yes	30	0			
0.00	97	8.4	Yes	30	7.8	*		
					0			
					2			
					10			
					10			
					13			
					0			
					N/A			
					N/A			
					2			
26.20	95	8	No		0			
14.70	70	7.7	Yes	30	66.2	*		
2.30	97	8.5	Yes	30	21	*		
6.80	100	8.5	Yes	30	14.4	*		
33.20	108	7.7	No		0			
20.80	113	7.7	No		50	*		
36.20	106	8	No		0			
32.30	106	8	No		0			
30.70	108	7.9	No		0			
34.40	110	8	No		0			
37.10	113	8	No		0.8			
34.40	107	8.1	No		1			
31.40	112	8.3	No		17	*		
24.10	96	8.1	No		24	*		
24.00	99	8.2	No		46	*		
29.30	115	8.2	No		25	*		
29.30	93	7.8	No		17.8	*		
31.70	110	8	No		3.0			
30.50	85	7.7	No		24.1	*		
								6b
4.00			Yes	32	2.4			66b
8.00			Yes	35	100			7b
16.00			Yes	33	8.5			65a
20.00			No		3.7			65b
20.00			Yes	34	-2.5			8a
28.00			No		7.1			8b
28.00			Yes	33	17.6			64a
32.00			No		-1.2			9a
34.00			No		18.7			53b
0.00			Yes	32	100			51a
27.00			No		-1.2			51b
27.00			Yes	32	-1.2			52b
18.00			Yes	34	0			20b
14.00			Yes	34	27.1			54b
18.00			Yes	34	13.1			58b
4.00			Yes	35	100			21a
30.00			No		30.8			21b
30.00			Yes	34	14.1			56a
31.00			No		11.9			22a
37.00			No		44.8			24a
20.00			No		85.5			24b
20.00			Yes	34	16.9			63b
10.00			Yes	33	100			25a
26.00			No		10.8			25b
26.00			Yes	35	7.2			62a
22.00			No		26.4			62b
22.00			Yes	33	12.4			61a
26.00			No		7.4			61b
26.00			Yes	34	8.6			23a
38.00			No		8.4			31a
36.00			No		15.5			71a
32.00			No		9.2			32a
34.00			No		50			72b
8.00			Yes	34	100			33a
34.00			No		11.8			

Table 5.1: NMP Oyster Embryo-Larval Bioassay Data

North East	315	E	Tees - No Z3 Buoy		03/11/94
North West	785	I	Off Lune/Wyre		02/06/94
North West	785	I	Off Lune/Wyre		28/07/94
North West	785	E	Mersey - Channel C1 Buoy		02/06/94
North West	785	E	Mersey - Channel C1 Buoy		28/07/94
North West	745	E	Mersey - Brombrough E1 Buoy	53 20.11N 02 57.22W	28/07/94
North West	705	I	Liverpool Bay - Burbo Bight	53 28.29N 03 15.58W	28/07/94
North West	755	E	Mersey - Seacombe Ferry	53 24.58N 03 00.48W	28/07/94
North West	735	E	Mersey - Runcorn Old Quay	53 20.80N 02 43.80W	28/07/94
North West	725	E	Mersey - Monks Hall	53 22.95N 02 36.71W	28/07/94
Solway RPB	15	I	Solway		01/06/94
Solway RPB	15	I	Solway		27/07/94
Southern	495	I	Selsey Bill	50 40.00N 0 50.00W	10/03/94
Southern	495	I	Selsey Bill	50 40.70N 00 49.60W	18/08/94
Southern	505	E	Southampton Water - Dock Head	50 52.90N 1 23.50W	10/03/94
Southern	505	E	Southampton Water - Dock Head	50 52.95N 01 23.30W	18/08/94
Southern	515	E	Southampton Water - East Brambles Buoy	50 47.20N 1 13.55W	10/03/94
Southern	515	E	Southampton Water - East Brambles Buoy	50 51.14N 01 12.77W	18/08/94
Southern	525	E	Southampton Water - Calshot	50 49.20N 1 18.00W	10/03/94
Southern	525	E	Southampton Water - Calshot		18/08/94
South West	545	E	Tamar Estuary - Halton Quay	50 28.00N 04 14.31W	21/03/94
South West	545	E	Tamar Estuary - Halton Quay	50 28.00N 04 14.31W	29/07/94
South West	545	E	Tamar Estuary - Halton Quay	50 28.00N 04 14.31W	29/07/94
South West	555	E	Tamar Estuary - Warren Point	50 25.35N 04 11.95W	21/03/94
South West	555	E	Tamar Estuary - Warren Point	50 25.35N 04 11.95W	21/03/94
South West	555	E	Tamar Estuary - Warren Point	50 25.35N 04 11.95W	29/07/94
South West	565	E	Tamar Estuary - Hamoaze	50 25.35N 04 11.95W	21/03/94
South West	565	E	Tamar Estuary - Hamoaze	50 25.35N 04.11.95W	21/03/94
South West	565	E	Tamar Estuary - Hamoaze	50.22.86N 04 11.37W	29/07/94
Welsh	615	I	Severn - Nash Point	51 18.00N 03 33.00W	28/11/94
Welsh	615	I	Severn - Nash Point	51 18.00N 03.33.00W	21/03/94
Thames			Thames - Sea Reach		30/03/94
Thames	435	E	Thames - Woolwich	51 29.77N 00 03.87E	30/03/94
Thames	435	E	Thames - Woolwich	51 29.77N 00 03.87E	10/10/94
Thames	455	E	Thames - Mucking	51 29.67N 00 29.46E	30/03/94
Thames	455	E	Thames - Mucking	51 29.67N 00 29.46E	10/10/94
Thames	455	E	Thames - Mucking	51 29.67N 00 29.46E	10/10/94
Thames	445	E	Thames - West Thurrock	51 27.92N 00 18.00E	30/03/94
Thames	445	E	Thames - West Thurrock	51 27.92N 00 18.00E	10/10/94
Thames	445	E	Thames - West Thurrock	51 27.92N 00 18.00E	10/10/94
Thames	465	I	Thames - The Warp	51 30.80N 00 58.00E	10/10/94
Welsh	625	E	Severn - Old Severn Rail Bridge		21/02/94
Welsh	625	E	Severn - Old Severn Rail Bridge	51 50.17N 02 27.95W	28/11/94
Welsh	645	E	Severn - English & Welsh Grounds	51 28.89N 03 00.10W	21/03/94
Welsh	645	E	Severn - English & Welsh Grounds	51 28.89N 03 00.10W	21/03/94
Welsh	645	E	Severn - English & Welsh Grounds	51 28.89N 03 00.10W	28/11/94
Welsh	645	E	Severn - English & Welsh Grounds	51 28.89N 03 00.10W	28/11/94
Welsh	635	E	Severn - No. 1 Beacon	51 33.06N 02 42.05W	21/03/94
Welsh	635	E	Severn - No. 1 Beacon	51 33.06N 02 42.05W	28/11/94
Welsh	635	E	Severn - No. 1 Beacon	51 33.06N 02 42.05W	28/11/94
Welsh	655	I	Cardigan Bay		06/06/94
Welsh	655	I	Cardigan Bay		03/08/94
Welsh	695	E	Dee Buoy No. 2		14/06/94
Welsh	695	E	Dee Buoy No. 2		01/08/94
Welsh	*4508	E	Dee off Shotton Breakwater		23/09/94
Welsh	*4508	E	Dee off Shotton Breakwater		23/09/94
Welsh	*4507	E	Dee DS Flint Castle	53 14.65N 03 05.73W	23/09/94
Welsh	*4507	E	Dee DS Flint Castle	53 14.65N 03 05.73W	23/09/94
North East	305	E	Tees - Bamletts Bight		15/03/95
North East	305	E	Tees - Bamletts Bight		26/09/95
North East	315	E	Tees - No23 Buoy		15/03/95
North East	315	E	Tees - No23 Buoy		26/09/95
North East	325	E	Tees - Phillips Approach		15/03/95
North East	325	E	Tees - Phillips Approach		26/09/95
North East	245	I	Sea off Tyne		01/05/95
North East	255	E	Wear - South Hylton		24/04/95
North East	255	E	Wear - South Hylton		06/09/95
North East	265	E	Wear - Queen Alexandra Bridge		24/04/95
North East	265	E	Wear - Queen Alexandra Bridge		06/09/95
North East	275	E	Wear - Sandy Point		24/04/95
North East	275	E	Wear - Sandy Point		06/09/95
North East	295	I	Sea - Tees		01/05/95
North East	235	E	Tyne - Lloyds Hailing St - Ion		08/08/95
North East	225	E	Tyne - Hebburn		08/08/95
North East	215	E	Tyne - Scotswood Bridge		06/09/95
Anglian		I	W39	TF5980043000	21/02/95
Anglian		I	W42	TF5670045400	21/02/95

09/11/94	32.00			No		8.6			73a
09/06/94	36.00			No		9.2			27a
11/08/94	32.00			No		15.1			37a
09/06/94	33.00			No		8.6			28a
11/08/94	32.00			No		-1.2			38a
11/08/94	30.00			No		4.7			38a
11/08/94	33.00			No		-2.3			40a
11/08/94	32.00			No		4.7			41a
11/08/94	16.00			Yes	32	10.5			43b
11/08/94	2.00			Yes	31	100			44b
09/06/94	32.00			No		8.2			26a
11/08/94	31.00			No		-2.3			42a
15/03/94	35.00			No		1.2			2a
18/08/94	34.00			No		7.4			47a
15/03/94	31.00			No		1.2			4a
16/08/94	34.00			No		8.2			48a
15/03/94	32.00			No		1.2			5a
18/08/94	36.00			No		-2.5			50a
15/03/94	30.00			No		1.2			3a
16/08/94	35.00			No		1.2			49a
25/03/94	8.00			Yes	33	25			13b
04/08/94	21.00			No		14.80			34a
04/08/94	21.00			Yes	32	9.80			34b
25/03/94	30.00			No		6			14a
25/03/94	30.00			Yes	34	6			14b
04/08/94	31.00			No		5.6			35a
25/03/94	28.00			No		4.8			15a
25/03/95	28.00			Yes	34	7.1			15b
04/08/94	34.00			No		11.50			36a
01/12/94	32.00			No		-1.2			74a
25/03/94	32.00			No		2.4			10a
30/03/94	34.00			No		47.8			16a
30/03/94	2.00			Yes	34	55.6			17b
12/10/94	10.00			Yes	34	100			67b
30/03/94	19.00			Yes	34	58.8			18b
12/10/94	26.00			No		7.5			69a
12/10/94	28.00			Yes	34	8.8			69b
30/03/94	35.00			Yes	33	97.6			19b
12/10/94	10.00			No		4.3			68a
12/10/94	24.00			Yes	34	5.4			68b
12/10/94	24.00			No		7.5			70a
22/02/94	22.00			Yes	33	8.3			1b
01/12/94	13.00			Yes	33	3.5			76b
25/03/94	26.00			No		15.5			11a
25/03/94	26.00			Yes	32	10.7			11b
01/12/94	28.00			No		-1.2			75a
01/12/94	28.00			Yes	33	1.2			75b
25/03/94	19.00			Yes	32	21.4			12b
01/12/94	23.00			No		-2.3			77a
01/12/94	23.00			Yes	33	0			77b
16/06/94	35.00			No		2.4			29a
11/08/94	34.00			No		3.5			46a
16/06/94	32.00			No		10.6			30a
11/08/94	33.00			No		-1.2			45a
28/09/94	23.00			No		1.2			56a
28/09/94	23.00			Yes	34	13.4			59b
28/09/94	27.00			No		6.1			60a
28/09/94	27.00			Yes	34	13.4			60b
16/03/95	14.60	96	6.6	Yes	32	100			
27/09/95	23.60	56	7.5	Yes	32.7	7.1			
16/03/95	28.60	93	7.4	Yes	34	-0.1	0.5		
27/09/95	32.40	66	7.8	No		-2.6			
16/03/95	32.90	100	7.6	No		-1.6			
27/09/95	33.10	80	8	No		-4.4			
02/05/95	34.00	110	8.1	No		13.9			
25/05/95	2.20	92	7.7	Yes	32.6	100			
07/09/95	27.10	68	7.9	Yes	32.4	0.4	-1.1		
25/05/95	10.90	94	7.7	Yes	32.1	7.5			
07/09/95	26.70	78	7.9	Yes	33.6	1.6			
25/05/95	14.10	100	7.6	Yes	32.4	3.5			
07/09/95	26.70	77	7.9	Yes	33.6	2			
02/05/95	33.60	109	8	No		3.6			
09/08/95	33.70	94	8	No		16.7			
09/08/95	30.40	64	7.6	No		48			
07/09/95	18.60	65	7.6	Yes	32.6	2.1			
24/02/95	31.20	60	7.7	Yes	33	15.3			
24/02/95	32.80	83	7.6	No		79.7			

Table 5.1: NMP Oyster Embryo-Larval Bioassay Data

Anglian	336	E	Humber 7728	06/03/95	08/03/95	28.20	113	7.7	Yes	33.2	2.3		4.1
Anglian	336	E	Humber 7728	21/09/95	22/09/95	32.00	97	7.5	No		80.5		
Anglian	356	E	Humber Ste III	07/03/95	10/03/95	2.20	95	7.8	Yes	32.8	100		
Anglian	356	E	Humber Ste III	21/09/95	22/09/95	14.40	97	8.1	Yes	30.2	23.5		
Anglian	368	E	Humber 7702	14/03/95	04/03/95	19.20	107	7.8	Yes	33.8	0.3		
Anglian	368	E	Humber 7702	21/09/95	22/09/95	26.40	98	7.8	Yes	31.6	0.5		
Anglian	375	I	Humber Station NSTF	07/03/95	10/03/95	32.60	104	7.8	No	32.8	1.1		
Anglian	405	E	R.Ouse Stow Bridge	21/02/95	24/02/95	0.40	77	7.7	Yes	32.4	100		
Anglian	405	E	R.Ouse Stow Bridge	26/07/95	28/07/95	5.60	90	8.1	Yes	32.2	100		
Anglian	415	E	R.Ouse Freebridge Kings Lynn	21/02/95	24/02/95	2.20	87	7.7	Yes	34.5	100		
Anglian	415	E	R.Ouse Freebridge Kings Lynn	26/07/95	28/07/95	27.80	78	7.8	Yes	31.8	-7.7		-12
Anglian	425	E	R.Ouse The Point Kings Lynn	21/02/95	24/02/95	3.70	93	7.8	Yes	34.2	100		
Anglian	425	E	R.Ouse The Point Kings Lynn	26/07/95	28/07/95	31.80	74	8	No		-11		
Thames	435	E	Thames - Woolwich	27/03/95	30/03/95	0.60	102	7.5	Yes	33.8	100		
Thames	435	E	Thames - Woolwich	04/09/95	07/09/95	9.10	55	7.5	Yes	32.2	7.8		
Thames	445	E	Thames - West Thurrock	27/03/95	30/03/95	14.10	98	7.6	Yes	32.2	0.4		
Thames	445	E	Thames - West Thurrock	04/09/95	07/09/95	19.70	67	7.6	Yes	34.1	-0.7		
Thames	455	E	Thames - Mucking	27/03/95	30/03/95	22.00	104	7.7	Yes	33	-2.2		
Thames	455	E	Thames - Mucking	04/09/95	07/09/95	23.40	69	7.7	Yes	32.9	-0.3		
Thames	465	I	Thames - The Warp	27/03/95	30/03/95	33.10	93	7.8	No		-0.9		
Thames	465	I	Thames - The Warp	04/09/95	07/09/95	34.60	85	8	No		2		
Southern	496	I	Selsey Bill	07/02/95	09/02/95	33.60	94	8.3	No		13.9		
Southern	495	I	Selsey Bill	13/09/95	14/09/95	34.80	97	7.9	No		-1.1		
Southern	505	E	Southampton Water - Dock Head	07/02/95	09/02/95	29.30	92	8.1	Yes	33.4	0		
Southern	505	E	Southampton Water - Dock Head	13/09/95	14/09/95	32.60	85	7.9	No		-1.2		
Southern	515	E	Southampton Water - East Brambles Buoy	07/02/95	09/02/95	31.96	94	8.3	No		-2.2		
Southern	515	E	Southampton Water - East Brambles Buoy	13/09/95	14/09/95	33.80	96	7.9	No		7.3		
Southern	525	E	Southampton Water - Calshot	07/02/95	09/02/95	29.00	83	8.3	Yes	33.5	-4.3		
Southern	525	E	Southampton Water - Calshot	13/09/95	14/09/95	34.10	92	7.9	No		3.6		
South West	545	E	Tamar Estuary - Halton Quay	23/02/95	26/02/95	0.00	106	8.6	Yes	32.4	100		
South West	545	E	Tamar Estuary - Halton Quay	20/07/95	21/07/95	20.60	90	7.8	Yes	32	100		
South West	555	E	Tamar Estuary - Warren Point	23/02/95	26/02/95	10.90	100	7.3	Yes	32.4	100		
South West	555	E	Tamar Estuary - Warren Point	20/07/95	21/07/95	32.70	96	7.9	No		-0.1		
South West	565	E	Tamar Estuary - Hamoaze	23/02/95	26/02/95	18.40	102	7.6	Yes	33.3	82.6		
South West	565	E	Tamar Estuary - Hamoaze	20/07/95	21/07/95	33.00	96	7.9	No		-1		
South West	585	O	Off Plymouth Sound	20/07/95	21/07/95	35.00	107	7.8	No		1.3		
Welsh	615	I	Severn - Nash Point	09/02/95	27/02/95	28.00	88	8	Yes	33.4	-3.2		-1.9
Welsh	625	E	Severn - Old Severn Rail Bridge	09/02/95	27/02/95	0.80	86	7.8	Yes	34.6	100		
Welsh	635	E	Severn - No. 1 Beacon	09/02/95	27/02/95	10.30	86	7.9	Yes	32.8	83.8		
Welsh	645	E	Severn - English & Welsh Grounds	09/02/95	27/02/95	18.20	91	8	Yes	33.7	8.2		
Welsh	653	I	Cardigan Bay	20/10/95	14/02/95	34.20	99	7.9	No		7.9		
Welsh	675	E	Dee - Shotton Breakwater	22/11/95	24/03/95	19.60	104	7.5	Yes	34.3	3.6		
Welsh	673	E	Dee - Shotton Breakwater	20/03/95	28/11/95	25.70	86	7.7	Yes	31.3	-4		
Welsh	685	E	Dee - Flint Castle	22/11/95	24/03/95	29.70	101	7.8	Yes	33.6	-0.8		-1.3
Welsh	695	E	Dee - Flint Castle	22/08/95	29/11/95	30.00	100	7.8	No		-2		
Welsh	695	E	Dee - Buoy No 2	20/11/95	24/03/95	32.00	101	7.8	No		0.8		
Welsh	695	E	Dee - Buoy No 2	22/03/95	21/11/95	32.50	101	7.8	No		-10		
North West	705	I	Liverpool Bay - Burbo Bight	20/11/95	24/03/95	30.20	97	7.9	No		5.8		
North West	785	I	Liverpool Bay - Burbo Bight	19/04/95	21/11/95	32.70	91	7.9	No		2.8		
North West	725	E	Mersey - Monks Hall	08/11/95	21/04/95	0.40	90	7.2	Yes	32.7	100		
North West	725	E	Mersey - Monks Hall	18/04/95	18/11/95	1.60	78	7	Yes	32.4	100		
North West	735	E	Mersey - Runcorn Old Quay	07/11/95	21/04/95	13.20	85	7.3	Yes	33	-4.6		
North West	735	E	Mersey - Runcorn Old Quay	22/03/95	18/11/95	24.80	93	7.2	Yes	38.6	16.7		
North West	745	E	Mersey - Bromborough E1 Buoy	07/11/95	24/03/95	15.70	96	7.3	Yes	34.2	9.5		
North West	745	E	Mersey - Bromborough E1 Buoy	22/03/95	18/11/95	30.80	102	7.5	No		0.8		
North West	755	E	Mersey - Seacombe Ferry	07/11/95	24/03/95	31.80	100	7.5	Yes	33.4	26.7		
North West	755	E	Mersey - Seacombe Ferry	22/03/95	18/11/95	32.60	103	7.9	No		4.5		
North West	765	E	Mersey - Channel C1 Buoy	20/11/95	24/03/95	30.10	100	7.8	No		84		
North West	765	E	Mersey - Channel C1 Buoy	19/04/95	21/11/95	32.20	95	7.8	No		-8.5		
North West	785	I	Off Lune/Wyre	n/a	21/04/95	31.60	104	7.8	No		-6.8		
Solway RPB	15	I	Solway		17/03/95	18.80	109	7.6	Yes	33.3	-2.1		

* - not NMP No.

6. BIOACCUMULATION

To be provided at a later date.

7. WATER CHEMISTRY

7.1 Methods

All samples were taken between 0m and 1m below the surface of the water. At estuarine sites samples were generally recovered at or near high water.

7.2 Limits of detection

The extent to which data have been recorded below the limit of detection (LOD) is shown in Table 7.1. This shows the number of samples taken and the number below the LOD, for each determinand and Environment Agency Region. Table 7.2 shows the number of different LODs reported for each determinand and Environment Agency Region. The general trend has been for falling LODs over time as analytical techniques have improved or better accuracy has been demanded.

For many determinands the number of samples reported below the detection limit is high. While this might appear encouraging as an indicator of good water quality it raises two questions: (a) Are the existing LODs appropriate and applied uniformly across all regions and laboratories, and (b) How should data below the LOD be interpreted?

With regards to (a), a review and confirmation of required analytical performance is overdue. A glance at the summary statistics for any particular metal or organic compound shows how many different LODs have been reported between and within regions. The future NMP programme management should address this issue.

For this report data recorded below the LOD are assigned a value of half the LOD. Statistics derived from data where 50% or more samples are below the LOD are not plotted on maps.

7.3 Completeness of sampling and analytical programme

Sample coverage was mainly good, with samples being taken at the prescribed sampling frequency at most sites, for most determinands. Table 7.1 shows where there are notable gaps in the sampling programme.

The mandatory determinands which have been completely omitted by at least one region are: azinphos-ethyl, trifluralin, trichlorobenzene and Secci depth. In addition North West Region appears to have under reported azinphos-methyl, dichlorvos, fenthion, fenitrothion, malathion, parathion and parathion-methyl. The reasons for these gaps are accidental omission, misinterpretation of the plan or because certain labs couldn't analyse for some determinands. This will be addressed by the Environment Agency in future programmes.

Analysing water samples for PAHs was not mandatory and no results were reported.

All available data have been examined and analysed because of the limited amount collected so far. It is recommended that for the UK NMP (holistic) report only post AQC data are used.

Appendix I contains statistical summaries for selected determinands by site. These determinands were selected because overall they had a significant number of values reported above the LOD. From these it can be seem which sites have samples or determinands missing.

To produce a mean, median and coefficient of variation of concentration all values reported as less than the LOD have been substituted with half of the LOD. Minimum and maximum values are determined before substitution. Where the majority of samples are below the LOD this has led to median values which are smaller than the minimum. Medians have been calculated non-parametrically. If all results are below the LOD then the maximum value will be equal to the highest LOD.

The number of samples required at estuarine sites over the five years is 20 (5 for intermediate sites). It is considered that 4 samples per year, over 5 years, are insufficient to detect temporal trends, so data analysis has concentrated on exploring spatial variations.

There has been no attempt to remove outliers from the data at this stage.

7.4 Spatial variation of determinands

Data for the period 1991 to 1995 have been combined due to the limited data set. All AQC data have been used. Figures 7.1 to 7.23 show the spatial distribution of selected determinands. Table 7.3 summarises the spatial variation of determinands. The two maps in each figure show median concentrations (upper figure) and maximum concentrations (lower figure). In the median maps:

(i) If less than 4 samples are available for a site a dark star has been plotted.

(ii) If the number of values reported below the LOD is more than half of all samples then a light star is plotted.

(iii) If the number of values reported below the LOD is less than half of all samples a light circle is plotted scaled according to the median concentration.

In the maximum concentration figures the value is plotted regardless of how much data there is and before substitution for values below the LOD. If all results at a site are below the LOD the maximum concentration reflects the maximum LOD itself. There are some outliers in the data sets, but these have not been removed for this analysis. The medians are not affected by outliers and so allow more robust conclusions to be made compared to maximum values.

In the following summaries the median concentrations are compared with the estuarine EQS, where applicable, for each determinand (an estuarine EQS is usually expressed as an annual mean concentration). This is to provide a rough measure of the level of contamination at each site. A median value described as being above or below an EQS is intended to be purely indicative and is not to taken as evidence of compliance or failure of any waters with respect to any standards or legislation. The EQSs are mainly derived from the Dangerous Substances Directive (76/464/EEC) and daughter directives which cover List 1 substances and their references are presented in the text (e.g. mercury, 82/176/EEC).

7.4.1 Physical Determinands

Salinity (Figure 7.1) The most notable feature is the large number of sites (10 out of 57) with less than four samples, although some of these are in estuaries where there are a large number of sampling sites. The figure shows the natural pattern expected.

7.4.2 Nutrients

Ammonia as N (Figure 7.2) The highest median values occur in the Tees and Mersey as do the highest maximum values. Six sites reported median values above 1 mg/l (71.4 uM/l) and seven sites reported maximum concentrations above 5 mg/l (357 uM/l).

Nitrate as N (Figure 7.3) - The general tendency is for nitrate to decrease from the freshwater limit to the mouth of estuaries. The largest median values occur in the Thames as do the largest maximum values. Four sites reported median values above 5 mg/l (357 uM/l) and two sites reported maximum concentrations above 10 mg/l (714 uM/l).

Nitrite as N (Figure 7.4) - The highest median values were reported for Ouse, Wear, Tees, Mersey and Thames. The general tendency is for median nitrite to decrease from the freshwater limit to the bottom of estuaries. The largest maximum values were recorded in the Tees and the Thames. Three sites reported median values above 0.1 mg/l (7.14 uM/l) and five sites reported maximum concentrations above 0.5 mg/l (35.7 uM/l).

Orthophosphate as P (Figure 7.5) - The Thames had the highest median concentrations, reflecting large inputs from sewage in this catchment, followed by the Tees and Wear. The largest maximum concentrations were recorded in the Tamar and Thames. Four sites reported median values above 1 mg/l (32.3 uM/l) and four sites reported maximum concentrations above 5 mg/l (162 uM/l).

Silicate as Si (Figure 7.6) - The general tendency is for silicate to decrease from the freshwater limit to the mouth of estuaries. The largest median and largest maximum values were recorded in the Thames and Mersey, although the distribution of maximum values is quite even across all the estuaries monitored. Three sites reported median values above 5 mg/l (178 uM/l) and five sites reported maximum concentrations above 10 mg/l (356 uM/l).

Chlorophyll a (Figure 7.7) - The highest median values were reported for the Tees, Ouse, Dee and Mersey. In these areas the median value ranged from 15 - 23 ug/l which exceeds that considered to be typical of eutrophic waters (10 ug/l) (DoE Methodology, 1993). Only the Tyne, Wear, Severn, Tamar, Solent and Humber had median values < 10 ug/l. The largest maximum concentrations were in the Tees and Ouse.

7.4.3 Metals

Mercury (Figure 7.8) The median concentration at most sites was below the LOD. There were 3 exceptions to this: one site in each of the Tyne, Tees and Thames. The largest maximum concentrations were measured in the Wear, The Wash, Severn, Dee and Mersey. To put this into context, the EQS for dissolved mercury in estuaries is 0.5 ug/l (as an annual

mean, 82/176/EEC). Hence, the highest median values of 0.05 ug/l are still an order of magnitude less than the EQS.

Cadmium (Figure 7.9) Many estuaries have median concentrations below the LOD and only 5 estuaries had median values above the LOD: the Tyne, Wear, Tees, Thames and Severn. Of these the Thames and Severn median concentrations were generally higher, reaching 0.37 ug/l, which is small compared to the EQS for estuaries affected by discharges (5 ug/l, annual mean, 83/513/EEC) and the EQS for other coastal waters (2.5 ug/l, annual mean). The maximum concentrations were highest in the Tyne, Tees, Wear and Severn. There were also high maximum values reported for the mouth of the Humber and off Lune/Wyre.

Copper (Figure 7.10) The largest median concentrations were found in the Humber and Thames. The estuarine EQS for copper is 5 ug/l (annual mean, 76/464/EEC) and median values exceed this in the Thames and one site in the Humber. These concentrations are thought to reflect the large populations living in those catchment areas, the copper deriving from domestic and industrial sources. The largest maximum concentrations were measured in the Tees.

Lead (Figure 7.11) The majority of data for most of the sites were below the LOD. The largest median concentrations were found in the Tyne, Wear, Tees and Thames, as were the largest maximum values, but these medians are well below the EQS of 25 ug/l (annual mean, 76/464/EEC).

Nickel (Figure 7.12) The highest median values, up to 15 ug/l, were recorded in the Thames (cf. EQS of 30 ug/l, annual mean 76/464/EEC). The majority of sites have median values an order of magnitude below the EQS. The largest maximum values were measured in the Tyne, Wear and Tees.

Zinc (Figure 7.13) The largest median values occur in the Tyne, Wear, Tees and Thames, with the largest maximum values falling in the Tyne, Wear and Tees. Most sites have median values below 25 ug/l (cf. EQS of 40 ug/l, annual mean, 76/464/EEC). Median concentrations are larger than the EQS at 1 site in the Tyne and 1 site in the Thames. Elevated levels of Zinc in the Tyne reflects the historic mining activities in the freshwater catchment.

Arsenic (Figure 7.14) The majority of sites have median concentrations below the LOD, where sufficient samples were taken. Only 3 estuaries have medians above the LOD: the Humber, Ouse and Tamar. The inclusion of the Tamar reflects historic mining activity in this catchment. The same areas had the largest maximum values. All values were low compared with the EQS of 25 ug/l (annual mean, 76/464/EEC). Although analysis for arsenic was not mandatory in NMP it was considered that omitting the data from this report would be misleading .

Chromium (Figure 7.15) Most sites have median concentrations below the LOD and only 4 estuaries have some sites with medians above the LOD. The largest median concentrations were found in the Tyne, Wear, Tees and Thames, but these were very low compared with the estuarine EQS of 15 ug/l (annual mean, 76/464/EEC). The largest maximum values occurred in the Tyne, Wear, Tees and Tamar.

7.4.4 Organic compounds

gamma-HCH (Lindane) (Figure 7.16) The majority of data for most of the sites were below the LOD. The EQS is 0.02 ug/l (annual mean, 84/491/EEC) and one site in the Thames had a median concentration marginally above this value. The largest maximum value was found in the Tyne.

Carbon tetrachloride (Figure 7.17) All samples were small compared to the EQS (12 ug/l annual mean, 86/280/EEC). The largest maximum concentrations were reported in the Wear and Severn.

Chloroform (Figure 7.18) All median concentrations were small compared to the EQS (12 ug/l, annual mean, 86/280/EEC, 88/347/EEC). The largest median concentrations were found in the Tees and Mersey. Very few samples were reported above the LOD. The largest maximum values were reported for sites in the Wear and Tees.

Simazine (Figure 7.19) - There were very few samples at most sites and few data were reported above the LOD, so concentrations were generally very low. Only 6 sites had median concentrations above the LOD. The EQS proposed by DoE for this determinand is 2 ug/l and the largest value reported was 1 ug/l. The largest median concentrations were found in the Humber, Ouse and Thames and the largest maximum values were all LODs.

Atrazine (Figure 7.20) - There were very few samples at most sites and few samples reported above the LOD, so concentrations were generally very low. Only 8 sites had median concentrations above the LOD. The EQS proposed by DoE for this determinand is 2 ug/l and the largest value reported was 1 ug/l. The largest median concentrations were found in the Humber, Ouse and Thames and the largest maximum values were all LODs.

Trichloroethylene (Figure 7.21) There were very few samples at most sites and a few rare samples reported above the LOD, so that only 1 site in the Tees showed a median concentration above the LOD with 0.1 ug/l (cf. EQS of 10 ug/l, annual mean 90/415/EEC). The largest maximum value occurred in the Wear.

Tetrachloroethylene (Figure 7.22) The largest median concentrations were found at isolated sites in the Wear and Mersey and the largest maximum value of 10 ug/l in the Severn (cf. EQS of 10 ug/l, annual mean 90/415/EEC). There were very few samples at most sites and the majority of values were below the reported LOD.

Trichloroethane (Figure 7.23) There were very few samples at most sites and median concentrations were reported above the LOD in the Mersey and in the north east. The largest maximum values were found in the Tyne and Tees.

7.4.5 Other determinands

Table 7.1 shows the number of sample results reported by each Region per determinand and the number reported below the LOD. Many determinands have insufficient positive results for a meaningful analysis. As such they have not been included in the summary statistics of

Appendix I and have not been presented graphically.

7.4.6 Summary

Table 7.3 Summary of spatial variation of determinands

Determinand	Median Concentration	Maximum Concentration	Sites with < 4 samples (all sites)
Ammonia	Tees, Mersey (2 - 8 mg/l)	Tees, Mersey	9 #
Nitrate	Thames (5 - 10 mg/l)	Thames	16 #
Nitrite	Wear, Tees, Thames, Mersey (0.1 - 0.2 mg/l)	Tees, Thames	7 #
Orthophosphate	Thames (1 -2 mg/l)	Tamar	15 #
Silicate	Thames, Mersey (5 - 10 ug/l)	Thames, Mersey	31 #
Chlorophyll a	Tees, Ouse, Thames, Dee, Mersey (10 - 23 ug/l)	Tees, Ouse	9 #
Mercury	All < LOD except for Tyne, Tees, Thames All << EQS	Wear, Mersey, Dee, Severn	10 #
Cadmium	All < LOD except Tyne, Wear, Tees, Thames, Severn All << EQS	Tyne, Wear, Tees, Severn	7 #
Copper	All < EQS except Thames, Humber	Tees	7 #
Lead	All < LOD except Tyne, Wear, Tees, Thames All < EQS	Tyne, Wear, Tees, Thames	6 #
Nickel	All < EQS	Tyne, Wear, Tees	7 #
Zinc	All < EQS except Tyne, Thames	Tyne, Wear, Tees	4 #
Arsenic	All < LOD except Humber, Ouse, Tamar All results < EQS	Humber, Ouse, Tamar	37 @
Chromium	All < LOD except Tyne, Wear, Tees, Thames All < EQS	Tyne, Wear, Tees	12

gamma-HCH (Lindane)	All < EQS except Thames	Tyne, Ouse, Thames	6
Carbon tetrachloride	All results < EQS	Wear, Severn	13 *
Chloroform	All < EQS	Wear, Tees	10 *
Simazine	All < LOD except Humber, Ouse, Thames, Severn All results << EQS	Humber, Ouse, Thames	21 *
Atrazine	All < LOD except Humber, Ouse, Thames, Severn All results << EQS	Humber, Ouse, Thames	21 *
Trichlorethylene	All < LOD except Tees All << EQS	Wear	25 *
Tetrachloroethylene	All < LOD except Wear, Mersey All << EQS	Severn	24 *
Trichloroethane	All < LOD except Mersey, Tyne, Wear, Tees	Tyne, Tees	21 *

to be analysed for at all sites
@ not a mandatory determinand
* to be analysed for at estuarine sites only.

This table shows that a large number of substances are generally below LODs. Median concentrations are also generally below the EQSs although median concentrations approach or exceed the EQS in a few places (for copper, zinc and Lindane). However, medians are based on all the available data and may mask a tendency for concentrations to fall over the period 1991 to 1995. For example, North East Region concentrations tended to be higher in the years 1991 and 1992. The decline in concentration results reflects the regulatory and pollution prevention and control activities of the Environment Agency and predecessor organisations and investment by industry and water companies.

The highest concentrations are often found in the industrialised estuaries of the north east, with highest pesticides in the Humber, Ouse and Thames, reflecting a more domestic or agricultural nature. The "cleanest" estuaries are the Solent and Cardigan Bay, reflecting a lack of industry or large population.

7.5 Variation of metals with salinity in major estuaries

This analysis aims to highlight issues relating to estuarine processes and has been performed to keep in line with the other NMP regional reports and the UK NMP (holistic) report. Figures

7.24 to 7.34 show the variation of 8 dissolved metals with salinity in the major estuaries covered in the NMP. The 8 metals are: mercury, cadmium, copper, lead, nickel, zinc, arsenic and chromium. In a simple estuary with no complicated inlets or tributaries, where the predominant source of a particular dissolved metal is the riverine input, one might expect to see a straight line plot of metal against salinity for a metal exhibiting conservative behaviour. The line would run from high metal concentration and low salinity to low metal concentration and high salinity. This arises from the fact that in estuaries salinity is a measure of dilution. By plotting all the data from several years in this way we might expect a scattered band instead of a line but the principle still holds. Not all metals data were accompanied by salinity measurements and so these plots may have some metal determinations missing.

If a plot is not clearly linear other factors must be considered: e.g. the river is not a source of the metal, the metal concentration in the river is not constant, there might be complex interactions between the dissolved phase and sediments and suspended particles, there may be other freshwater inputs, there may be additional point or diffuse sources of the metal in the estuary, or offshore, or aerial deposition may be important. Plots are also affected by LODs e.g. Hg, Cd in the Ouse.

Few of the metal vs salinity plots show this idealised behaviour, although some do show a general trend of falling metal concentrations with increasing salinity (e.g. Zn in the Tyne, Cu, and Zn in the Thames). Most plots contain outliers that may mask trends. The Solent may even show trends in the opposite direction, but the salinity range is limited.

Most metal vs salinity plots indicate that simple riverine input with conservative mixing is not the dominant feature, although generally the data are too limited for this type of study. If we want to establish this type of relationship it might be better to consider specific, intensive surveys throughout one day and not mix data from different surveys.

Monitoring programmes have been in place for many years to identify the source of contaminants and NMP forms part of this monitoring framework. The Environment Agency, and predecessor organisations, have used the experience gained from these programmes to control point sources of pollution using their regulatory powers and by focussing on major issues highlighted by the Urban Waste Water Treatment Directive, Dangerous Substances Directive and Annex 1A and PARCOM load reduction programmes. Although analyses like the one described here may help identify or confirm local estuarine processes and complexity of interactions in coastal waters, real improvements in environmental quality are already resulting from pollution prevention and control measures.

Table 7.1: NMP Water Chemistry, Samples taken

Number of samples reported below the LOD/Total samples taken

Determinand	ANGLIAN	NORTH EAST	NORTH WEST	SOUTH WEST	SOUTHERN	THAMES	WELSH
Dissolved Aluminium 0.45um (ug/l Al)							
Dissolved Mercury 0.45um (ng/l Hg)	133/197	80/151	116/163	52/62	71/82	14/22	117/153
Dissolved Cadmium 0.45um (ng/l Cd)	103/115	92/202	115/176	41/64	131/146	8/38	33/156
Dissolved Copper 0.45um (ug/l Cu)	13/116	44/211	5/173	1/38	1/141	2/50	7/156
Dissolved Lead 0.45um (ug/l Pb)	112/116	81/225	164/178	29/64	51/139	11/53	51/156
Dissolved Nickel 0.45um (ug/l Ni)	15/115	56/183	15/125	13/64	11/136	2/49	9/156
Dissolved Zinc 0.45um (ug/l Zn)	10/116	13/210	20/158	5/37	35/130	1/49	9/156
Dissolved Arsenic 0.45um (ug/l As)	37/194		0/2	2/36	137/148	22/22	
Dissolved Chromium 0.45um (ug/l Cr)	55/61	79/219	107/125	16/22	116/138	24/49	81/141
Tributyl tin (ng/l)			27/31	24/24	40/40		
PCB - C28 (ng/l)	114/114		3/4	50/50	101/101	21/21	2/2
PCB - C52 (ng/l)	117/117		4/4	12/12	102/102	21/21	2/2
PCB - C101 (ng/l)	117/117		3/4	50/50	99/99	21/21	2/2
PCB - C105 (ng/l)	25/25			10/10			0/1
PCB - C118 (ng/l)	112/112		3/4	50/50	100/100	21/21	2/2
PCB - C128 (ng/l)							
PCB - C138 (ng/l)	117/117		3/4	50/50	99/99	21/21	2/2
PCB - C153 (ng/l)	114/114		3/4	50/50	98/98	21/21	2/2
PCB - C156 (ng/l)	25/25			1/12			0/1
PCB - C170 (ng/l)							
PCB - C180 (ng/l)	114/114		3/4	50/50	94/95	19/19	2/2
alpha-HCH (ng/l)	155/155	210/210	91/91	42/47	139/151	50/50	69/69
beta-HCH (ng/l)	11/11	206/206	88/93	46/48	132/151	29/29	42/42
gamma-HCH (ng/l)	71/161	122/216	69/73	17/65	92/150	24/50	64/69
Dieldrin (ng/l)	117/122	215/215	91/91	65/65	149/150	50/50	144/144
Aldrin (ng/l)	122/122	213/213	91/91	65/65	145/150	50/50	151/151
Endrin (ng/l)	121/122	215/215	91/91	63/65	149/151	49/50	152/152
Isodrin (ng/l)	14/14	206/206	87/87	31/31	138/142	28/29	40/40
HCB (ng/l)	38/38	208/208	91/91	64/65	129/147	29/29	138/140
PCP (ng/l)	18/18	152/213	80/82	43/50	133/147	48/52	126/127
pp TDE (ng/l)	112/122		5/5	48/48	141/141	49/49	2/2
pp DDE (ng/l)	38/38		5/5	34/34	148/149	50/50	2/2
pp DDT (ng/l)	37/38		5/5	37/37	146/149	49/49	2/2
op DDT (ng/l)	119/119	214/214	89/91	63/64	150/151	47/47	52/52
HCBD (ng/l)	107/107	177/180	78/82	59/64	128/144	47/47	137/137
Carbon Tetrachloride (ug/l)	85/109	163/216	64/79	56/63	141/152	30/30	47/51
Chloroform (ug/l)	67/110	70/217	39/61	47/47	110/137	37/47	39/51
Trifluralin (ug/l)	12/14		87/87	11/36	62/63	18/18	38/40
Endosulfan (ug/l)	12/12	176/176	53/53	11/11	57/59	20/21	40/40
Simazine (ug/l)	41/76	48/57	44/58	23/25	44/44	11/27	29/41
Atrazine (ug/l)	40/74	49/62	46/58	22/25	44/44	8/24	28/41
Azinphos-Ethyl (ug/l)	14/14	61/61	1/1	19/19	40/40	17/18	
Azinphos-Methyl (ug/l)	14/14	52/52	1/1	11/12	113/113	19/20	37/37
Dichlorvos (ug/l)	14/14	52/53	1/1	25/25	123/123	16/16	39/39
Fenthion (ug/l)	13/13	50/50	1/1	24/24	39/39	4/4	39/39
Fenitrothion (ug/l)	14/14	61/61	1/1	16/25	119/125	16/18	39/39
Malathion (ug/l)	14/14	61/61	1/1	22/25	126/126	16/16	39/39
Parathion (ug/l)	14/14	56/56	1/1	13/13	122/122	19/20	39/39
Parathion-Methyl (ug/l)	14/14	61/62	1/1	25/25	43/43	16/19	39/39
Trichloroethylene (ug/l)	33/33	51/69	25/30	36/36	107/134	16/20	44/55
Tetrachloroethylene (ug/l)	32/33	52/75	22/33	35/36	122/131	10/20	41/50
Trichlorobenzene (ug/l)		168/204	0/1		11/116	25/28	34/40
1,2 Dichloroethane (ug/l)	33/33	97/191	77/78	31/33	98/115	29/29	54/54
Trichloroethane (ug/l)	33/33	68/189	29/46	30/36	88/115	24/29	44/50
Napthalene (ug/l)							
Phenanthrene (ug/l)							
Anthracene (ug/l)							
Fluoranthene (ug/l)							
Pyrene (ug/l)							
Benz[a]anthracene (ug/l)							
Chrysene/triphenylene (ug/l)							
Benzo[a]pyrene (ug/l)							
Benzo[e]pyrene (ug/l)							
Perylene (ug/l)							
Benzo[ghi]perylene (ug/l)							
Indeno[1,2,3-cd]pyrene (ug/l)							
Ammonia (mg/l N)	11/77	7/152	8/75	0/25	1/157	11/54	28/144
Nitrate (mg/l N)	3/10	18/146	14/73	0/12	4/160	0/40	0/50
Nitrite (mg/l N)	9/76	12/147	7/74	2/51	8/164	15/44	23/145
Orthophosphate (mg/l P)	5/18	1/118	5/73	2/53	12/163	0/52	0/143
Silicate (mg/l Si)	2/11	0/35	7/72	2/48	12/128	1/28	3/139
Dissolved Oxygen (% Saturation)	0/39	0/1	0/35	0/51	0/155		0/1
Dissolved Oxygen (mg/l)		0/136	0/88	0/22		0/30	0/36
Suspended Solids 105C (mg/l)	3/136	3/195	3/143	4/58	3/79	2/53	4/88
Chlorophyll a (ug/l)	13/175	21/175	1/110	7/50	2/112	0/39	5/153
Secci Depth (m)	0/28	0/57		0/45		0/1	0/42
Salinity	0/54	9/246	10/102	0/51	0/111	0/32	0/105
Temperature (deg C)	0/115	0/406	0/146	0/51	0/112	0/53	0/69

Table 7.2: NMP Water Chemistry, Number of different limits of detection

Determinand	ANGLIAN	NORTH EAST	ORTH WEST	SOUTH WEST	SOUTHERN	THAMES	WELSH
Dissolved Aluminium 0.45um (ug/l Al)							
Dissolved Mercury 0.45um (ng/l Hg)	3	2	6	2	6	3	5
Dissolved Cadmium 0.45um (ng/l Cd)	1	3	7	5	5	3	4
Dissolved Copper 0.45um (ug/l Cu)	3	1	2	1	1	2	4
Dissolved Lead 0.45um (ug/l Pb)	1	1	2	5	3	4	4
Dissolved Nickel 0.45um (ug/l Ni)	3	2	1	4	3	2	5
Dissolved Zinc 0.45um (ug/l Zn)	1	3	3	2	4	1	2
Dissolved Arsenic 0.45um (ug/l As)	4			2	3	2	
Dissolved Chromium 0.45um (ug/l Cr)	2	1	2	3	2	3	5
Tributyl tin (ng/l)			1	2	10		
PCB - C28 (ng/l)	1		1	15	9	3	1
PCB - C52 (ng/l)	1		1	7	11	3	1
PCB - C101 (ng/l)	1		1	15	9	3	1
PCB - C105 (ng/l)	1			3			
PCB - C118 (ng/l)	1		1	13	9	3	1
PCB - C128 (ng/l)							
PCB - C138 (ng/l)	1		1	15	9	3	1
PCB - C153 (ng/l)	1		1	13	9	3	1
PCB - C156 (ng/l)	1			1			
PCB - C170 (ng/l)							
PCB - C180 (ng/l)	1		1	12	9	3	1
alpha-HCH (ng/l)	2	3	4	5	5	4	3
beta-HCH (ng/l)	1	2	4	5	7	2	2
gamma-HCH (ng/l)	6	2	3	7	9	3	3
Dieldrin (ng/l)	25	4	3	6	7	4	4
Aldrin (ng/l)	9	2	3	6	6	4	4
Endrin (ng/l)	9	2	3	5	6	4	4
Isodrin (ng/l)	1	3	2	5	4	2	1
HCB (ng/l)	1	2	3	6	6	3	5
PCP (ng/l)	1	3	4	3	4	6	3
pp TDE (ng/l)	8		2	5	6	4	1
pp DDE (ng/l)	1		2	4	7	4	1
pp DDT (ng/l)	1		2	5	5	4	1
op DDT (ng/l)	6	2	3	7	8	4	3
HCBD (ng/l)	2	5	4	6	7	4	4
Carbon Tetrachloride (ug/l)	6	2	4	5	7	5	4
Chloroform (ug/l)	5	1	2	2	14	5	4
Trifluralin (ug/l)	1		5	4	8	2	2
Endosulfan (ug/l)	1	3	4	3	7	3	1
Simazine (ug/l)	3	2	4	2	4	2	2
Atrazine (ug/l)	4	2	4	2	4	3	2
Azinphos-Ethyl (ug/l)	1	4	1	4	8	1	
Azinphos-Methyl (ug/l)	1	1	1	2	8	1	3
Dichlorvos (ug/l)	1	1	1	2	7	1	1
Fenthion (ug/l)	3	1	1	3	8	1	1
Fenitrothion (ug/l)	1	1	1	4	8	1	1
Malathion (ug/l)	2	1	1	2	8	1	1
Parathion (ug/l)	2	1	1	1	8	1	1
Parathion-Methyl (ug/l)	2	1	1	3	8	1	1
Trichloroethylene (ug/l)	1	2	2	2	7	3	4
Tetrachloroethylene (ug/l)	1	2	2	3	6	3	4
Trichlorobenzene (ug/l)		3			3	4	2
1,2 Dichloroethane (ug/l)	1	2	1	2	11	5	3
Trichloroethane (ug/l)	1	2	2	3	5	4	4
Napthalene (ug/l)							
Phenanthrene (ug/l)							
Anthracene (ug/l)							
Fluoranthene (ug/l)							
Pyrene (ug/l)							
Benz[a]anthracene (ug/l)							
Chrysene/triphenylene (ug/l)							
Benzo[a]pyrene (ug/l)							
Benzo[e]pyrene (ug/l)							
Perylene (ug/l)							
Benzo[ghi]perylene (ug/l)							
Indeno[1,2,3-cd]pyrene (ug/l)							
Ammonia (mg/l N)	5	1	3		1	3	3
Nitrate (mg/l N)	1	2	3		3		
Nitrite (mg/l N)	4	2	5	1	7	4	4
Orthophosphate (mg/l P)	3	1	4	2	2		
Silicate (mg/l Si)	1		2	1	6	1	3
Dissolved Oxygen (% Saturation)							
Dissolved Oxygen (mg/l)							
Suspended Solids 105C (mg/l)	2	1	1	3	1	2	2
Chlorophyll a (ug/l)	1	1	1	2	1		3
Secci Depth (m)							
Salinity		2	1				
Temperature (deg C)							

8. SEDIMENT CHEMISTRY

8.1 Data

8.1.1 Summary of data set

Table 8.1 gives a breakdown of the data collection and return for each Environment Agency Region and survey type.

Table 8.1 Data collection and return

Region	Survey Type	First Sample	Last Sample
Anglian	Routine	15-June-1990	03-March-1994
North West	Spatial	22-March-1995	05-April-1995
North East	Routine	29-January-1991	03-December-1993
North East	Spatial	07-Mar-1994	16-March-1994
Southern	Routine	23-April-1991	11-May-1995
South West	Routine	09-February-1993	27-May-1993
South West	Spatial	15-March-1994	20-April-1994
Thames	Routine	14-November-1991	06-June-1995
Thames	Spatial	08-March-1994	04-May-1994
Welsh	Routine	11-May-1990	01-February-1995
Welsh	Spatial	14-February-1994	28-March-1995

8.1.2 Missing data

Spatial data was not reported by Anglian or Southern Region.
No Routine data was supplied by North West Region.
There was no data reported from any Region after June 1995.

There are 12 intermediate and 35 estuarine NMP sites within England & Wales. Data is available for 9 of the intermediate and 32 of the estuarine sites.

The intermediate sites with no data are:

375 Humber Jonus OSP2
385 Wash Jonus OSP6
575 Offshore Tamar

The estuarine sites with no data are:

415 Ouse @ Freebridge Kings Lynn
705 & 715 upper Mersey Estuary sites

There has been no consistency between Regions in the frequency of sampling or the division of sampling effort between single samples and spatial surveys. No systematic effort has yet been made to interpret the spatial data at present but this will be attempted when feasible. For the purposes of this report no distinction has been made between routine and spatial data.

Few Environment Agency Regions reported organic carbon content or performed a particle size analysis on their samples, so these determinands are not discussed.

8.2 Metals

8.2.1 Data manipulation.

In order to estimate the total metal concentration in sediments it is usual to digest samples using strong acids. The strength and type of acid used will determine the amount of metal solubilised. Two acids used for digestion are HF (hydrofluoric acid plus aqua regia) and AR (aqua regia alone). HF digestion aims for the total dissolution of sediment matrices, releasing all metal bound to and comprising the sediment matrix. With AR digestion there is no guarantee that the entire matrix will be solubilised and digestion may therefore be partial. The implications are that less metal might be brought into solution using AR than HF digestion. This means that AR digestion may provide underestimates of total metal concentrations compared to HF (Steve Rowlatt of MAFF, pers. comm., cites cases where metal concentrations have been greatly underestimated by using AR. See also Environment Agency, 1996). In addition a ring test carried out by ICES determined that HF gives less inter- and intra-laboratory variability in results than AR digestions carried out on the same sample (Loring and Rantala, 1988). However, by releasing all the metals in a sediment sample (using HF) estimates of the biologically available fraction may be overestimated. For health and safety reasons the Environment Agency currently uses AR digestion for analysis of metal concentrations, whilst MAFF, for example, uses HF. Firm conclusions based on a direct comparison of results from sites monitored by different organisations should be avoided.

Metals data are difficult to interpret unless they are normalised to take account of the varying nature of sediments. Normalisation to a sediment matrix constituent can help to identify areas where anthropogenic inputs of metals have elevated concentrations above the natural background. Usually this would be performed after HF digestion which solubilises the whole matrix. Using AR digestion limits the usefulness of this approach.

Aluminium has been used for this study as Al levels were available for the majority of the data points and this is consistent with the approach used by other UK NMP contributors. Anglian Region did not determine Al and thus all their data (including the North East Region point at Spurn Head) has had to be omitted from consideration. The Plan stipulates that chemical analysis of sediments should be performed on the <2 mm fraction. Analysis of some of the North East Region survey data was on the <63 µm fraction; this data was discarded as incompatible.

In areas with sediments derived by glacial processes, natural aluminium levels may be elevated, and lithium may be a better normaliser. Recent work by MAFF suggests that this effect will be

most pronounced along the north east coast between the Tweed and the Tees, and on the west coast between the Solway Firth & Morecambe Bay. (This generalisation is contrary to the results from the Solway intermediate site which had low Al concentrations.) However, Rowlatt & Lovell (1995) have shown that in the North Sea there is little overall difference whether Al or Li is used.

Metal:Aluminium (M/Al) ratios were calculated and the mean values of all valid data at each sampling location were determined. These are shown in Figures 8.1a-8.1h.

Site 15 (Solway Firth) is grouped with the Scottish estuaries in the NMP programme. The Firth divides England from Scotland and sediment sampling is undertaken by the Environment Agency. Data for this site were not included with the data for other sites and they are shown separately in Figure 8.2. The red bars represent the reference (M/Al) ratio equal to the pecked lines on Figures 8.1a-8.1h. The green lines are the measured (M/Al) ratios.

8.2.2 Interpretation

To determine the degree of metal enrichment in a particular sediment it is necessary to establish a baseline value. For Cd, Pb & Zn the mean values quoted by Rowlatt & Lovell (1995) for 51 Celtic Sea sediments were used. The baseline (M/Al) ratio for each metal is shown as a dotted line on Figures 8.1a-8.1h, and as a red bar on Figure 8.2. These lines were seen to pass through the lower values from our own data set, so a line was drawn through the lower values for the other 5 metals.

The baseline values used are: (M/Al)

As: 6.7×10^{-5}	Cd: 4.2×10^{-6}	Cr: 1.23×10^{-3}	Cu: 4.36×10^{-4}
Hg: 2.0×10^{-6}	Ni: 5.9×10^{-4}	Pb 1.4×10^{-3}	Zn: 2.3×10^{-3}

The Metal:Al ratios are plotted on a log scale and data were classified as follows:

- Data within 1 log of the baseline are classified as not enriched. This value is shown as the solid line on Figures 8.1a-8.1h
- Data between 1 log and 2 log are classified as enriched
- Data > 2 log above the base line are classified as significantly enriched.
- A summary of sites and the metals showing >1 log enrichment is given in Table 8.2.

Seventeen (out of 32) estuarine sites and five (out of 9) intermediate sites show enrichment, i.e. slightly more than 50% of sites.

8.2.3 Discussion

Intermediate sites

Plymouth Sound, Nash Passage (Severn Estuary), Burbo Bight (Liverpool Bay) and Lune/Wyre (Morecambe Bay) all showed elevated levels of arsenic. The Plymouth Sound results could be anticipated with the history of arsenic mining in the Tamar Catchment. It is

notable that all the sites from the Mersey to the Solway Firth show enrichment in As and Cd.

Estuarine sites

Most of the sites identified as enriched are in the estuaries impacted by mining or industry. Of note are the elevated levels of most metals (particularly arsenic) in the Tamar. Whilst the contamination of Mersey sediments by mercury from the chlor-alkali industry has been well documented, the degree of enrichment by cadmium and arsenic is less expected.

8.3 Organic Compounds

8.3.1 Data manipulation

At the majority of sites the organic content or particle size analysis of the sediments, required by the NMP protocol, is not available. It has therefore not been possible to relate the measured concentrations to sediment type.

The data contained many different LODs. Some of these were higher than real values. In order to avoid bias and potentially confusing results all data below the LOD was ignored, and each individual data item separately plotted (Figures 8.3a-8.3x, Figures 8.4a-8.4k). As with the metal data no distinction has been made between routine and spatial survey data.

8.3.2 Interpretation

The "drins"

Isodrin: A measurement in excess of 3 ug/kg was made at site 565 (Tamar, Hamoaze). Isodrin has never been available commercially in the UK.

Aldrin: Found in a few isolated samples in the Tyne, Tees, Wear, Thames, Solent, Tamar range from 1-4 ug/kg.

Endrin: Values are in the range 1-4 ug/kg which are significantly higher than the levels reported for Scottish Waters (<0.1 ug/kg)

Dieldrin: Ubiquitous except for the North West Region where all levels were reported as below the LOD. The majority of results are in the 2-6 ug/kg range. The highest values are from North East Region which is consistent with the Scottish data (sites 185, 195, 205 all > 2 ug/kg). The Scottish report quotes 0.02 ug/kg as a positive value. *There needs to be agreement in NMP on choosing LODs with good reasons.*

PCBs

Data is presented for the sum of the 7 ICES congeners (28, 52, 101, 118, 138, 153 &180). There are distinct peaks in the Thames and Severn Estuaries. Levels here are significantly higher (20-40 times) than the typical values quoted for Scottish Waters and 10 times the highest value in Scotland for the Clyde.

PAHs

Generally higher on the east coast than south or west coasts. The elevated values of naphthalene and phenanthrene in the north west (Mersey/Liverpool Bay) is notable as they were apparently absent elsewhere. In general the concentrations are significantly higher (10 times) than those reported for Scotland. This trend is consistent over 3, 4 and 5 ring compounds.

DDT family

The elevated levels of pp-DDT at 755 (Mersey), pp-DDE at 675 (Dee) and op-DDT at 585 (Plymouth Sound) are suspect. There is a similar suspect α-HCH also at 585. There is an apparent peak of pp-TDE between the Tees and the Wash.

Table 8.2 NMP Metal enriched sediment sites (ratio of Metal:Al)

Any value within 1 log of minimum is ignored
Any value within 2 log of minimum is shown as M
Any value >= 2 log of minimum is shown as **M** (i.e. bold lettering)

Intermediate sites		
15	Solway Firth	As, Cd
585	Plymouth Sound	As
615	Nash Point	**As**
705	Burbo Bight	As, Cd, Hg, Zn
785	Lune/Wyre	As, Cd
Estuarine Sites		
215	Tyne Scotswood Bridge	Cd, Zn
225	Tyne Hebburn	Cd
255	Wear Hylton Bridge	Pb
265	Wear Alexander Bridge	**Pb**
315	Tees Victoria Bridge	Hg
435	Woolwich	Cd, Cu, Hg, Pb
445	West Thurrock	Cd, Hg
455	Mucking	Cd
515	E Brambles	As, Hg

525	Calshot	As
545	Halton Quay	**As**, Cd, Cu, Hg
555	Warren Point	**As**, Cd, Cu, Hg, Pb, Zn
565	Tamar Hamoaze	As, Cu, Hg, Pb, Zn
625	Sharpness	As
745	Mersey E1	As, Cd, Hg, Zn
755	Seacombe Ferry	As, Cd, Hg, Zn
765	Mersey C1	As, Cd, Hg

9. CONCLUSIONS & RECOMMENDATIONS

9.1 Conclusions drawn from the monitoring plan results

9.1.1 Water Chemistry

The monitoring conducted so far has shown that the concentrations of substances measured by water chemistry are generally very low around the country, with a few exceptions.

The results show that in general the waters of estuaries in the north east (Tyne, Tees, Wear) and the Mersey and the Thames are the most heavily contaminated, reflecting the industrial activity in these areas. However, median concentrations were rarely higher than the EQS set in the Dangerous Substances Directive and were mostly an order of magnitude lower. There has been a major improvement in estuary water quality over the past 5 years due to the regulatory and pollution prevention and control activities of the Environment Agency and its predecessors and the significant investment by industry and water companies.

The Tamar is relatively highly contaminated with arsenic. This is due to spoil heaps from historical mining activity leaching arsenic into water courses.

The Humber and Severn show less water column contamination than might be expected for large estuaries. The six estuaries in the east of the country (Tees, Wear, Tyne, Humber, Ouse, Thames) show the highest nutrient concentrations, reflecting the higher population and agricultural activity. These estuaries also have the highest chlorophyll a concentrations, suggesting that they may be at higher risk of eutrophication. The Mersey and Dee also have high chlorophyll 'a' concentrations.

9.1.2 Sediment Chemistry

Subject to the reservations imposed by the analytical method, metal enrichment of sediments, with reference to aluminium, has been identified for sites in most estuaries. Most of this enrichment can be explained by the impact of industry (e.g. mercury in the Mersey) or mining (e.g. the elevation of most metals in the Tamar). Significant metal enrichment of estuarine sediments has been identified for sites in the Severn (arsenic at Nash Passage) and the Tamar (arsenic at Halton Quay and Warren Point).

Aldrin has been found in sediments in the north east, the Thames, Solent and Tamar. Highest endrin concentrations were measured in the Tamar. Dieldrin was found everywhere except the north west. The largest PCB concentrations were found in the Thames and Severn. While pp-DDT was found in most estuaries, op-DDT was recorded in the Tamar only and the largest pp-TDE concentrations were found in the Humber. The concentration of PAHs in sediments are generally higher on the east coast than the south or west coasts. The elevated values of naphthalene and phenanthrene in the Mersey and Liverpool Bay are notable as these substances were apparently absent elsewhere. In general the PAH concentrations are significantly higher (10 times) than those reported for Scotland. Lindane (γ-HCH) was detected in sediments in the Thames, Solent and Tamar.

9.1.3 Biological Effects

The most recent data (1995) show toxicity effects at sites in the Tees, Mersey, Humber, Ouse and Tamar. These effects, together with water chemistry and sediment chemistry data, highlight areas for further investigation.

9.1.4 Benthos

The distribution of diversity in estuaries is generally as expected: diversity increases from the heads of estuaries seawards. The spatial distribution of the average number of taxa has roughly the same pattern. The average numbers of individuals in the estuaries of the north east are much higher than elsewhere. The reason for this pattern is not clear. Effects such as localised organic and nutrient enrichment of sediments from effluent may play a part, although the data presented is too limited to support more conclusive analysis.

9.2 Conclusions from the monitoring plan itself

Consideration should be given to the following:

- *Revision of the site names list; clarification of their position and a NMP site code assigned*
- *Clarification of the method and timing of the sample collection*
- *Consider revising the embryo-larval bioassay test method and using the DTA Methods Guidelines*
- *Review data collection and analysis methods for sediment sampling, do particle size analysis and agree national methods and standards*
- *A review of determinands to be analysed for. Do we still need to investigate all of the current NMP determinands? Are there other substances that we should be investigating? Much of the analysis of water chemistry has been influenced heavily by the LOD. There is a need to review the LOD for each determinand, to decide whether it is good enough, perhaps by comparison with the EQS. We should also attempt to get consistent LODs nationally.*
- *If we want to examine processes, e.g. the distribution of dissolved metals down an estuary, it would be better to conduct special surveys than to use routine monitoring data of this type. In general it is very hard to establish any such relationships using this data.*
- *Are sufficient sites included? The coverage of sites may not be good enough for some aspects of the plan e.g. biological effects monitoring, whereas it may be more than necessary for some other determinands e.g. water column Cd, Hg, Pb, As, Cr are generally below the LOD even in estuaries where one might expect contamination.*

- *Are sufficient samples taken per year to answer the questions we need to answer?*
- *What are the questions we need to answer?*
- *Design the sampling programme to answer the questions.*

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FIGURES


Figure 2.1 NMP Water Column Sample Sites
NMP Site
Other Site
TYNE AT SCOTSWOOD BRIDGE (215)
TYNE AT HEBBURN (225)
TYNE AT LLOYDS HAILING STATION (235)
SEA OFF TYNE (245)
WEAR AT SANDY POINT (275)
WEAR AT QUEEN ALEXANDRA BRIDGE (285)
SEA AT TEES (295)
WEAR AT SOUTH HYLTON (255)
TEES AT THE GARES (325)
SOLWAY (15)
GREATHAM CREEK PHILLIPS APPROACH
TEES AT SMITHS DOCK
TEES AT HAVERTON HILL SHIPYARD
TEES AT VICTORIA BRIDGE (315)
TEES AT PRESTON PARK (305)
NORTH SEA TASK FORCE - TRENT FALLS (355)
OFF LUNE / WYRE (785)
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)
MERSEY CHANNEL C1 BUOY (765)
MERSEY ESTUARY AT CROSBY SHIP
NORTH SEA TASK FORCE - SPURN HEAD (335)
LIVERPOOL BAY BURBO BIGHT (705)
DEE BUOY NO.2 (695)
MERSEY ESTUARY AT SEACOMBE FERRY (755)
NORTH SEA TASK FORCE - OFF SHORE (375)
MERSEY ESTUARY AT MONKS HALL (725)
MERSEY RUNCORN OLD QUAY (735)
THE WASH N SEA TASK FORCE OFFSHORE POINT (385)
DEE OS FLINT CASTLE (4507)
MERSEY BROMBOROUGH E1 BUOY (745)
DEE OFF SHOTTON BREAKWATER (4508)
THE WASH CORK HOLE TIDE GAUGE
R.OUSE BUOY 13A
R.OUSE THE POINT KINGS LYNN (425)
R.OUSE FREEBRIDGE KINGS LYNN (415)
R.OUSE STOW BRIDGE (405)
CARDIGAN BAY (655)
SEVERN AT OLD SEVERN RAIL BRIDGE (625)
CHAPMAN BUOY
WOOLWICH (436)
WEST THURROCK (445)
THE WARP (465)
LONDON BRIDGE
SEVERN AT NO.1 BEACON (635)
SEVERN AT ENGLISH & WELSH GROUNDS (645)
ERITH
SEVERN AT NASH POINT (615)
MUCKING (455)
DOCK HEAD (505)
CALSHOT (525)
TAMAR ESTUARY, HALTON QUAY (545)
EAST BRAMBLES BUOY (515)
TAMAR ESTUARY, WARREN POINT (555)
SELSEY BILL (495)
TAMAR ESTUARY, HAMOAZE (565)
OFF TAMAR (575)
OFF PLYMOUTH SOUND (585)
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nmppnts.wor

Figure 4.1 Average Number of Taxa at NMP Locations from 1992.

Figure 4.2 Average Number of Individuals at NMP Locations from 1992.

Figure 4.3 Average Diversity (Shannon Weiner) at NMP Locations from 1992.

Figure 4.4 Average Number of Taxa at NMP Locations from 1993.

Figure 4.5 Average Number of Individuals at NMP Locations from 1993.

Figure 4.6 Average Diversity (Shannon Weiner) at NMP Locations from 1993.

Figure 5.1 1995 Oyster Embryo Larval Bioassay of NMP Samples (Percentage Net Response)

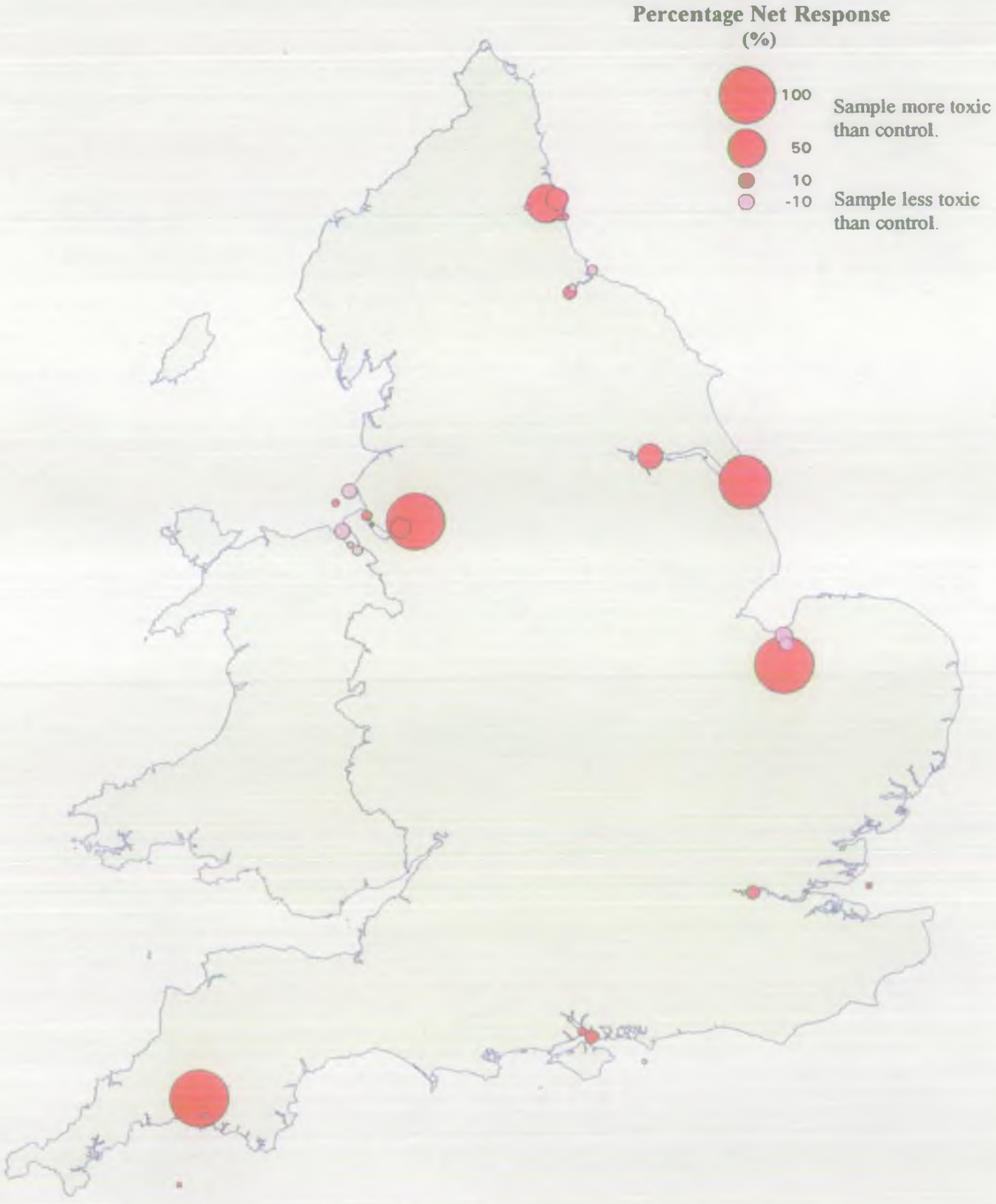


Figure 7.1 Salinity in NMP Samples from 1991-1995.

Figure 7.2 Concentration of Ammonia in NMP Samples from 1991-1995.

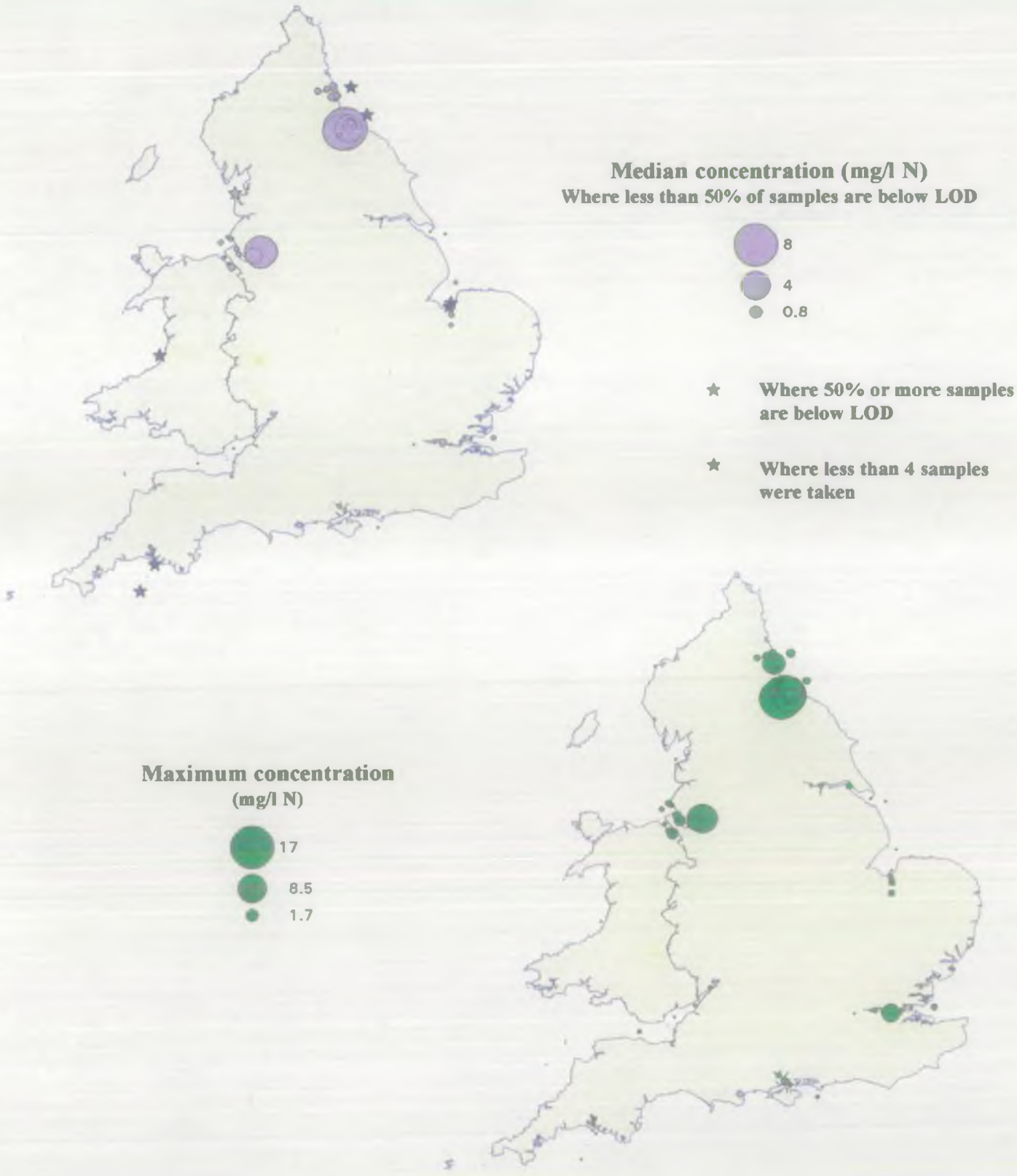


Figure 7.3 Concentration of Nitrate in NMP Samples from 1991-1995.

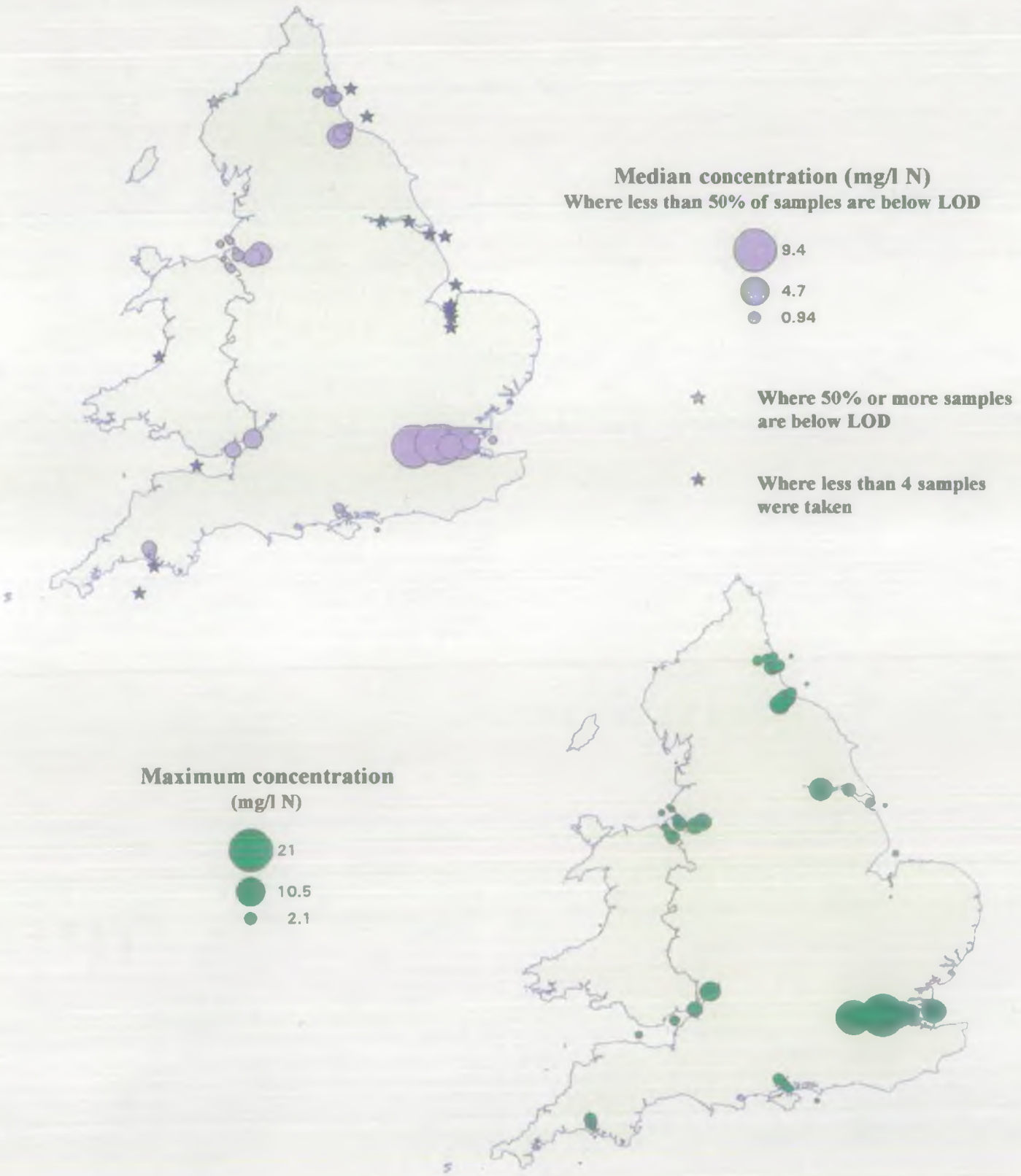


Figure 7.4 Concentration of Nitrite in NMP Samples from 1991-1995.

Figure 7.5 Concentration of Orthophosphate in NMP Samples from 1991-1995.

Figure 7.6 Concentration of Silicate in NMP Samples from 1991-1995.

Figure 7.7 Concentration of Chlorophyll a in NMP Samples from 1991-1995.

Median concentration (ug/l)
Where less than 50% of samples are below LOD

23
11.5
2.3

★ **Where 50% or more samples are below LOD**

★ **Where less than 4 samples were taken**

Maximum concentration (ug/l)

360
180
36

Figure 7.8 Concentration of Dissolved Mercury in NMP Samples from 1991-1995.

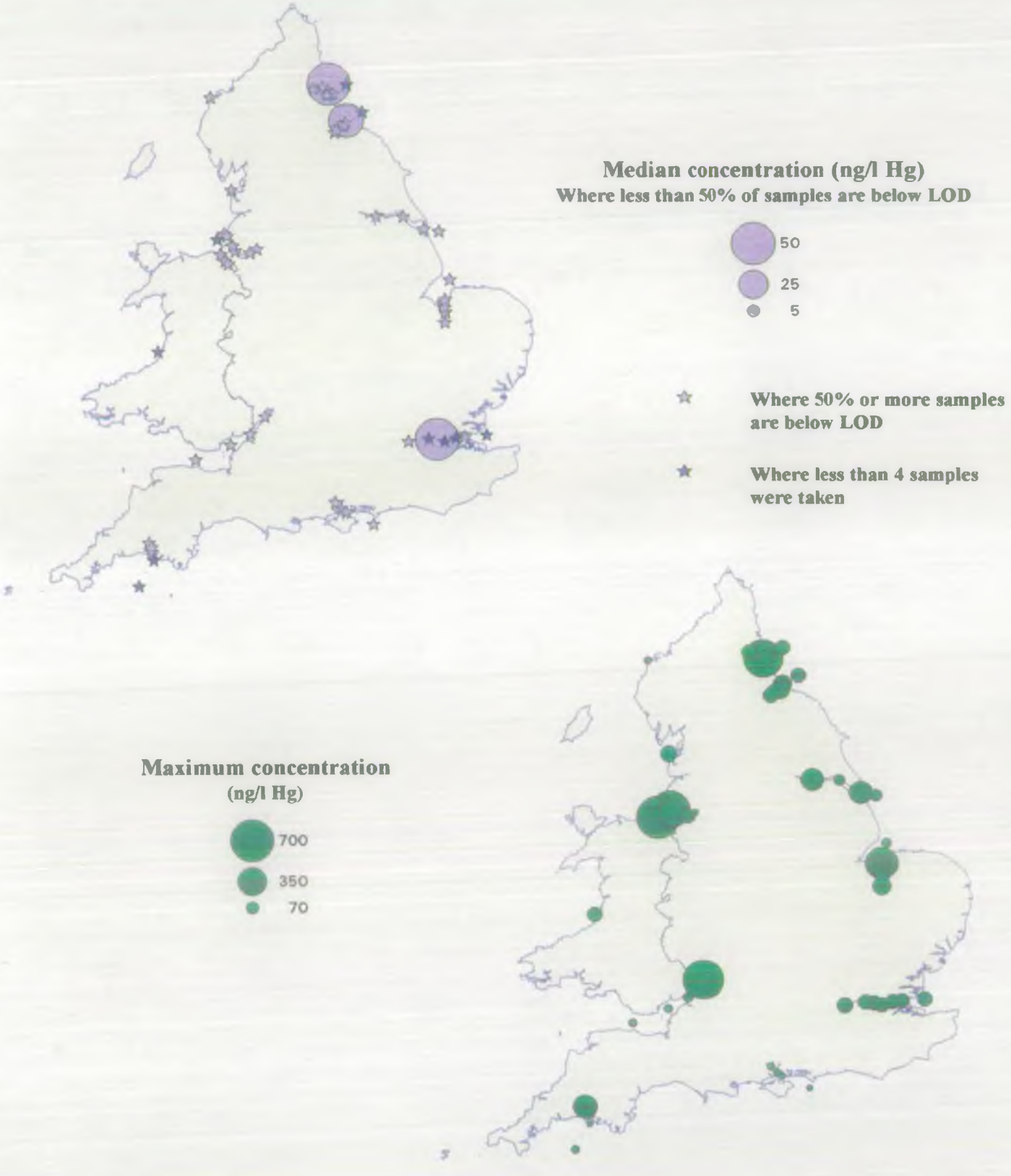


Figure 7.9 Concentration of Dissolved Cadmium in NMP Samples from 1991-1995.

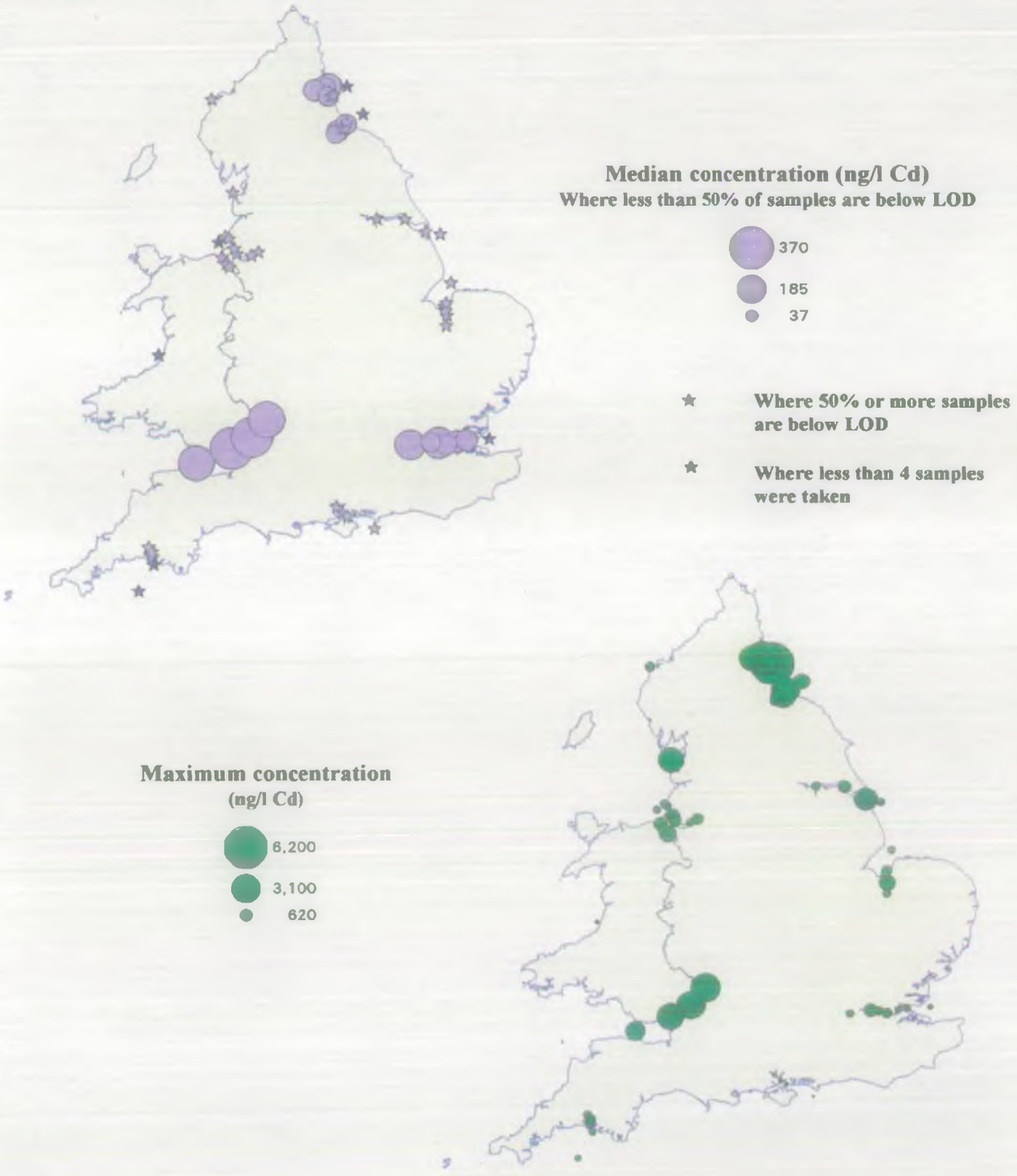


Figure 7.10 Concentration of Dissolved Copper in NMP Samples from 1991-1995.

Median concentration (ug/l Cu)
Where less than 50% of samples are below LOD

12
6
1.2

★ **Where 50% or more samples are below LOD**

★ **Where less than 4 samples were taken**

Maximum concentration (ug/l Cu)

510
255
51

Figure 7.11 Concentration of Dissolved Lead in NMP Samples from 1991-1995.

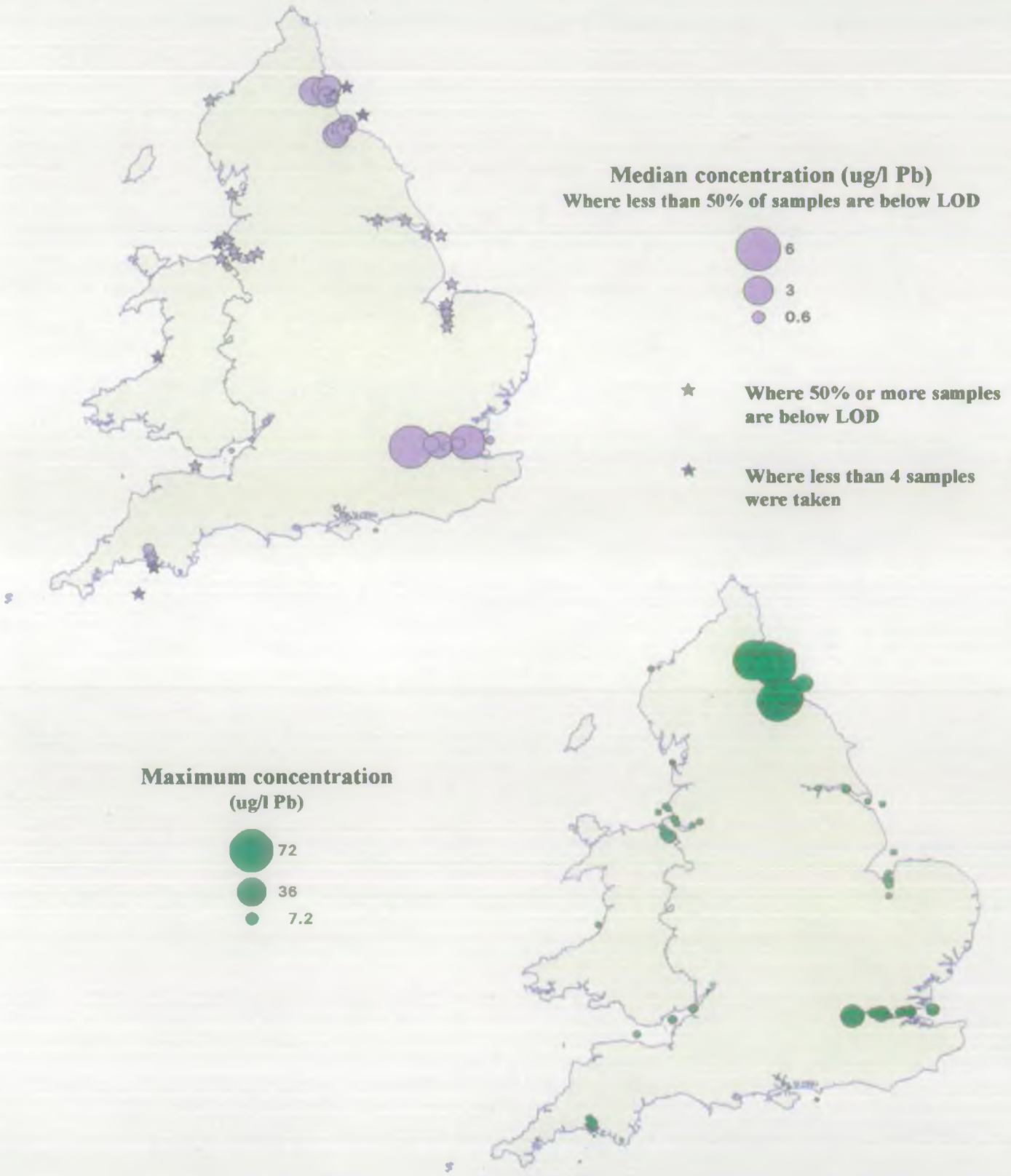


Figure 7.12 Concentration of Dissolved Nickel in NMP Samples from 1991-1995.

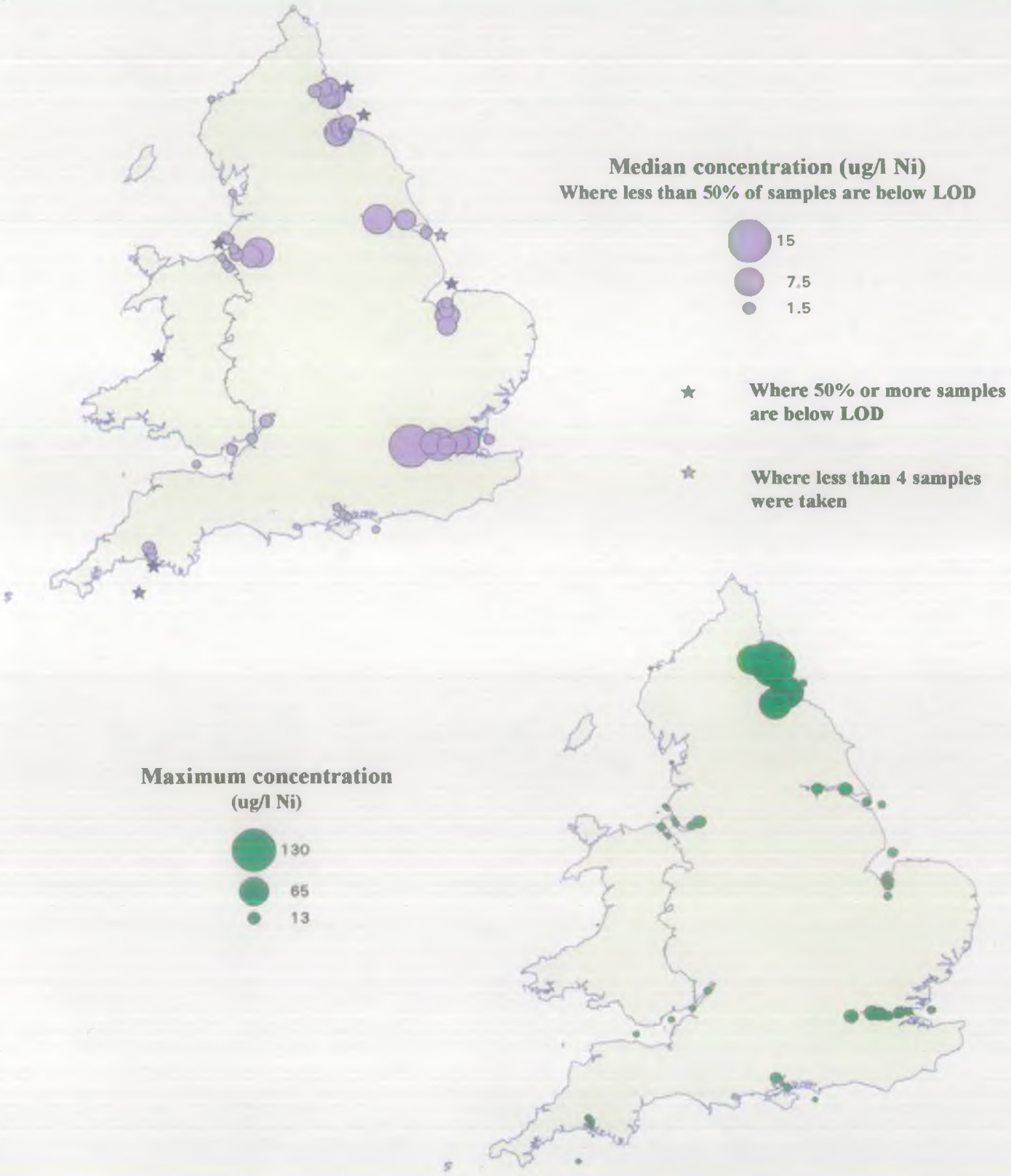


Figure 7.13 Concentration of Dissolved Zinc in NMP Samples from 1991-1995.

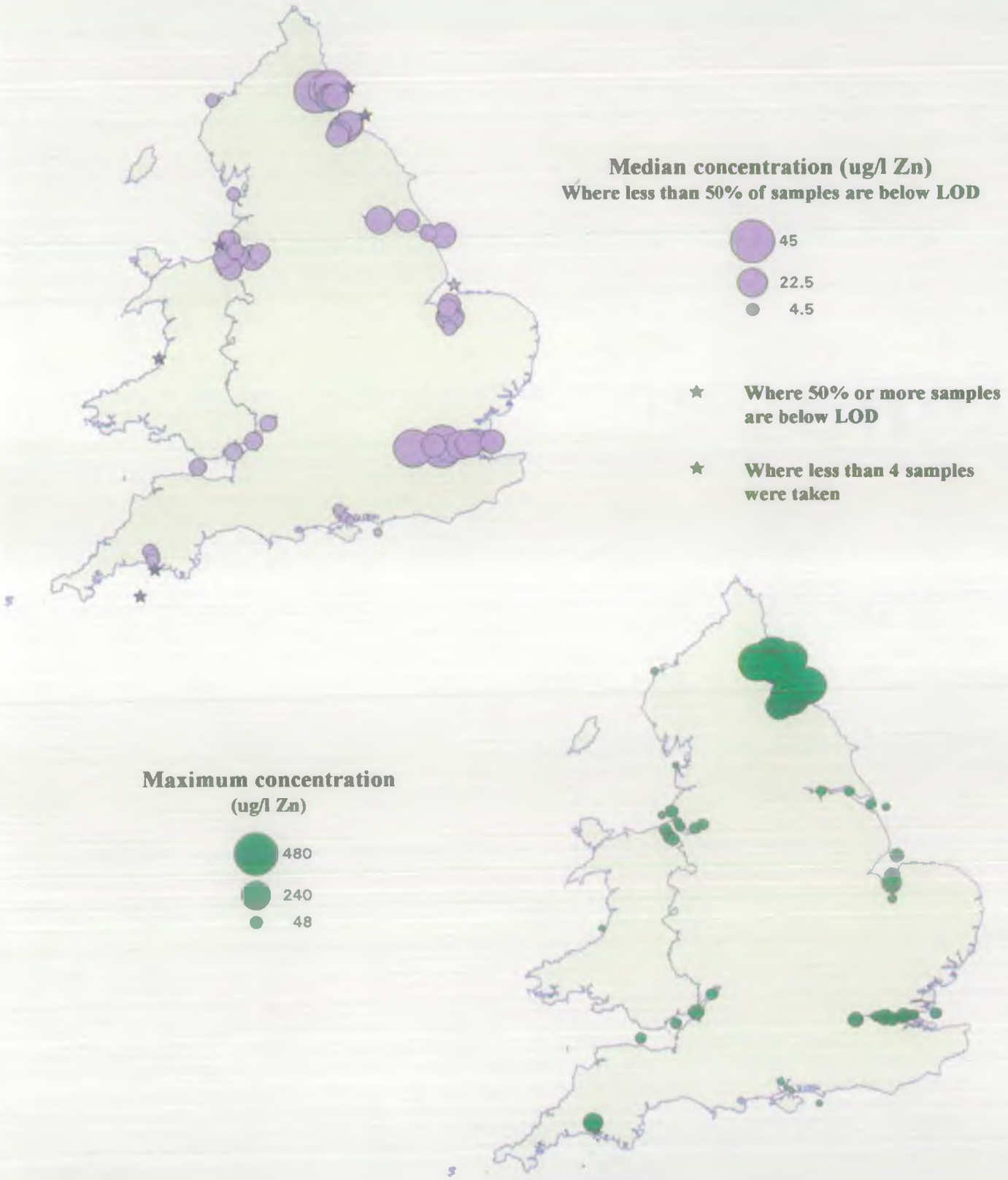


Figure 7.14 Concentration of Dissolved Arsenic in NMP Samples from 1991-1995.

Median concentration (ug/l As)
Where less than 50% of samples are below LOD

5
2.5
0.5

★ **Where 50% or more samples are below LOD**

★ **Where less than 4 samples were taken**

Maximum concentration
(ug/l As)

12
6
1.2

Figure 7.15 Concentration of Dissolved Chromium in NMP Samples from 1991-1995.

Figure 7.16 Concentration of Lindane in NMP Samples from 1991-1995.

Figure 7.17 Concentration of Carbon Tetrachloride in NMP Samples from 1991-1995.

Figure 7.18 Concentration of Chloroform in NMP Samples from 1991-1995.

Figure 7.19 Concentration of Simazine in NMP Samples from 1991-1995.

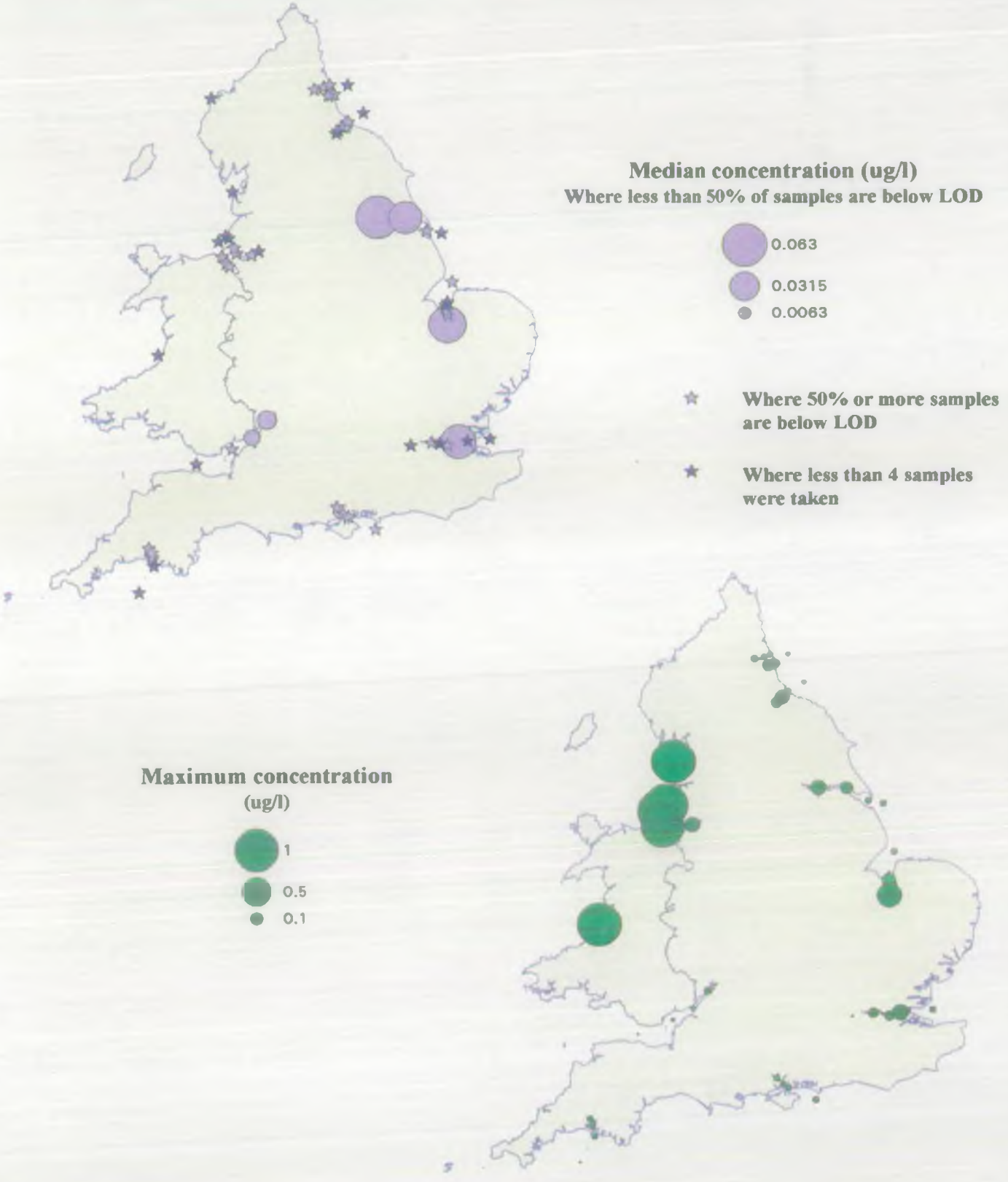


Figure 7.20 Concentration of Atrazine in NMP Samples from 1991-1995.

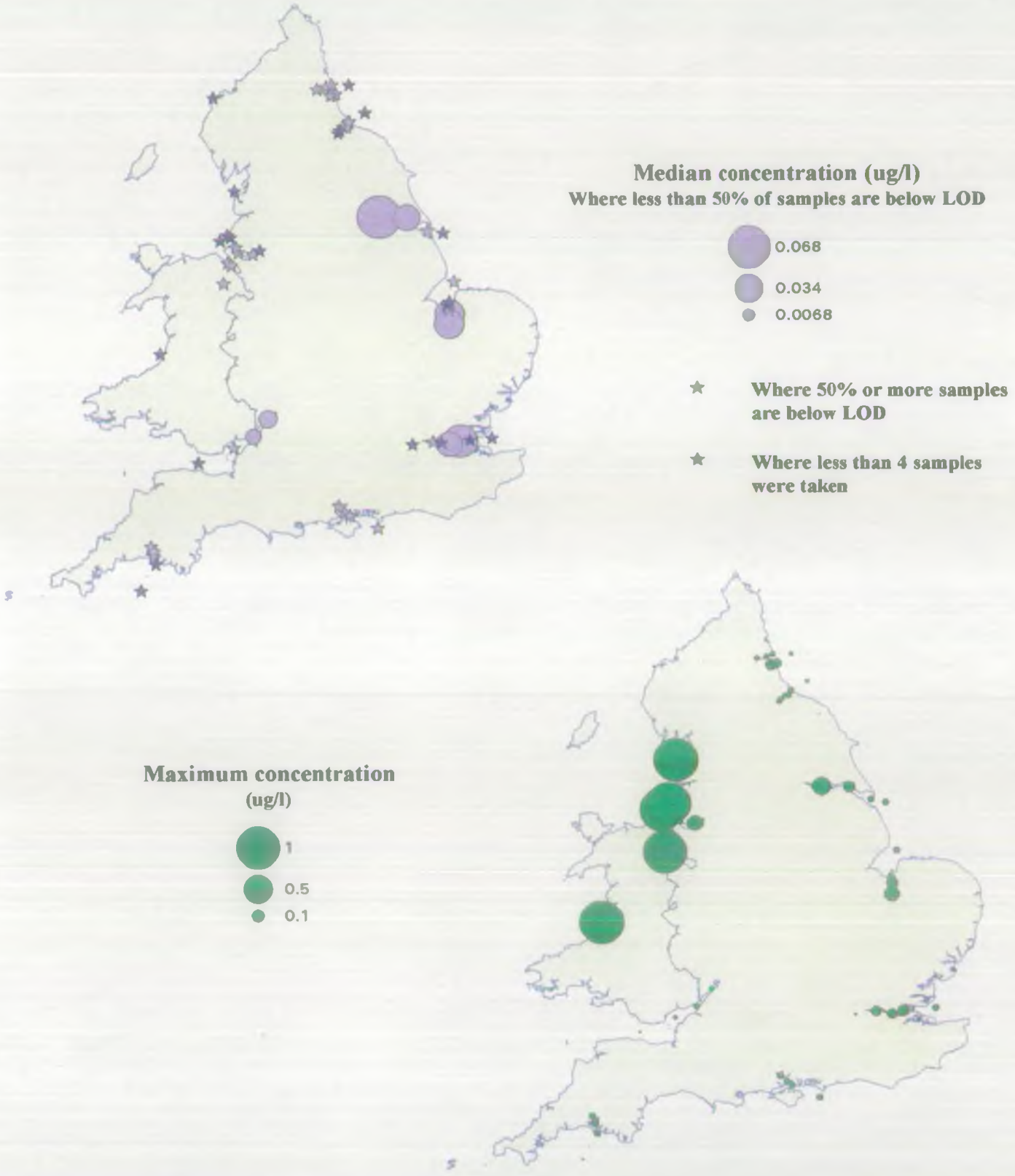


Figure 7.21 Concentration of Trichloroethylene in NMP Samples from 1991-1995.

Figure 7.22 Concentration of Tetrachloroethylene in NMP Samples from 1991-1995.

Figure 7.23 Concentration of Trichloroethane in NMP Samples from 1991-1995.

Figure 7.24 NMP Water Chemistry (1991-1995) Tyne Estuary Dissolved metal concentrations vs salinity

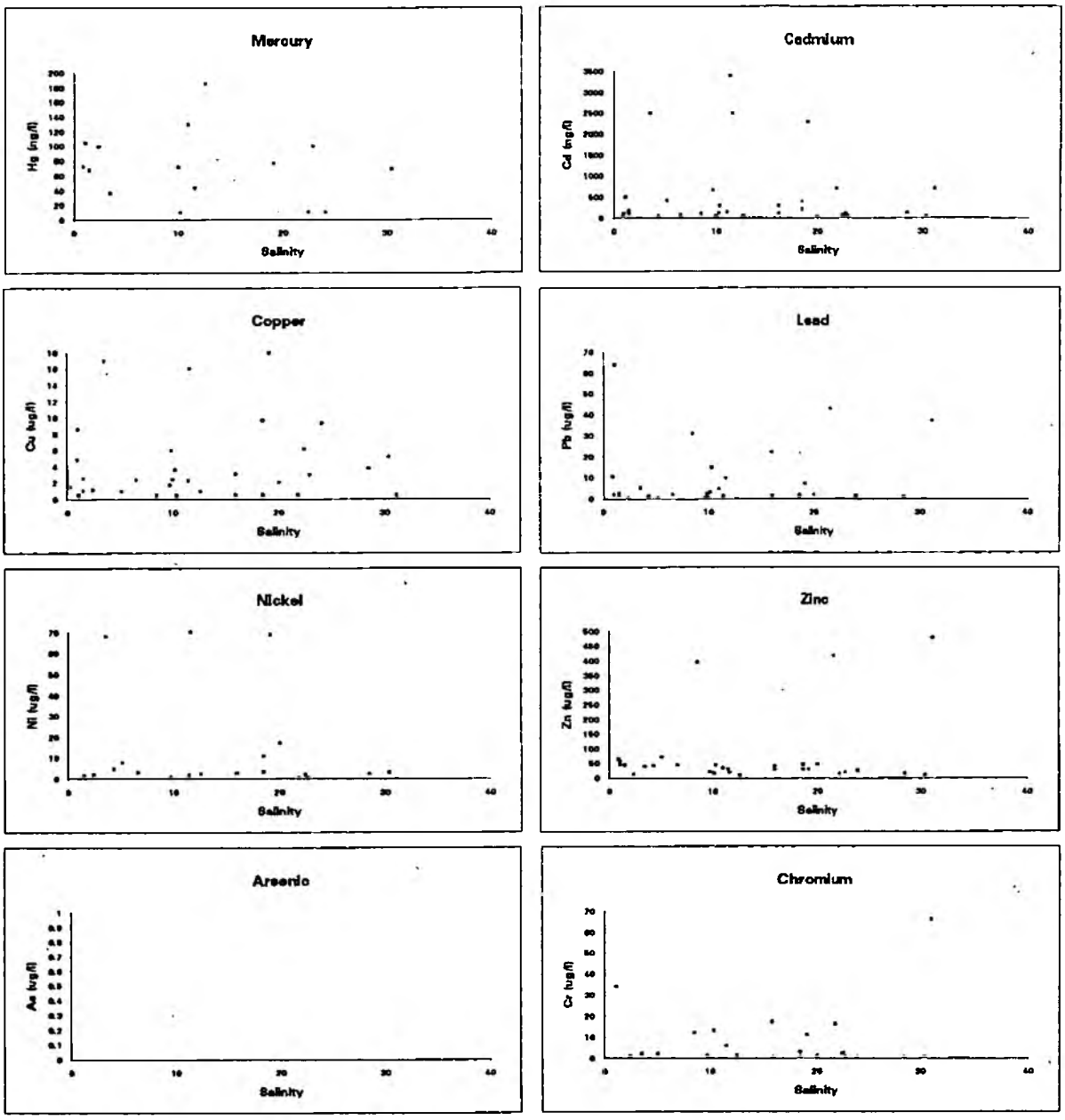


Figure 7.25 NMP Water Chemistry (1991-1995) Wear Estuary Dissolved metal concentrations vs salinity

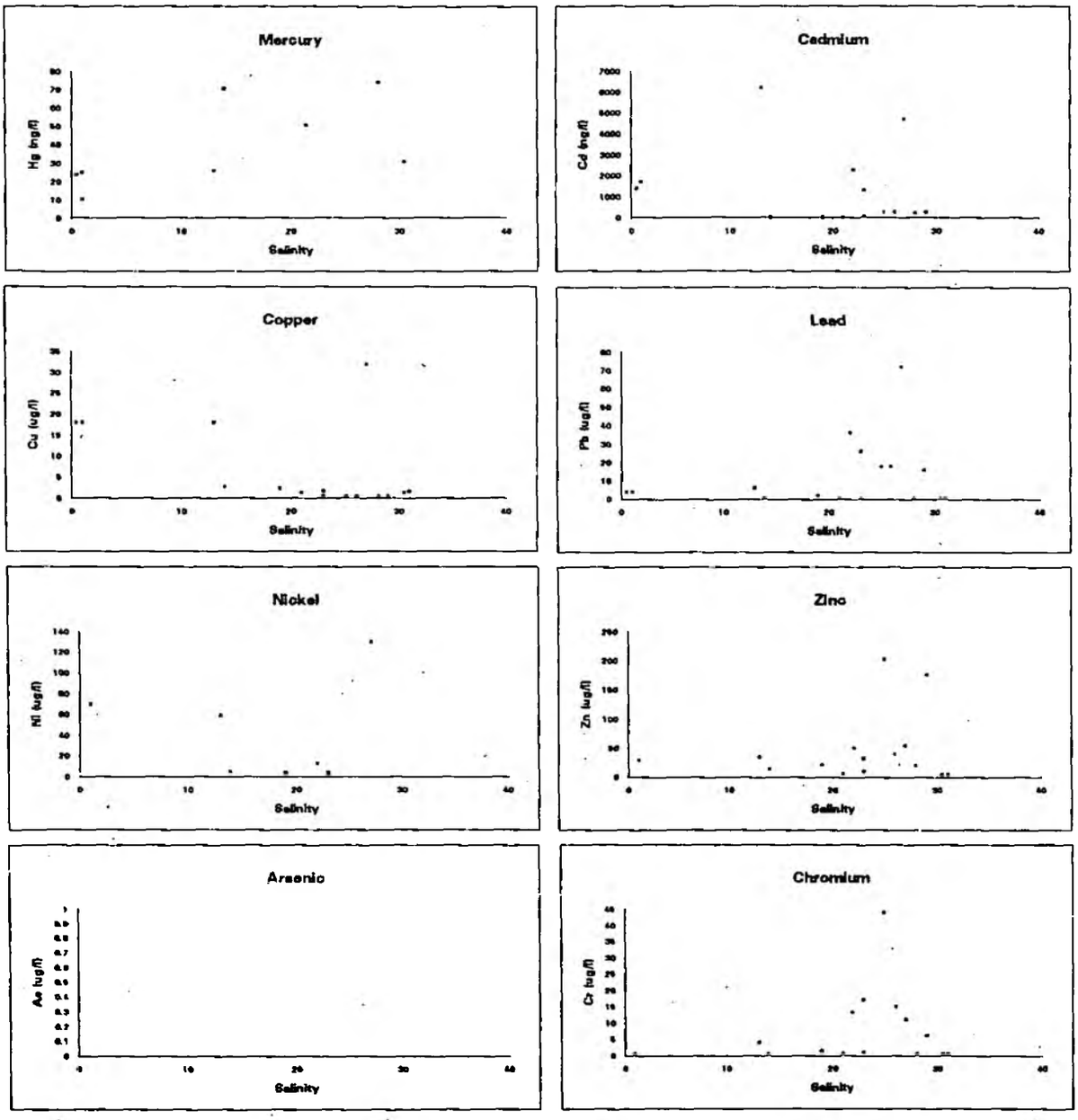


Figure 7.26 NMP Water Chemistry (1991-1995) Tees Estuary Dissolved metal concentrations vs salinity

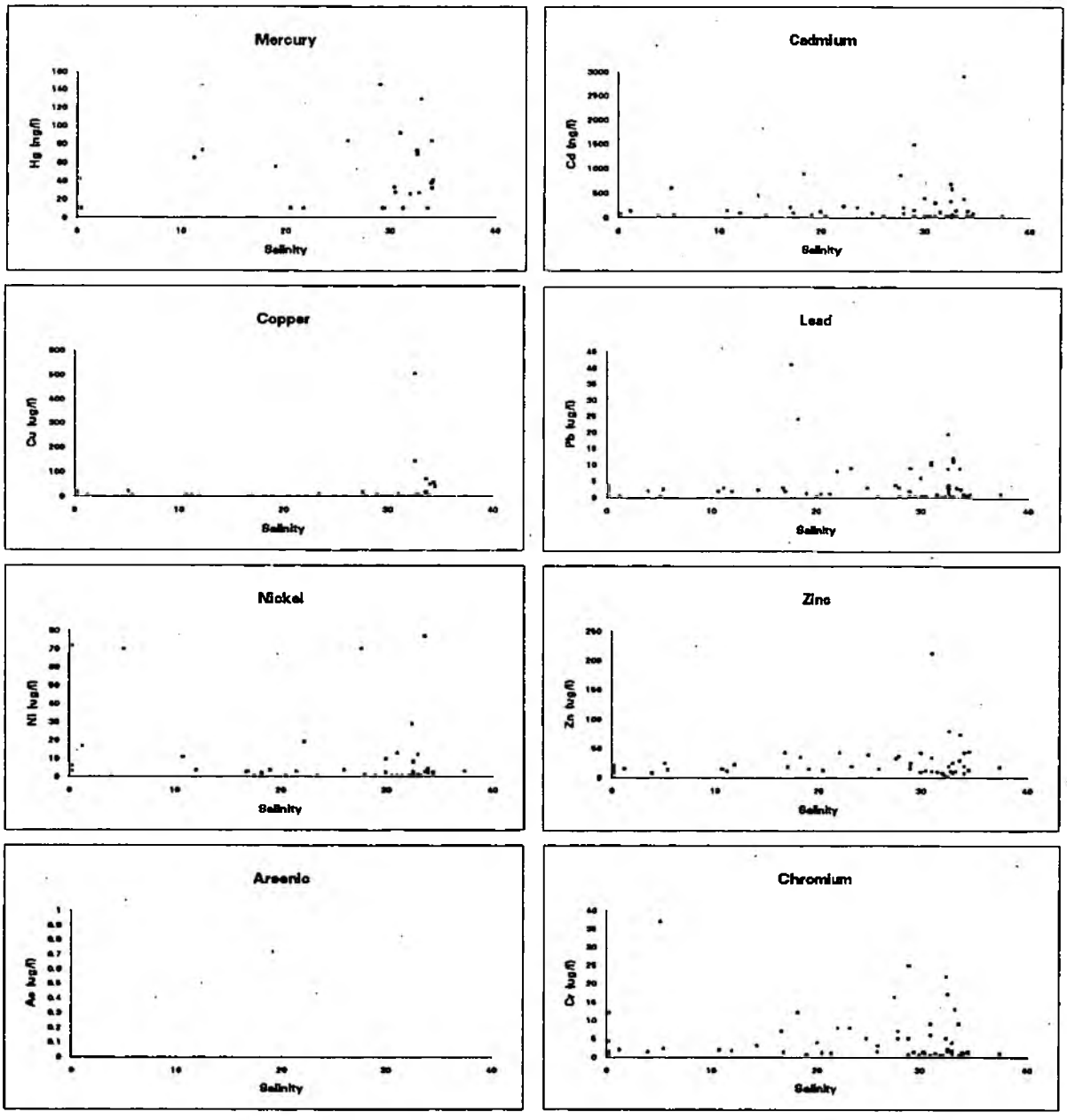


Figure 7.27 NMP Water Chemistry (1991-1995) Humber Estuary Dissolved metal concentrations vs salinity

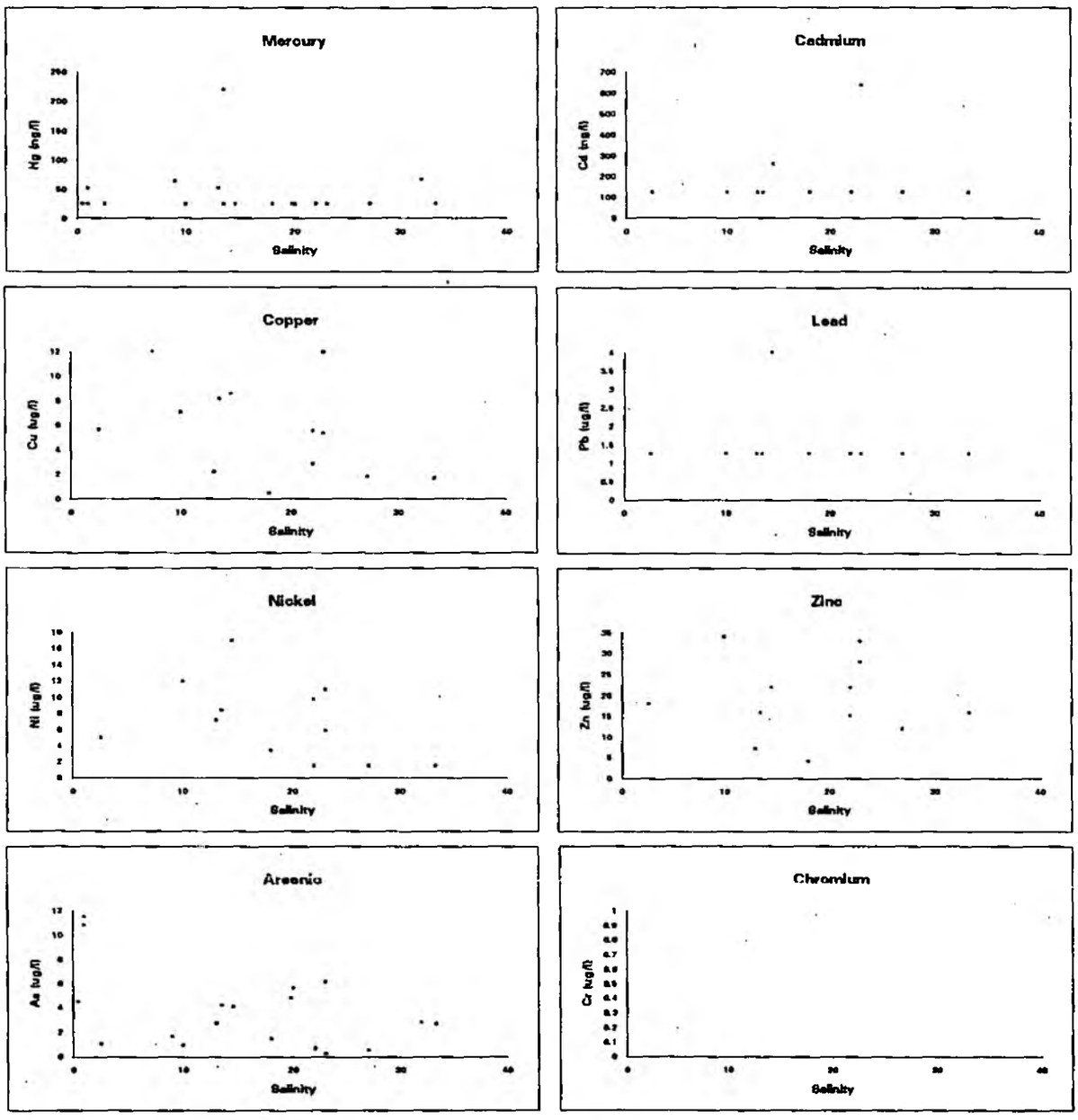


Figure 7.28 NMP Water Chemistry (1991-1995) Ouse Estuary and Wash Dissolved metal concentrations vs salinity

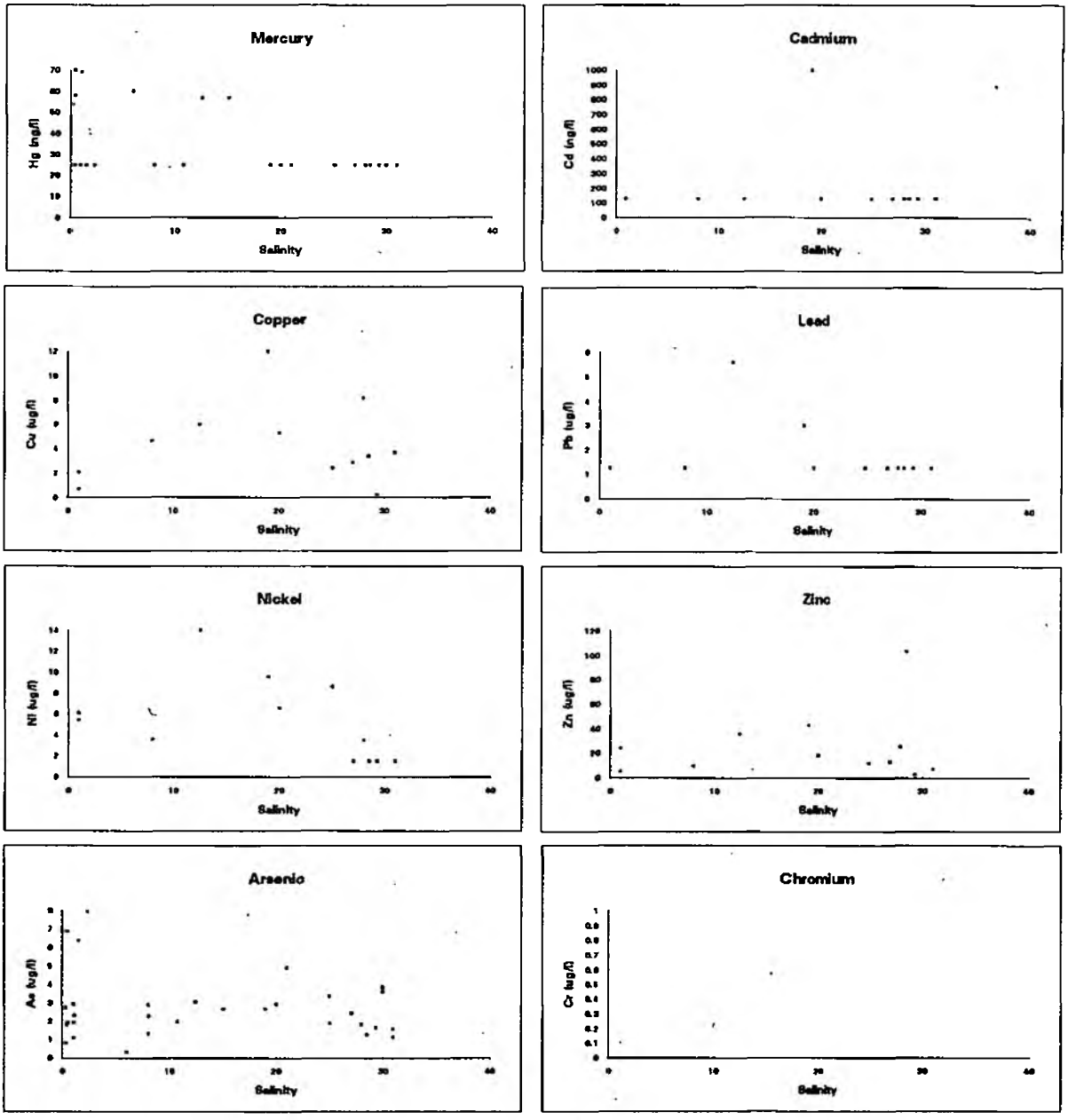


Figure 7.29 NMP Water Chemistry (1991-1995) Thames Estuary Dissolved metal concentrations vs salinity

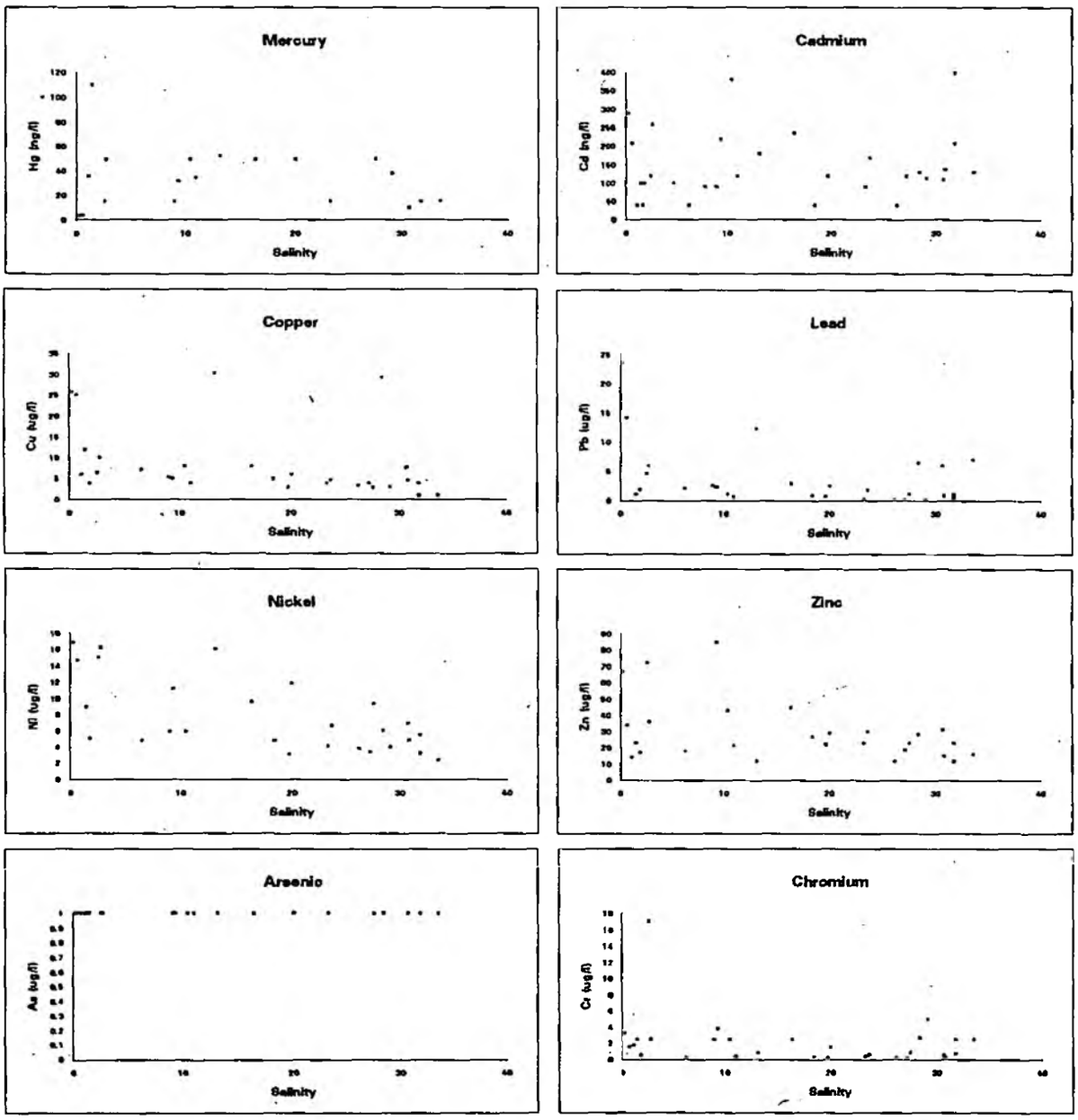


Figure 7.30 NMP Water Chemistry (1991-1995) Solent Dissolved metal concentrations vs salinity

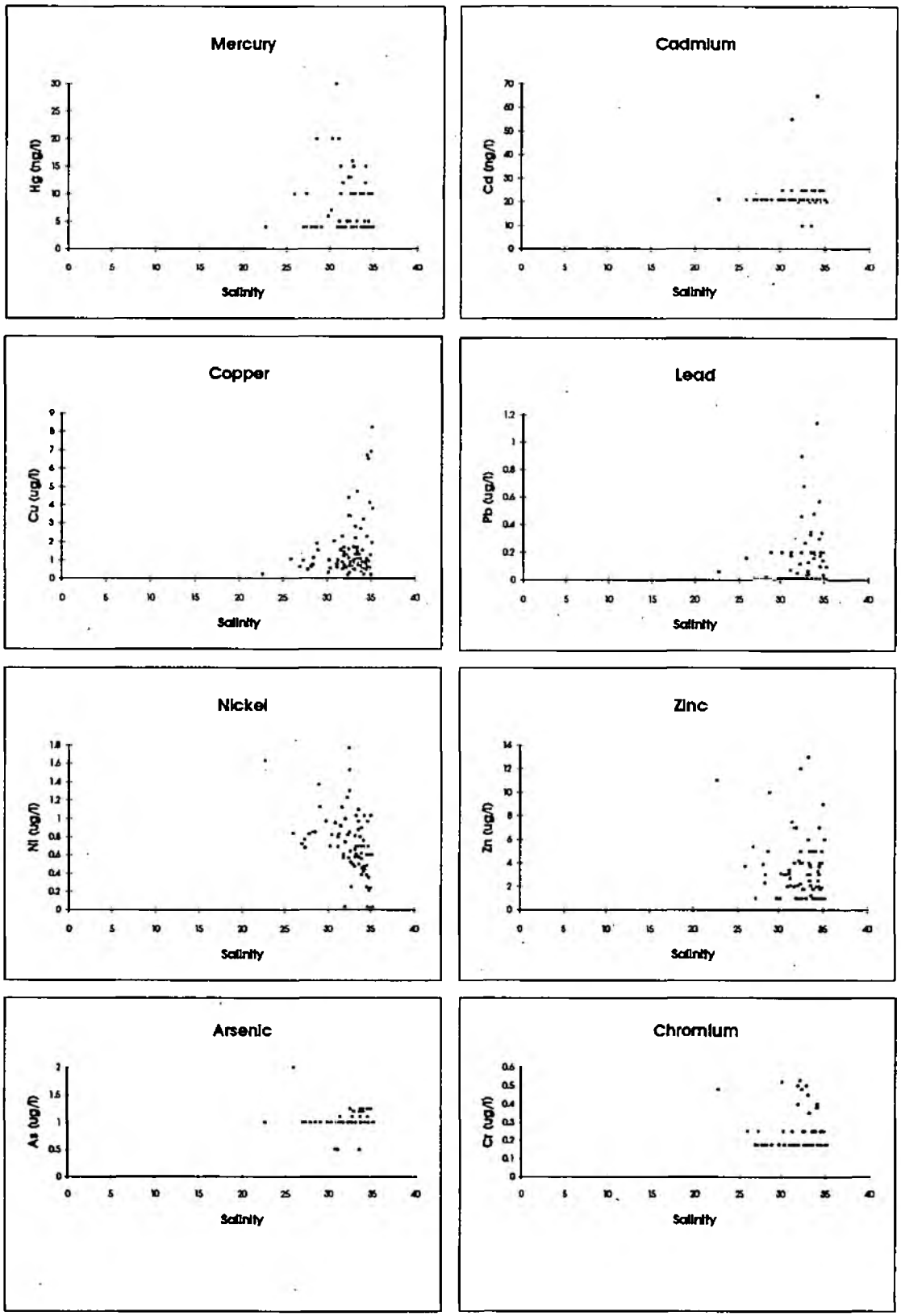


Figure 7.31 NMP Water Chemistry (1991-1995) Tamar Estuary and Plymouth Sound

Dissolved metal concentrations vs salinity

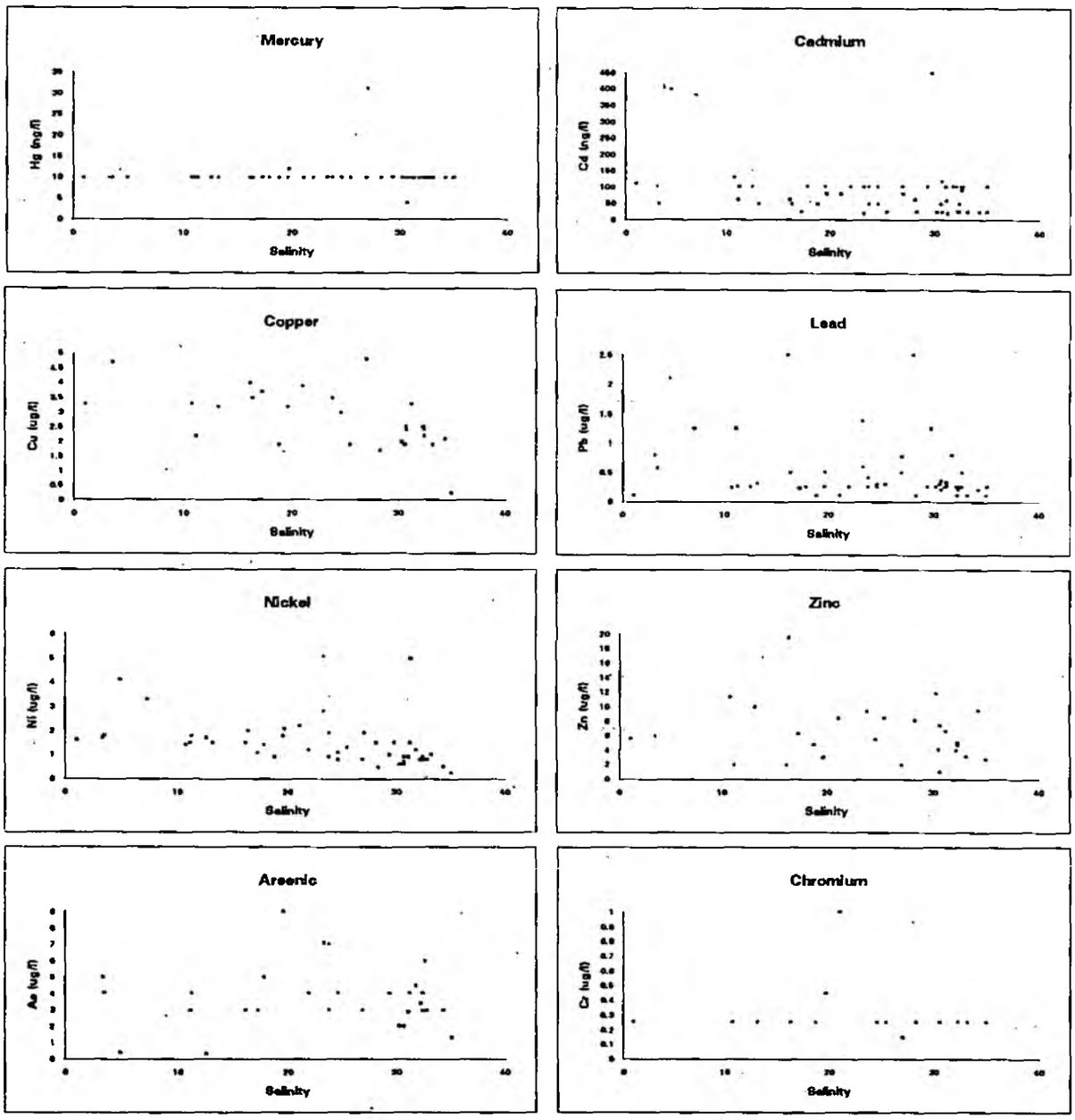


Figure 7.32 NMP Water Chemistry (1991-1995) Severn Estuary Dissolved metal concentrations vs salinity

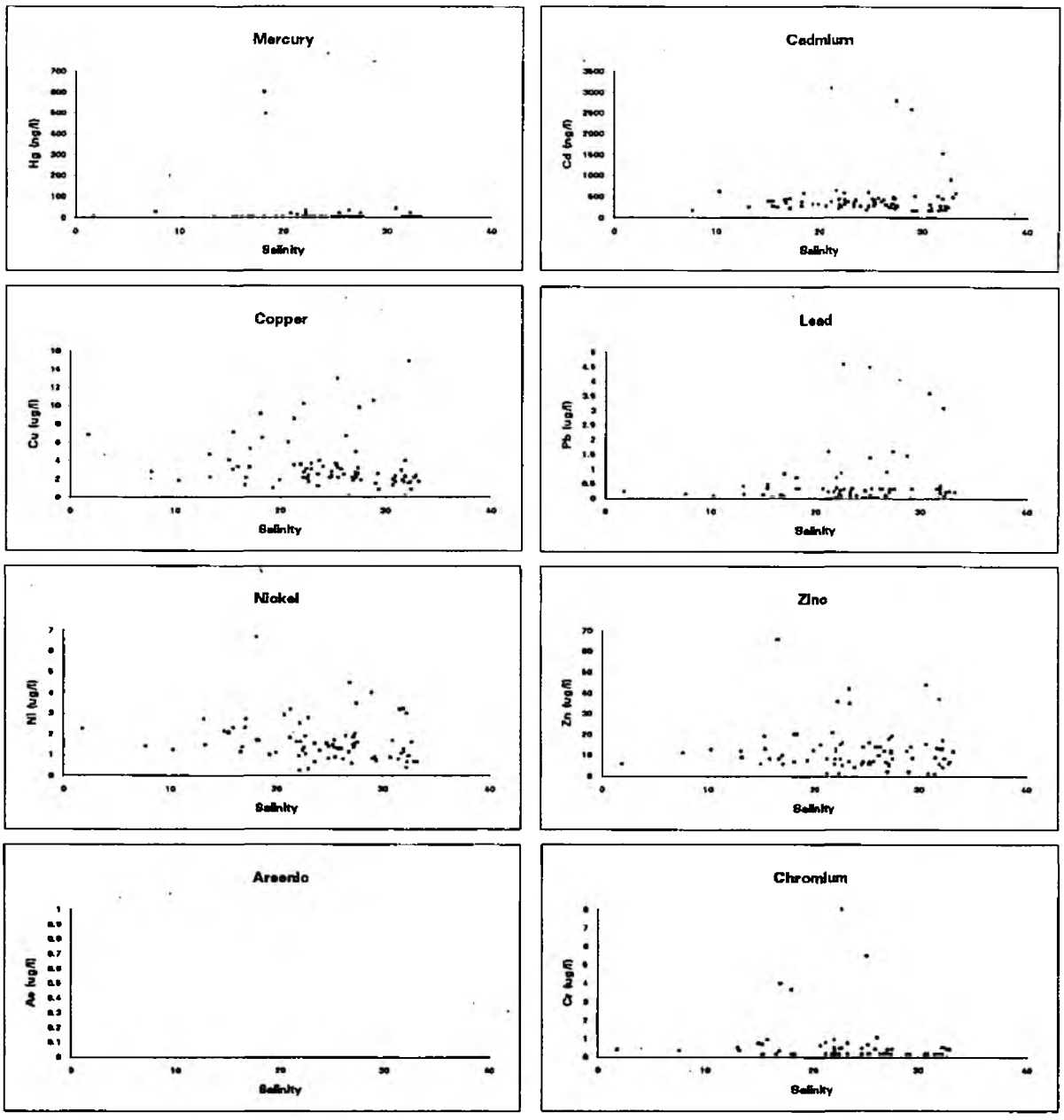


Figure 7.33 NMP Water Chemistry (1991-1995) Dee Estuary Dissolved metal concentrations vs salinity

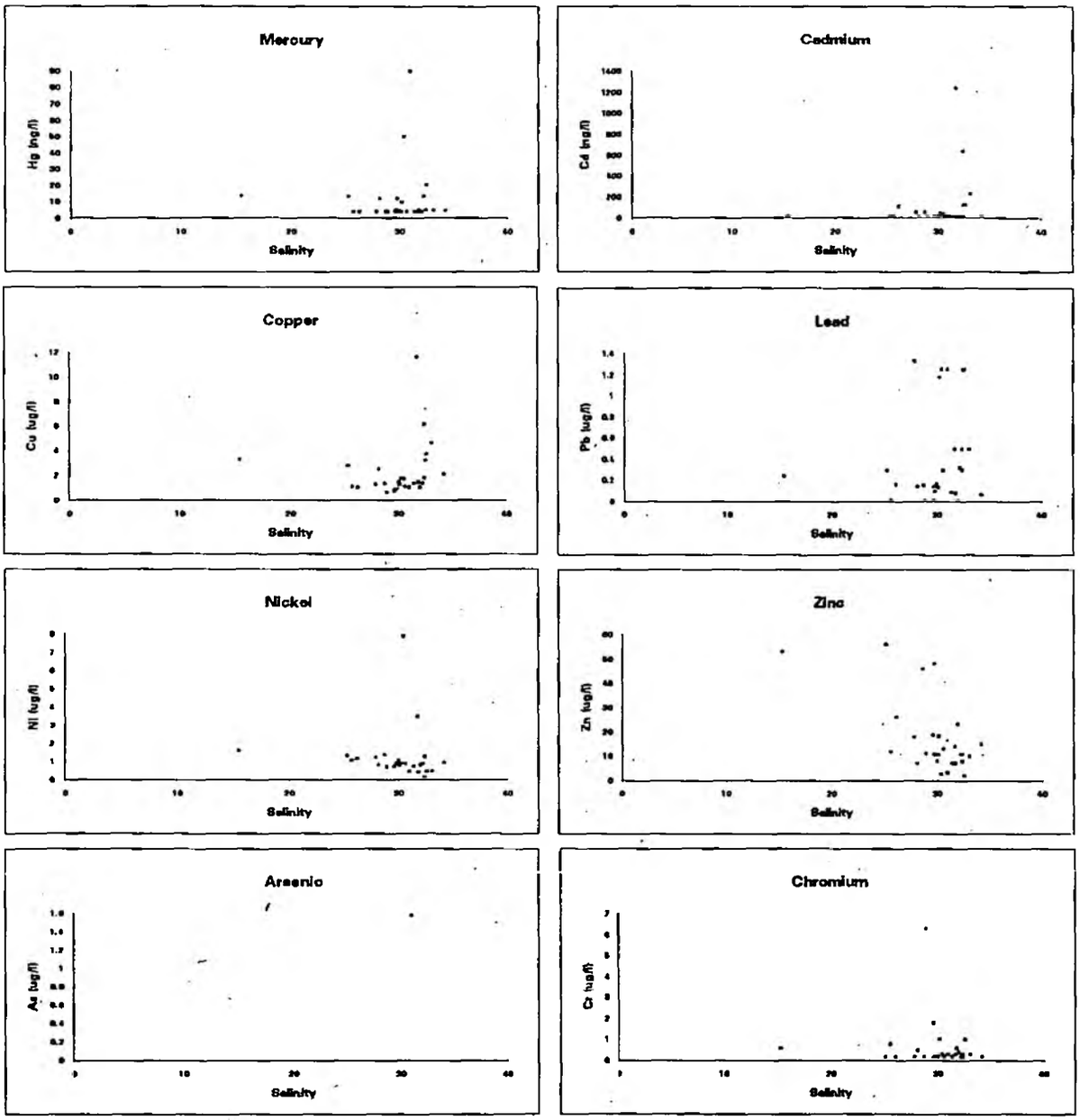


Figure 7.34 NMP Water Chemistry (1991-1995) Mersey Estuary Dissolved metal concentrations vs salinity

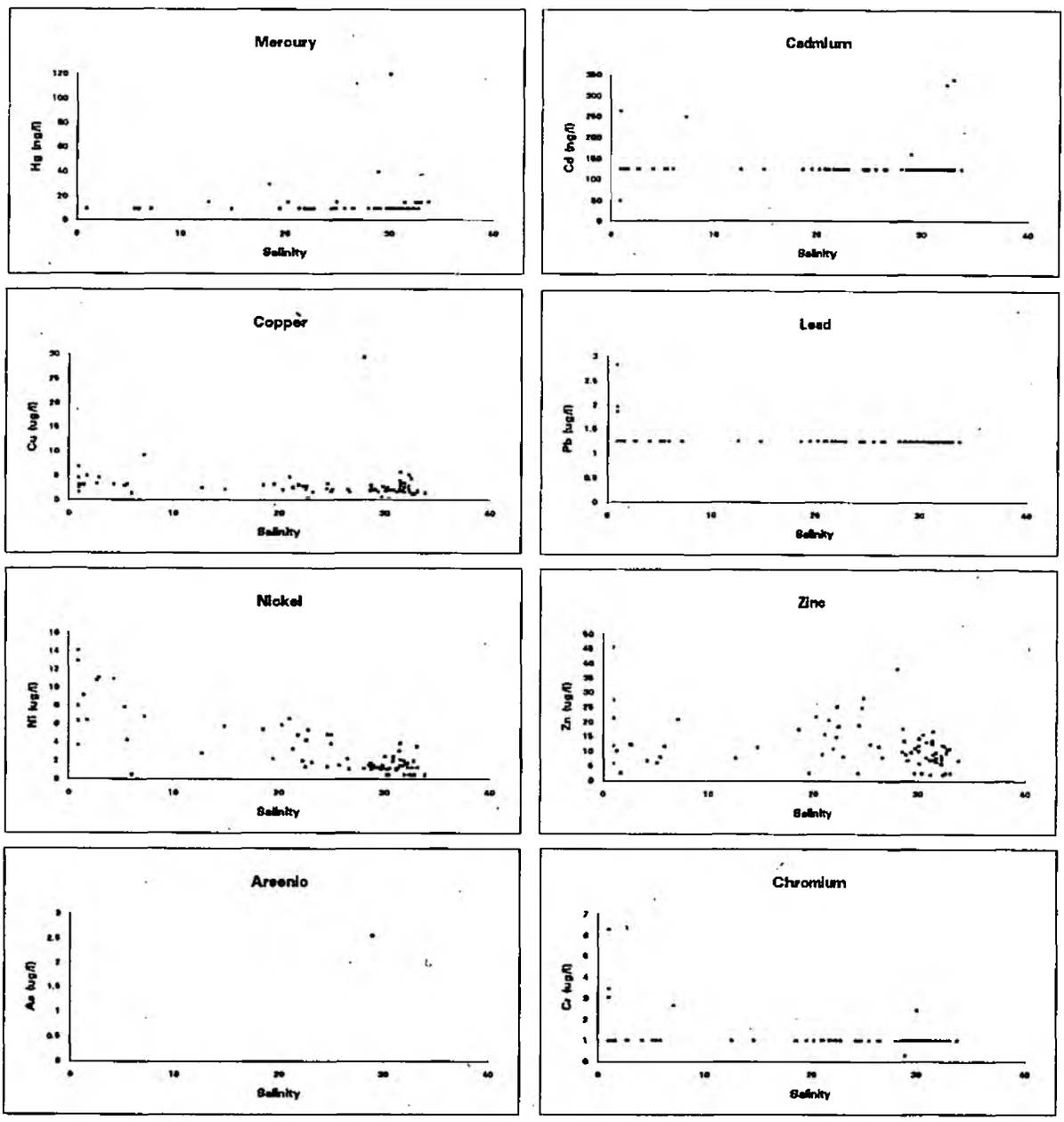


Figure 8.1a: Mean Mercury/Aluminium Ratio (mg/kg)/(mg/kg)

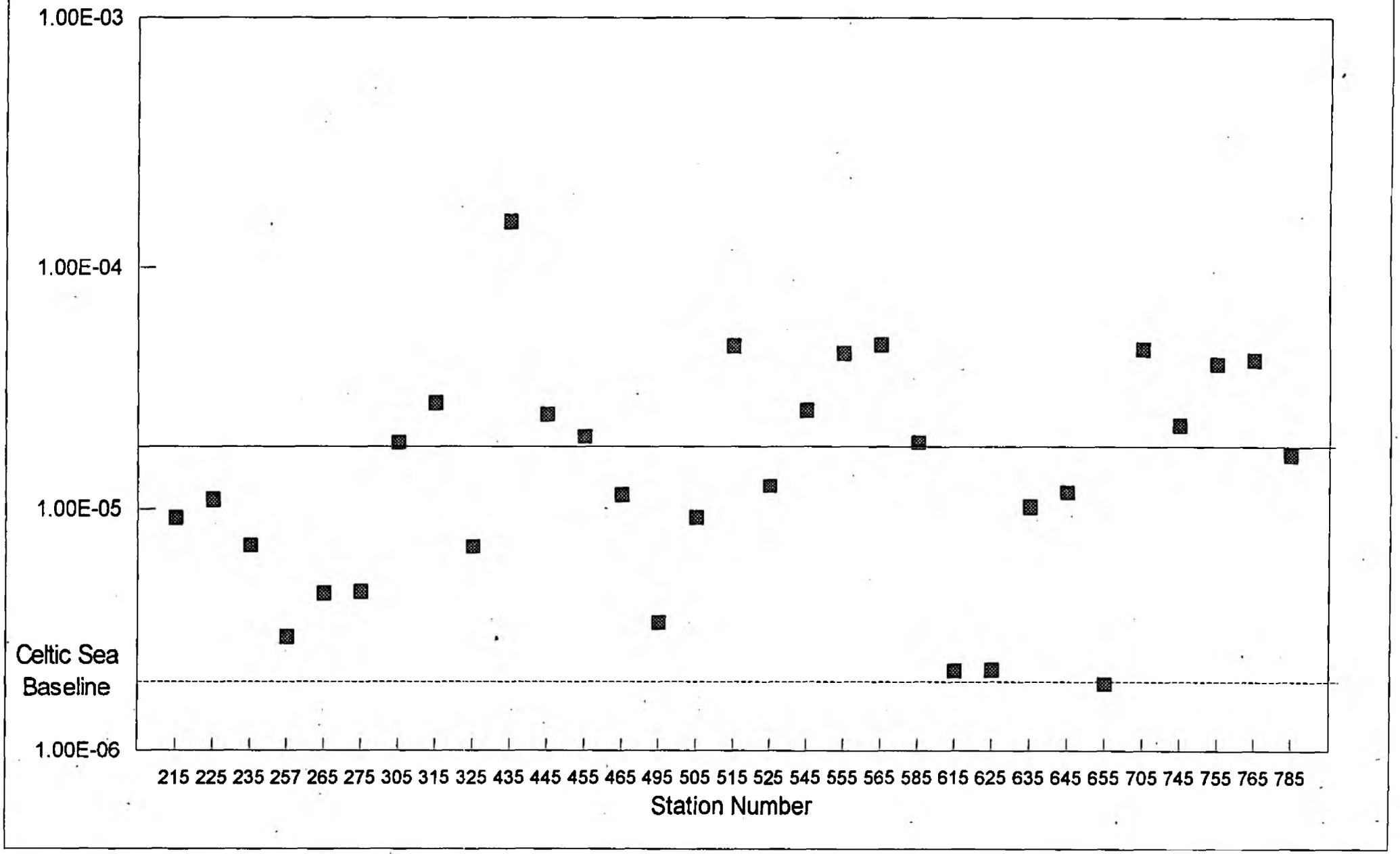


Figure 8.1b: Mean Copper/Aluminium Ratio (mg/kg)/(mg/kg)

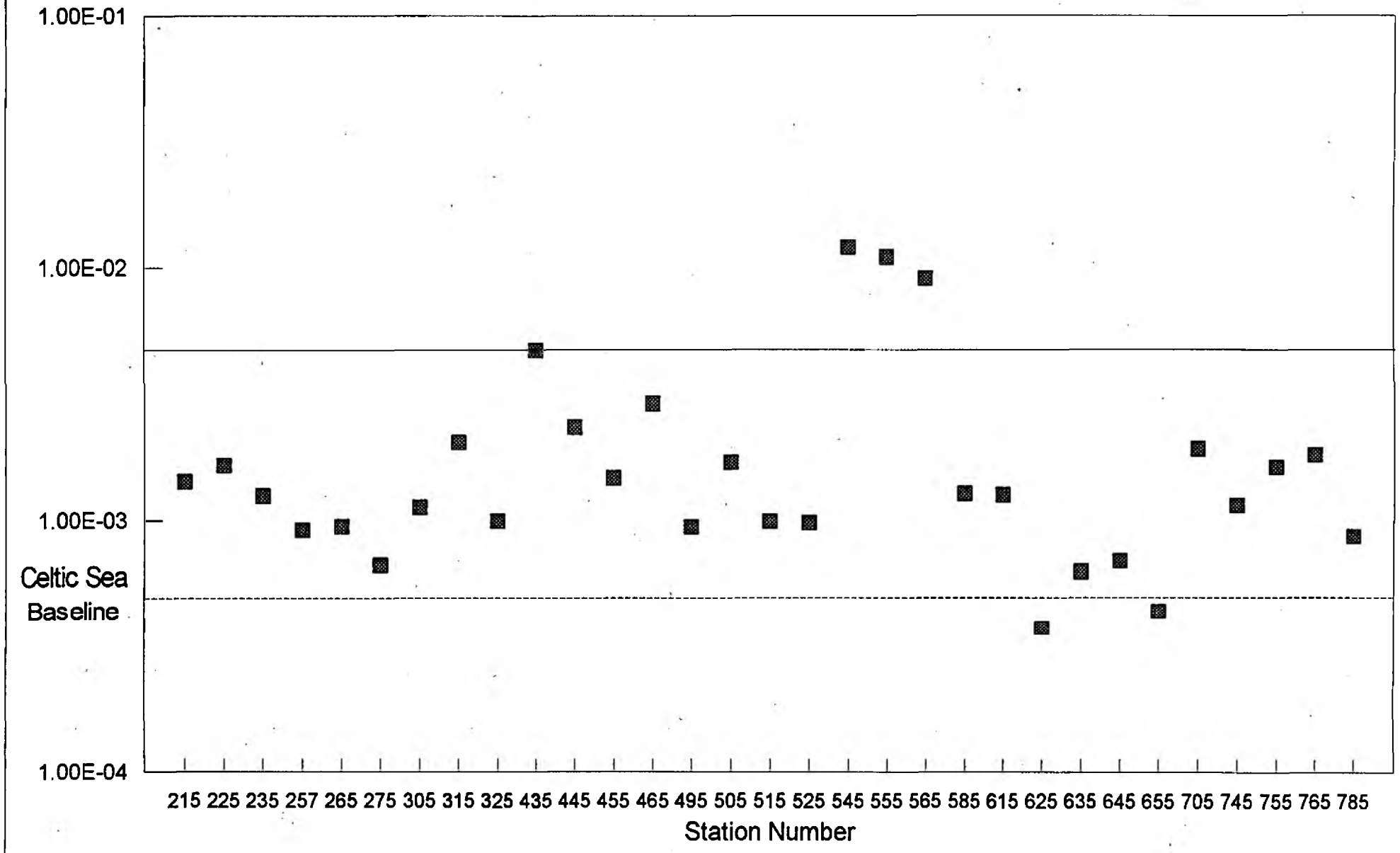


Figure 8.1c: Mean Nickel/Aluminium Ratio (mg/kg)/(mg/kg)

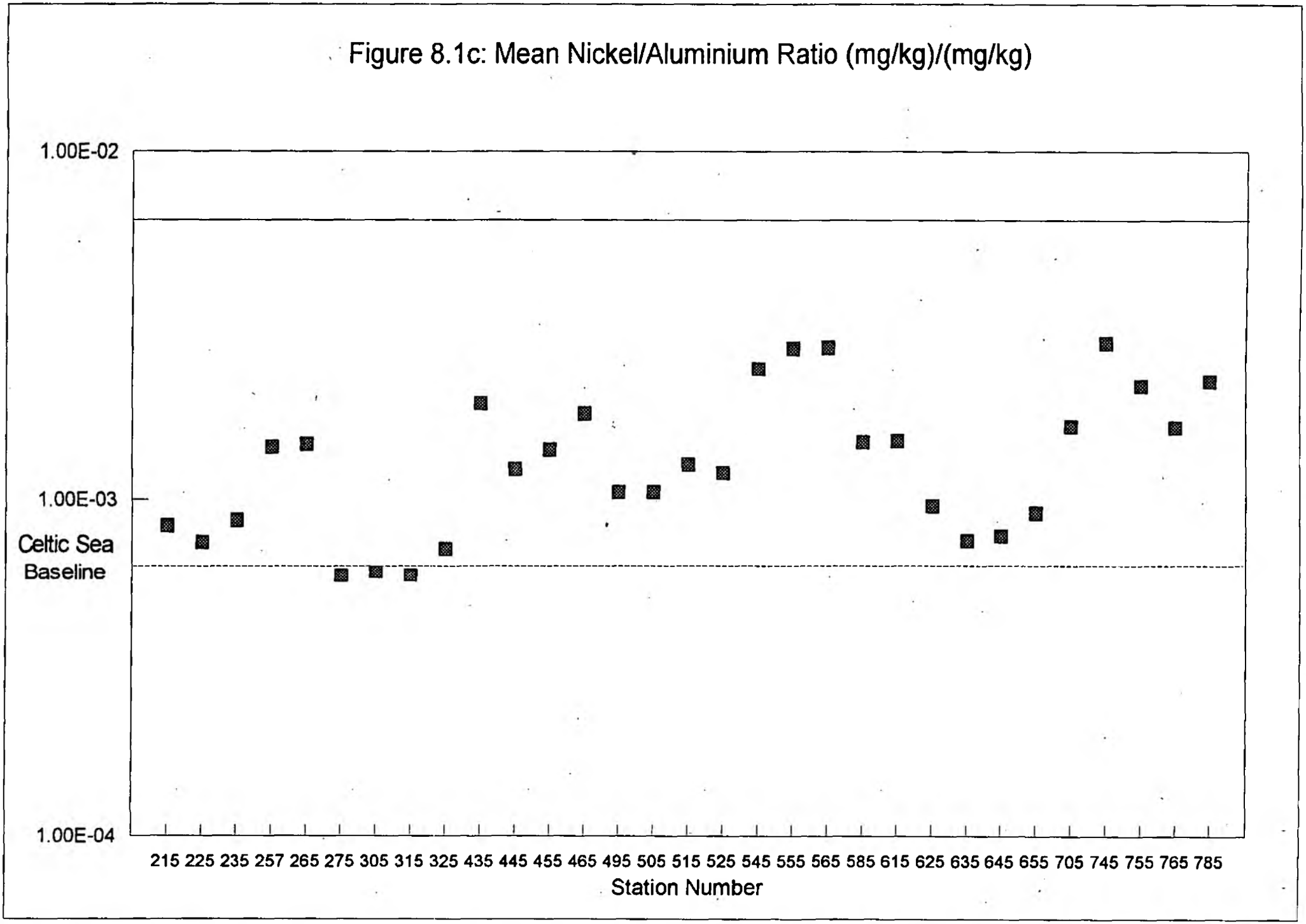


Figure 8.1d: Mean Arsenic/Aluminium Ratio (mg/kg)/(mg/kg)

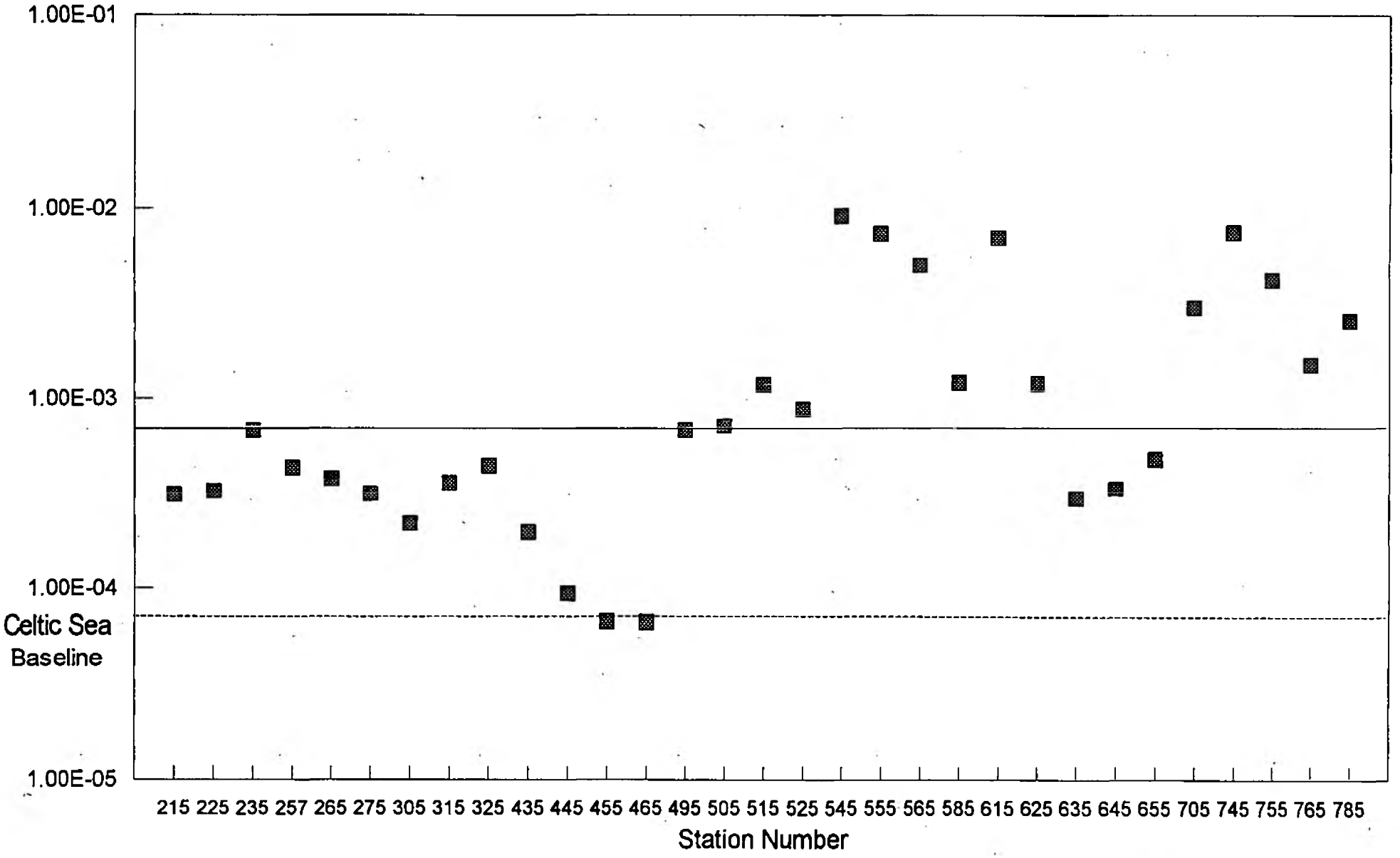


Figure 8.1e: Mean Cadmium/Aluminium Ratio (mg/kg)/(mg/kg)

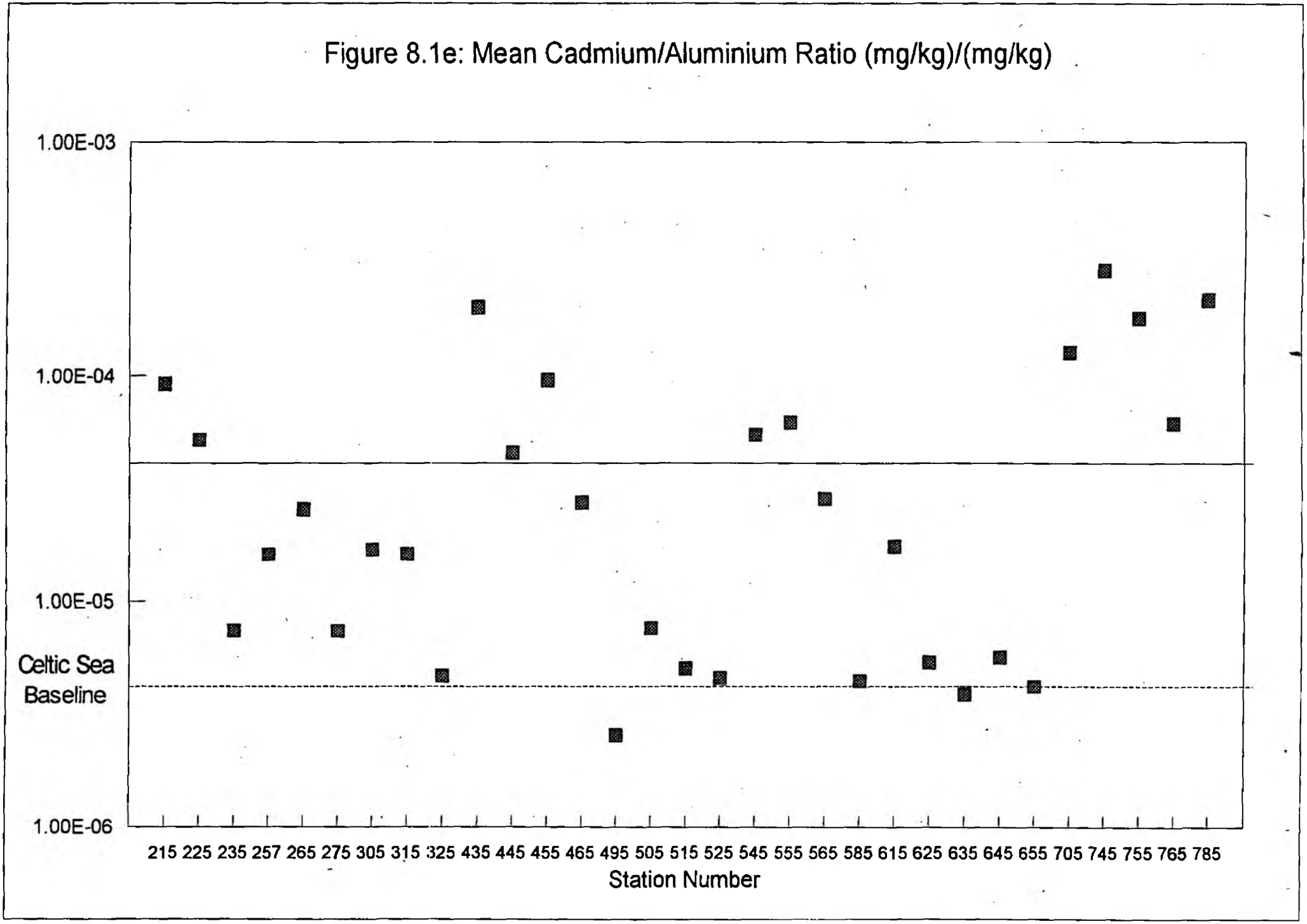


Figure 8.1f: Mean Lead/Aluminium Ratio (mg/kg)/(mg/kg)

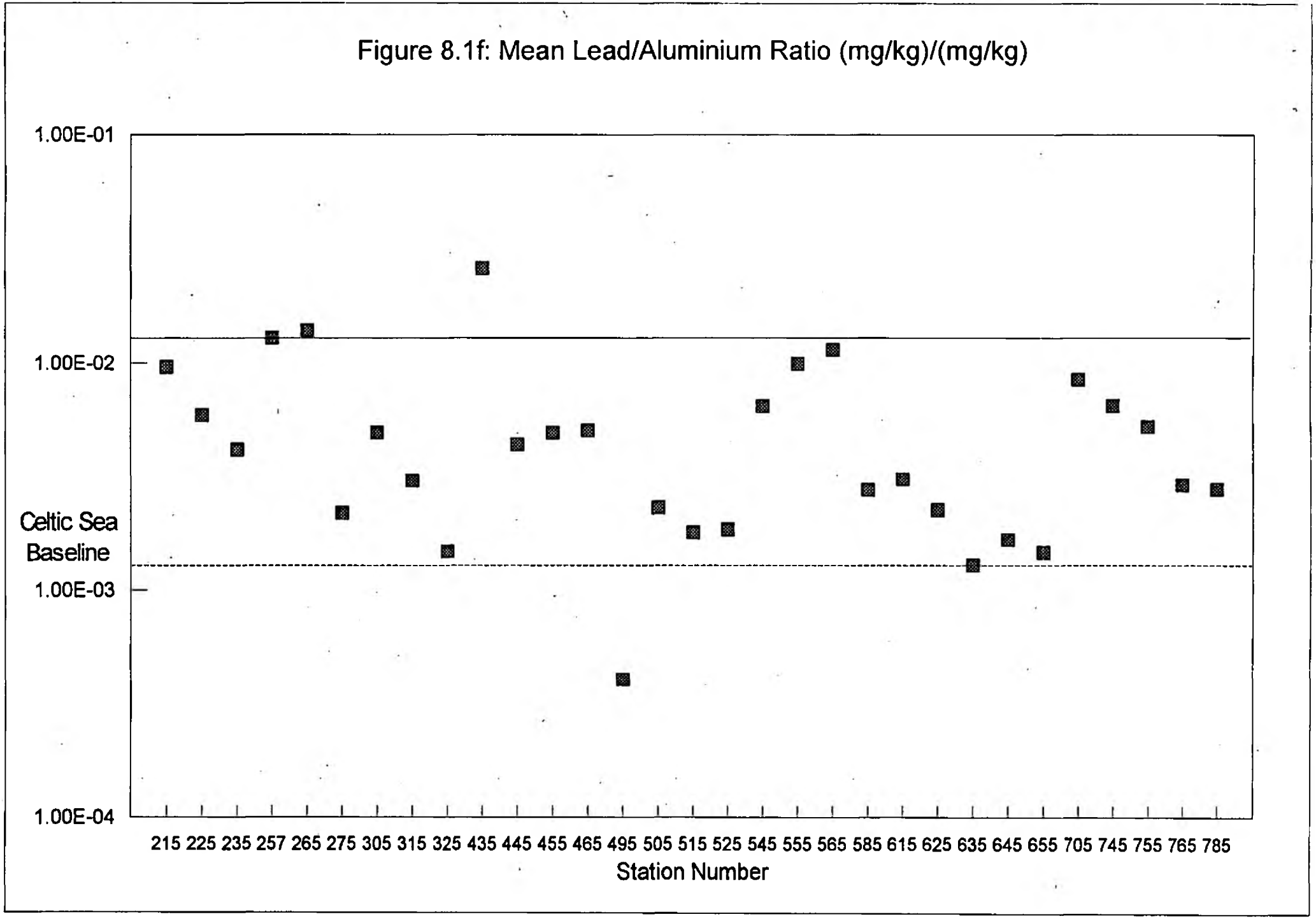


Figure 8.1g: Mean Zinc/Aluminium Ratio (mg/kg)/(mg/kg)

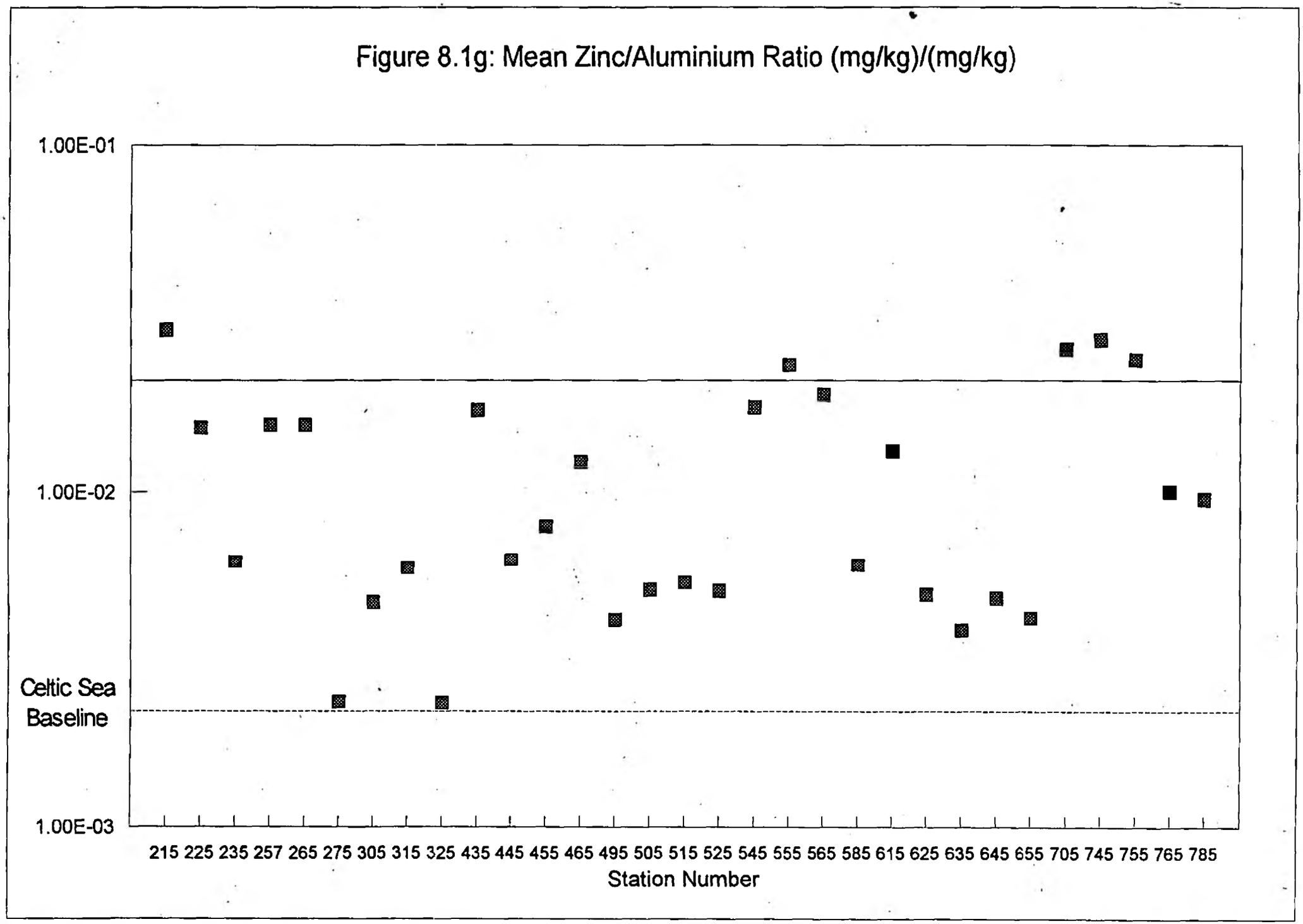


Figure 8.1h: Mean Chromium/Aluminium Ratio (mg/kg)/(mg/kg)

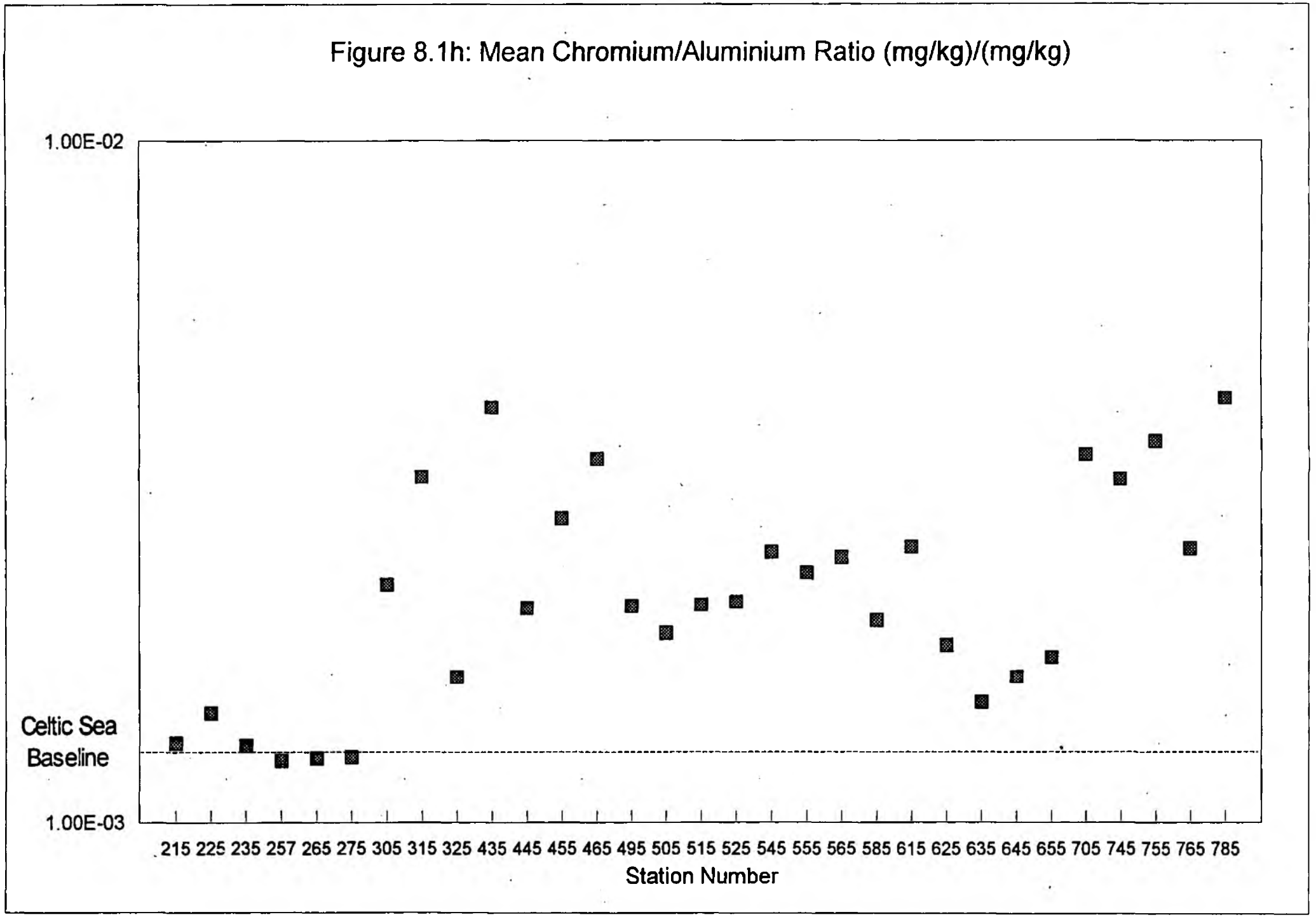


Figure 8.3a

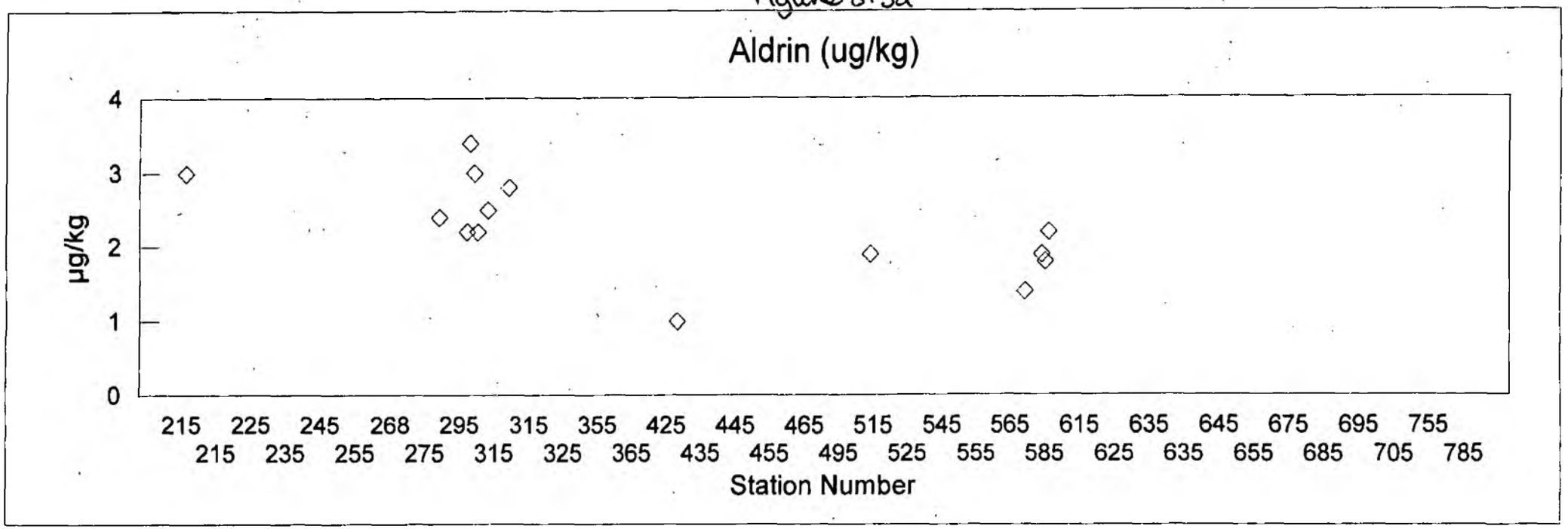


Figure 8.3b

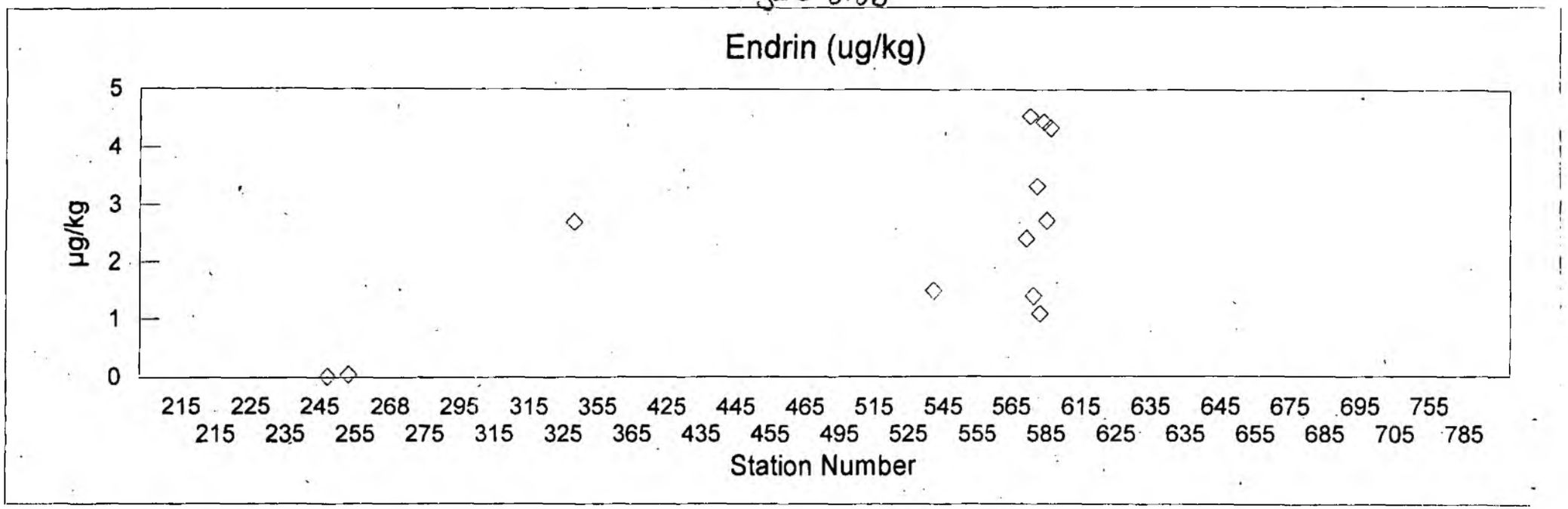
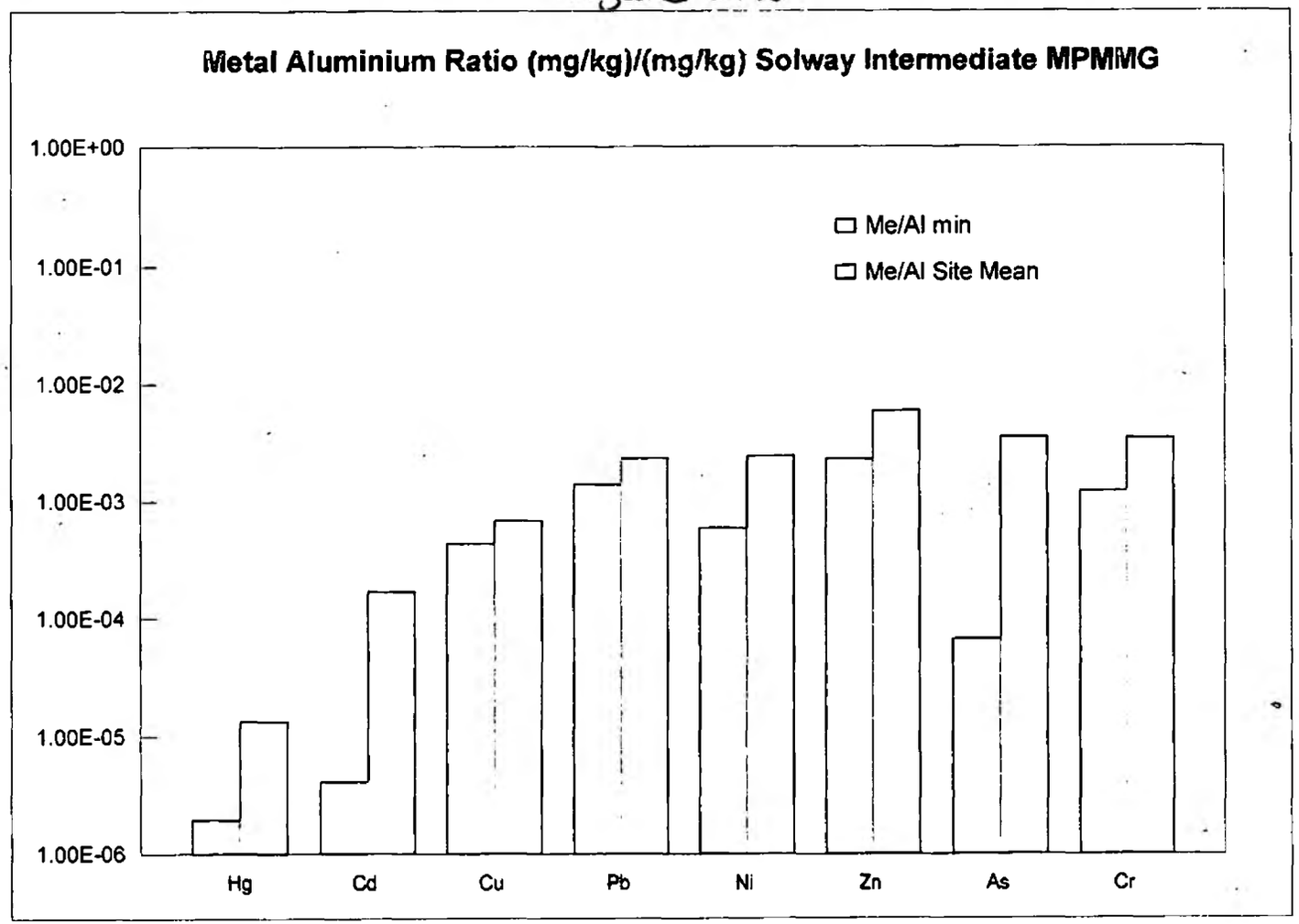


Figure 8.2



	Hg	Cd	Cu	Pb	Ni	Zn	As	Cr
(Me/Al) min	2.0E-06	4.2E-06	4.36E-04	1.4E-03	5.9E-04	2.3E-03	6.7E-05	1.23E-03
(Me/Al) site	1.37E-05	1.71E-04	6.83E-04	2.31E-03	2.42E-03	5.88E-03	3.55E-03	3.42E-03

Figure 8.3c

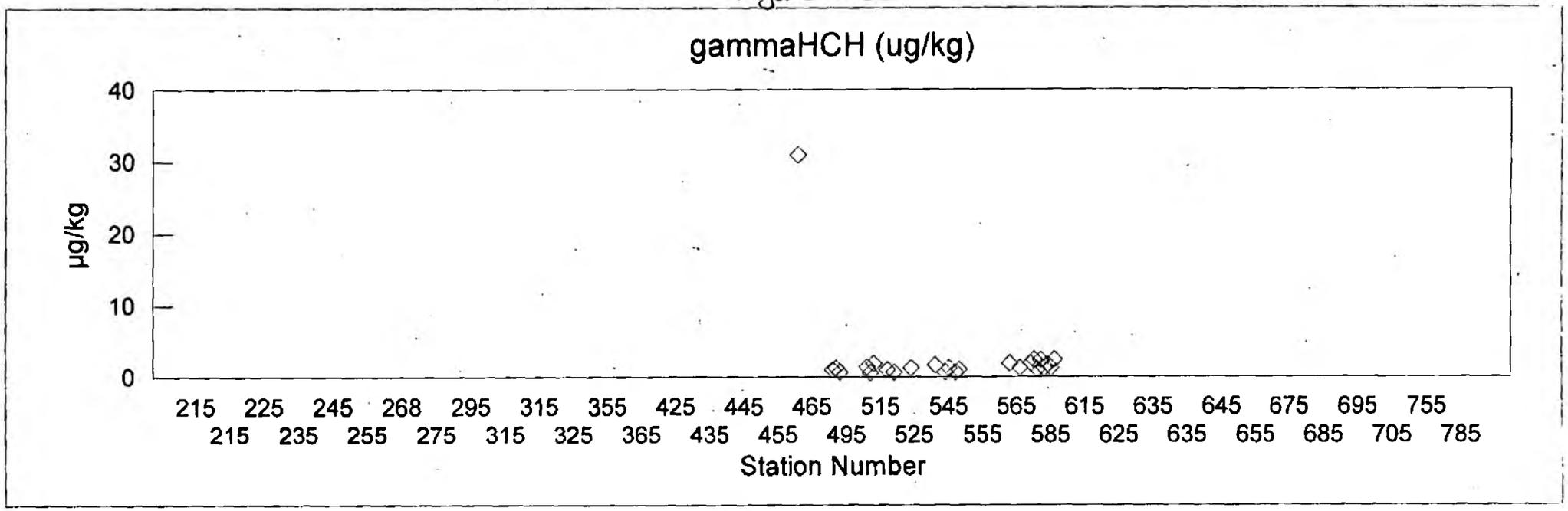


Figure 8.3d

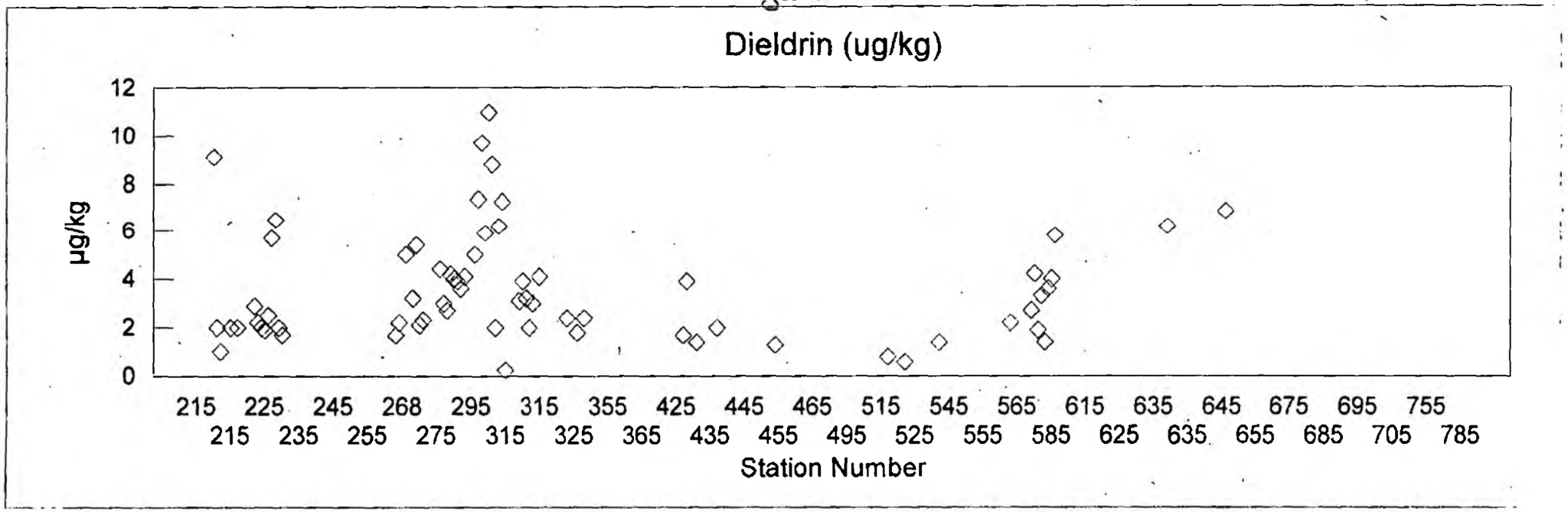


Figure 8.3e

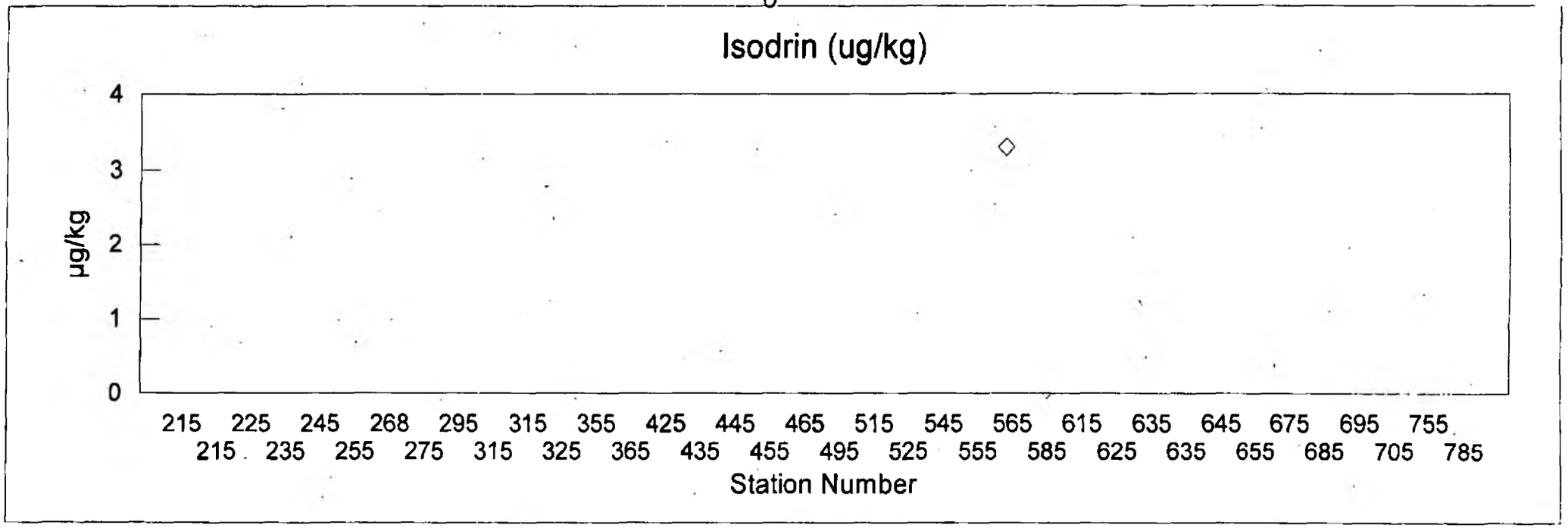


Figure 8.3f

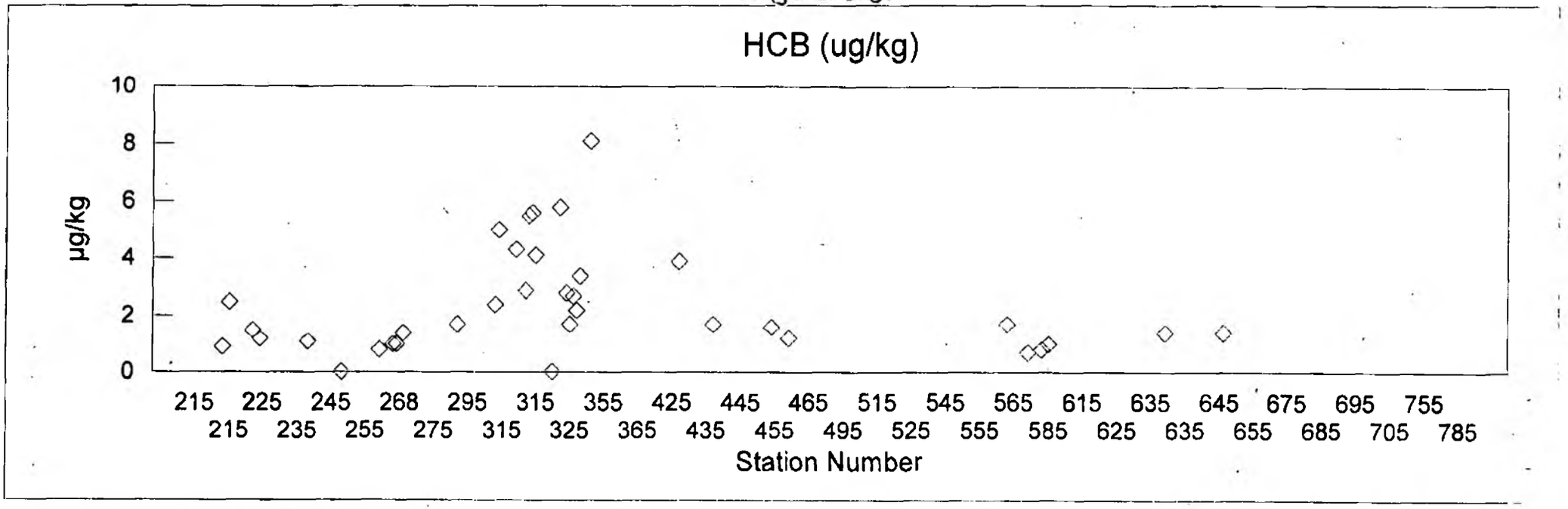


Figure 8.3g

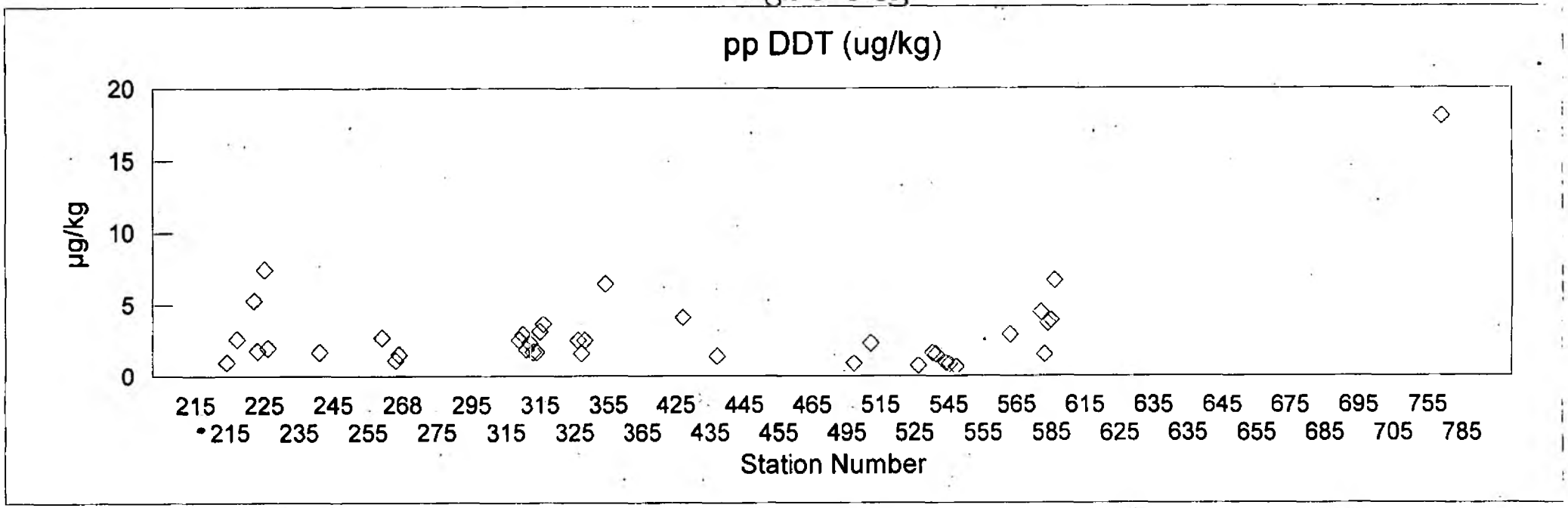


Figure 8.3h.

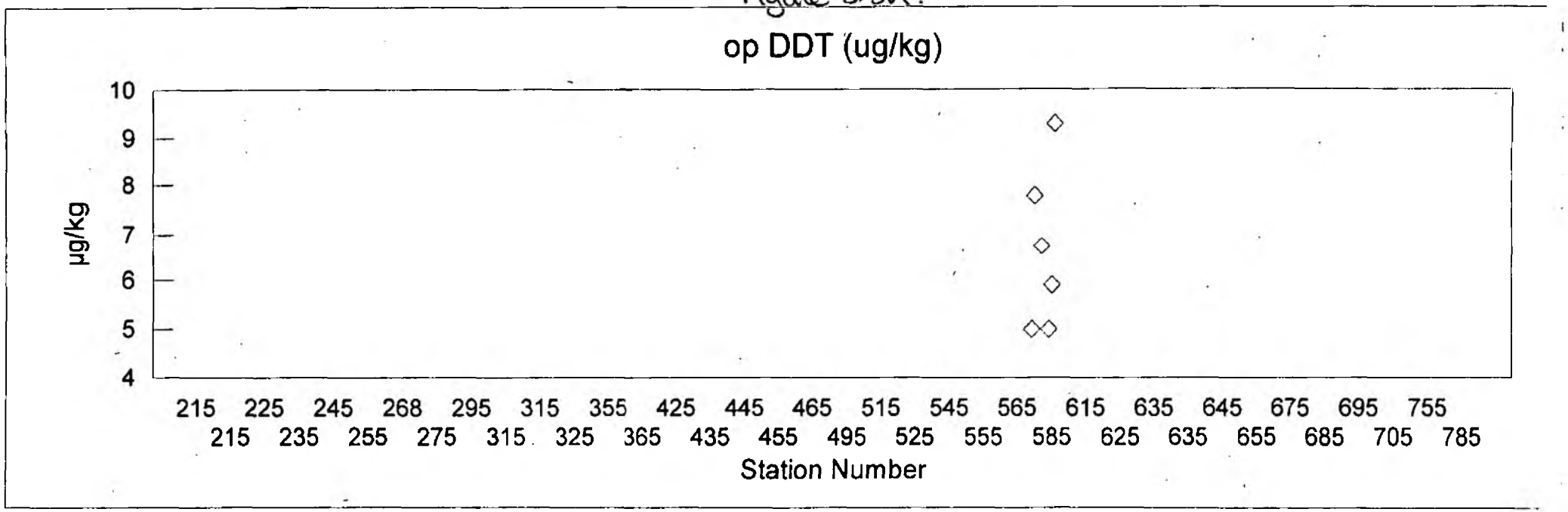


Figure 8.3i

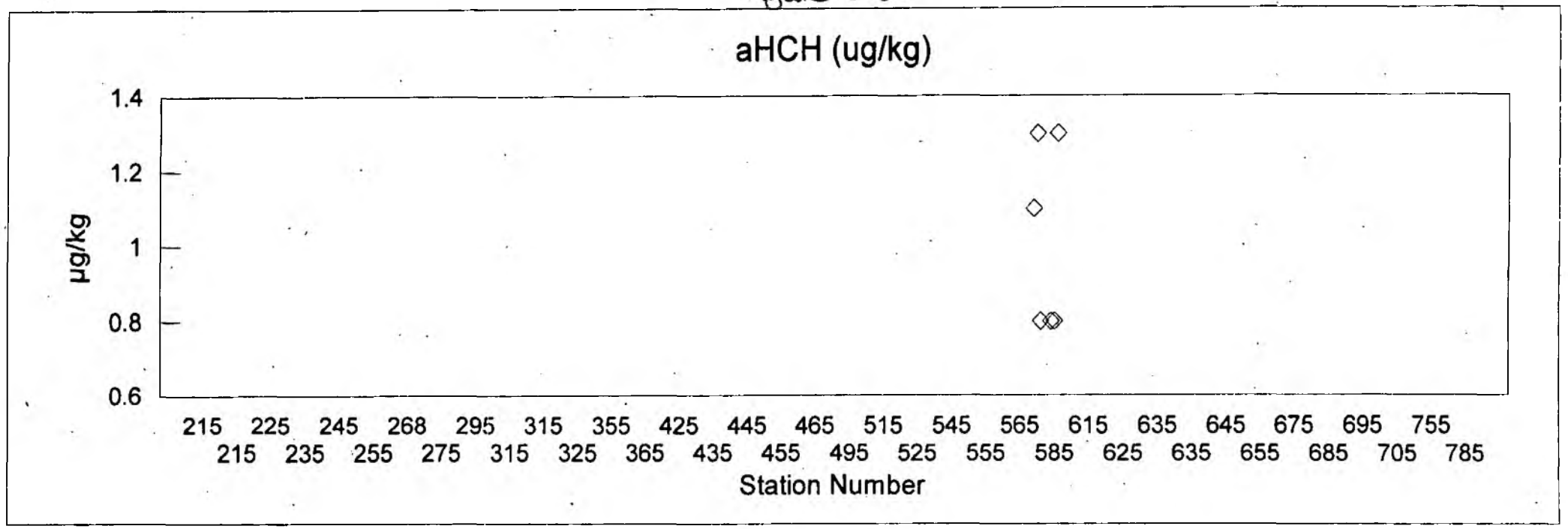


Figure 8.3j

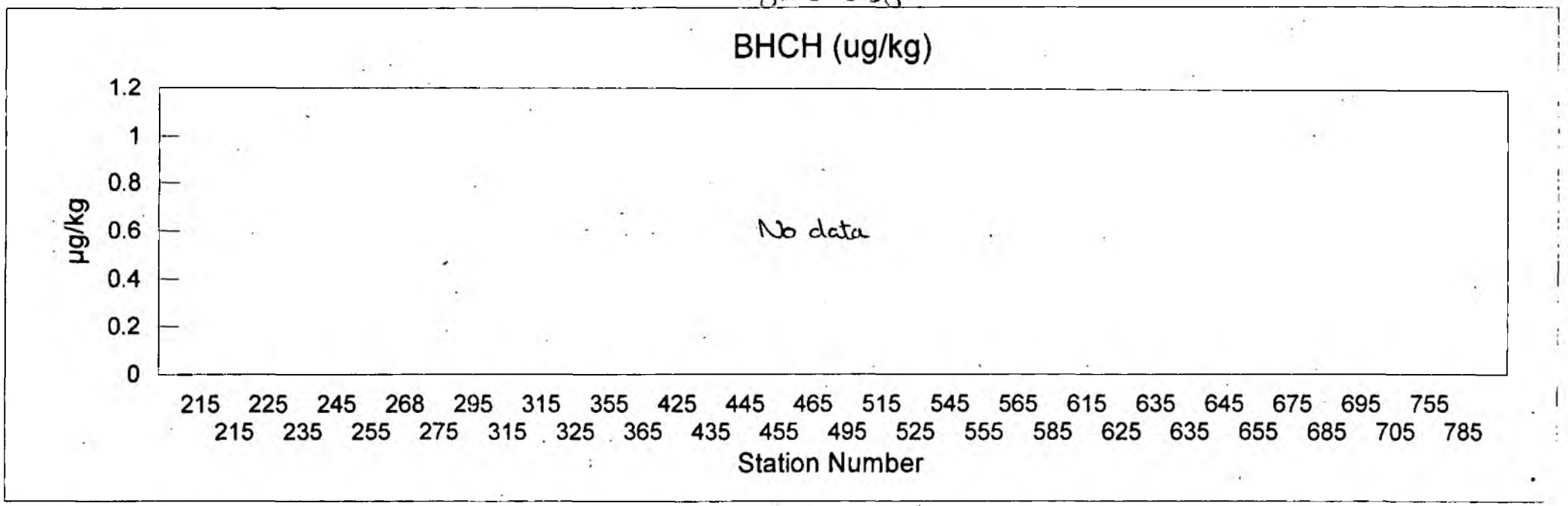


Figure 8.3K

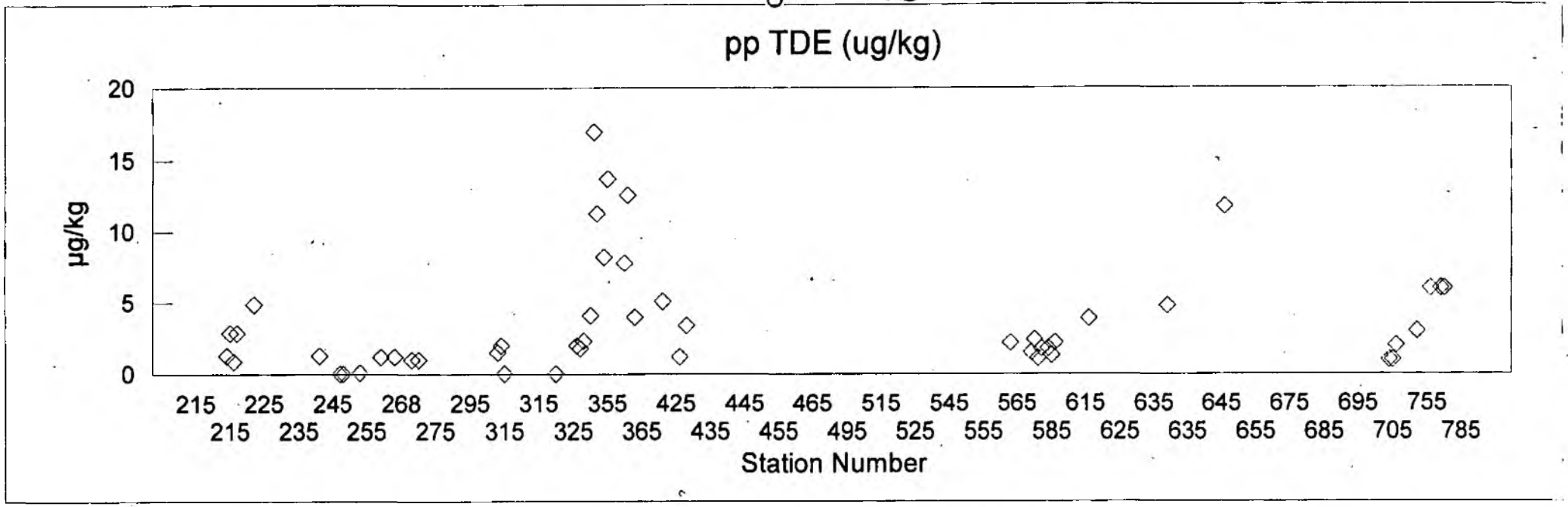


Figure 8.3L

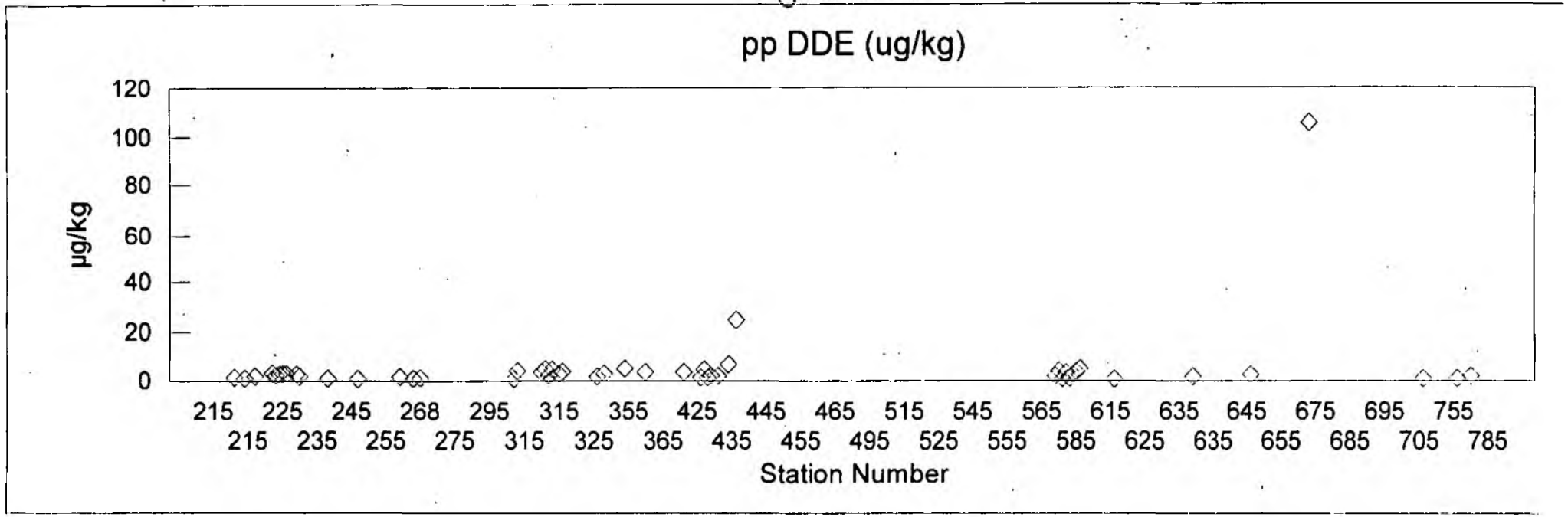


Figure 8.3m

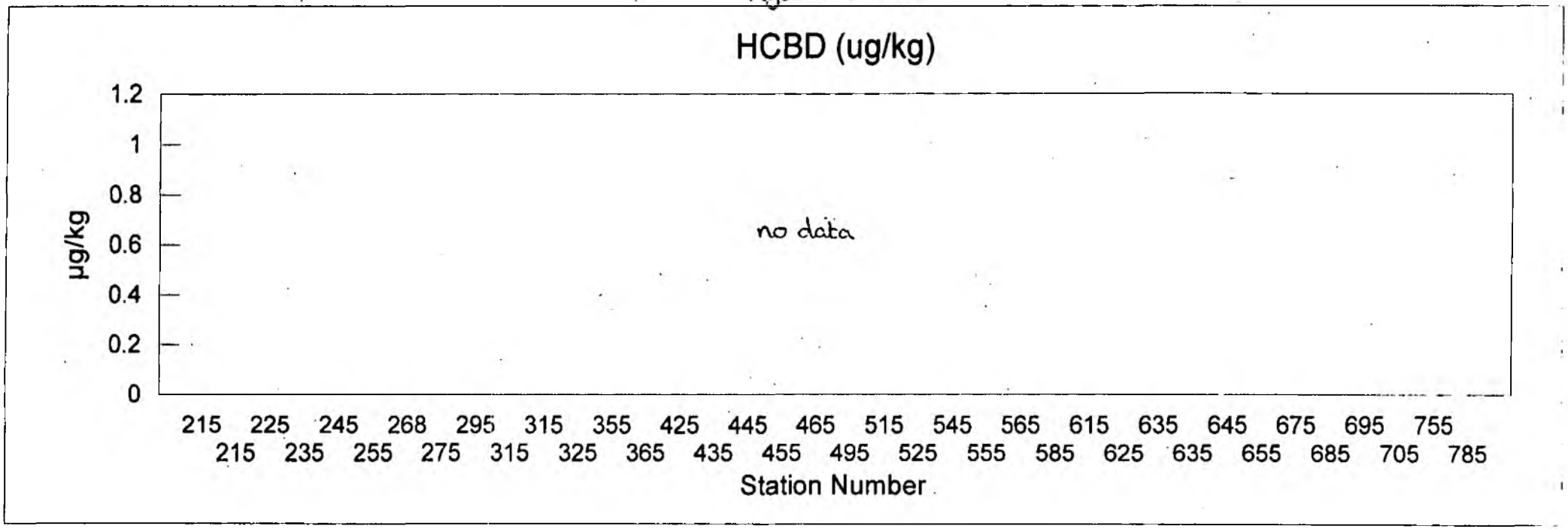


Figure 8.3n

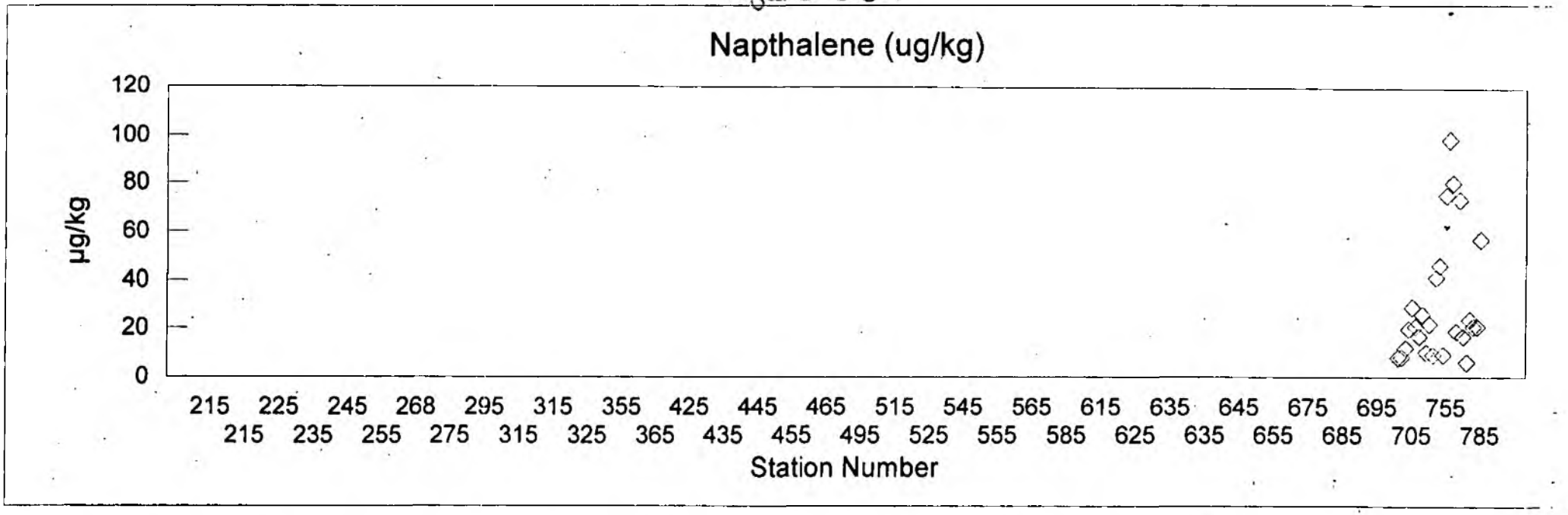
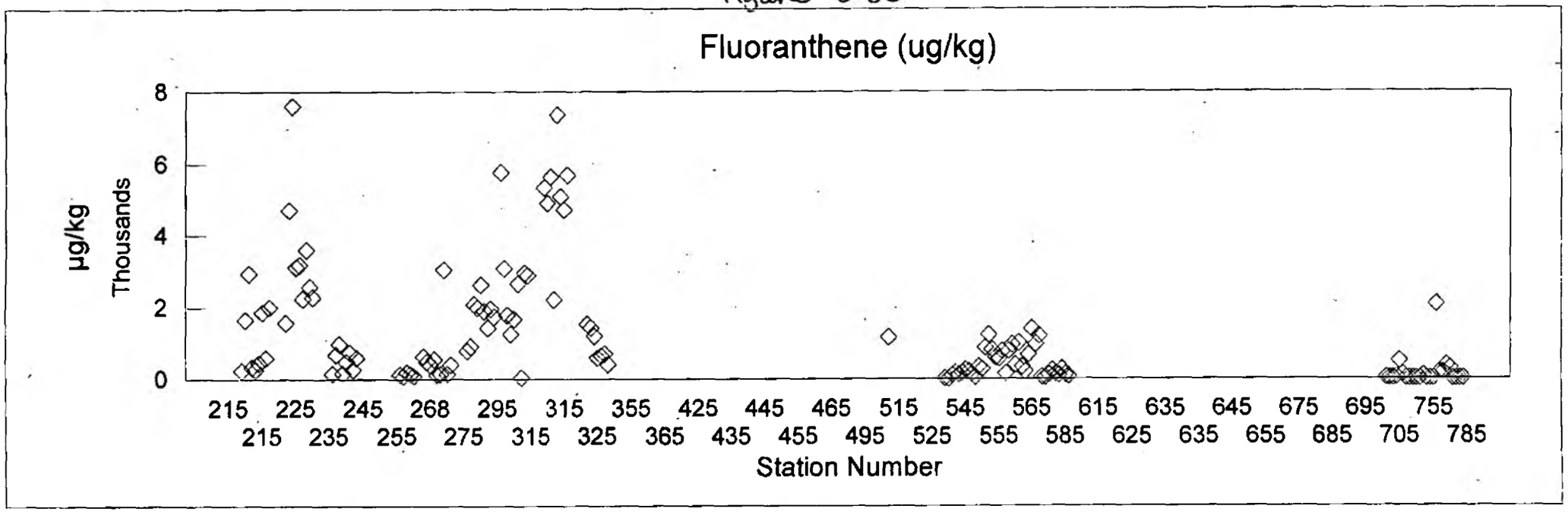


Figure 8.30



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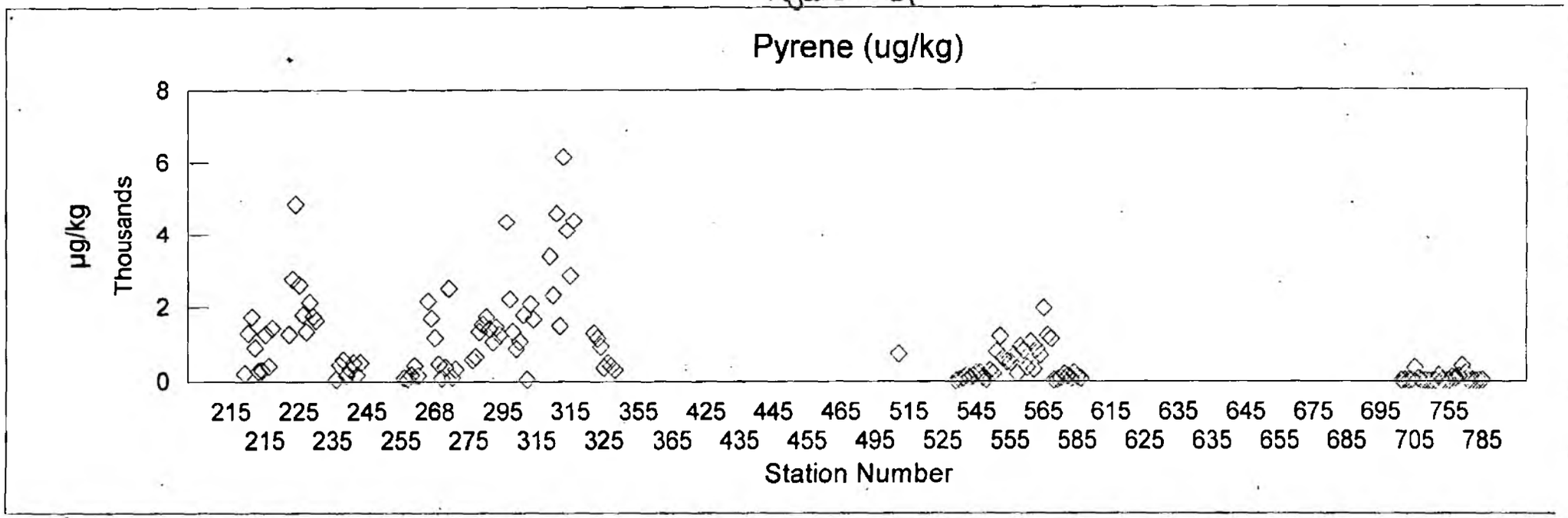


Figure 8.3q

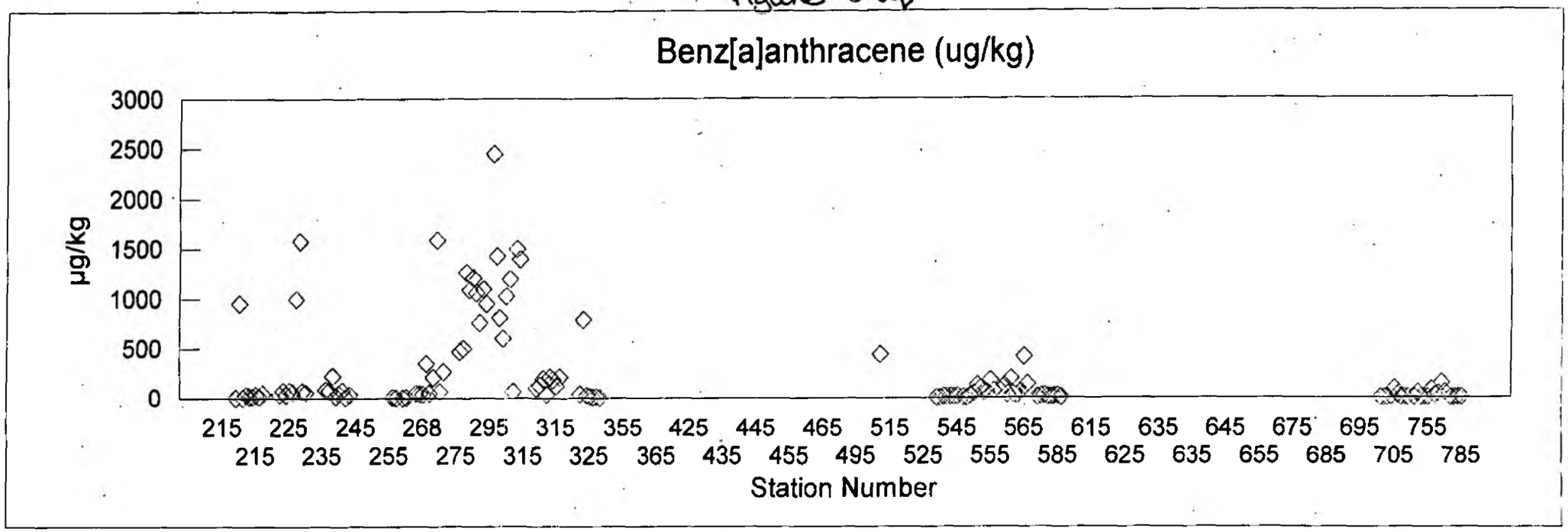


Figure 8.3r

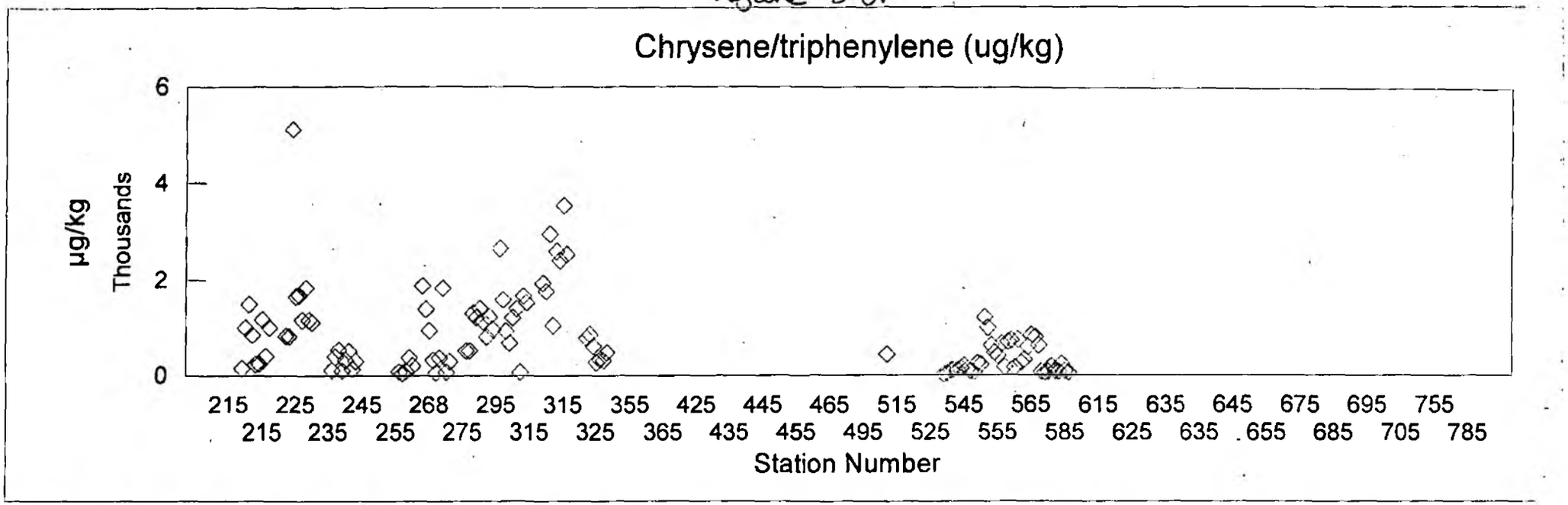


Figure 8.3s

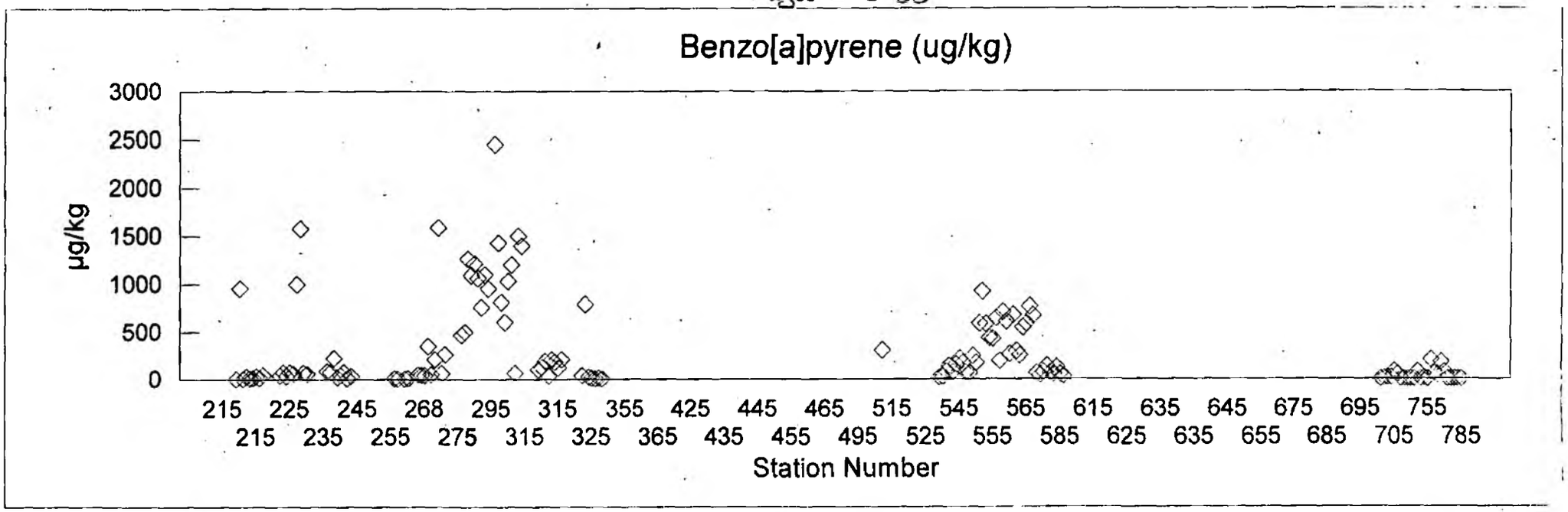


Figure 8.3t

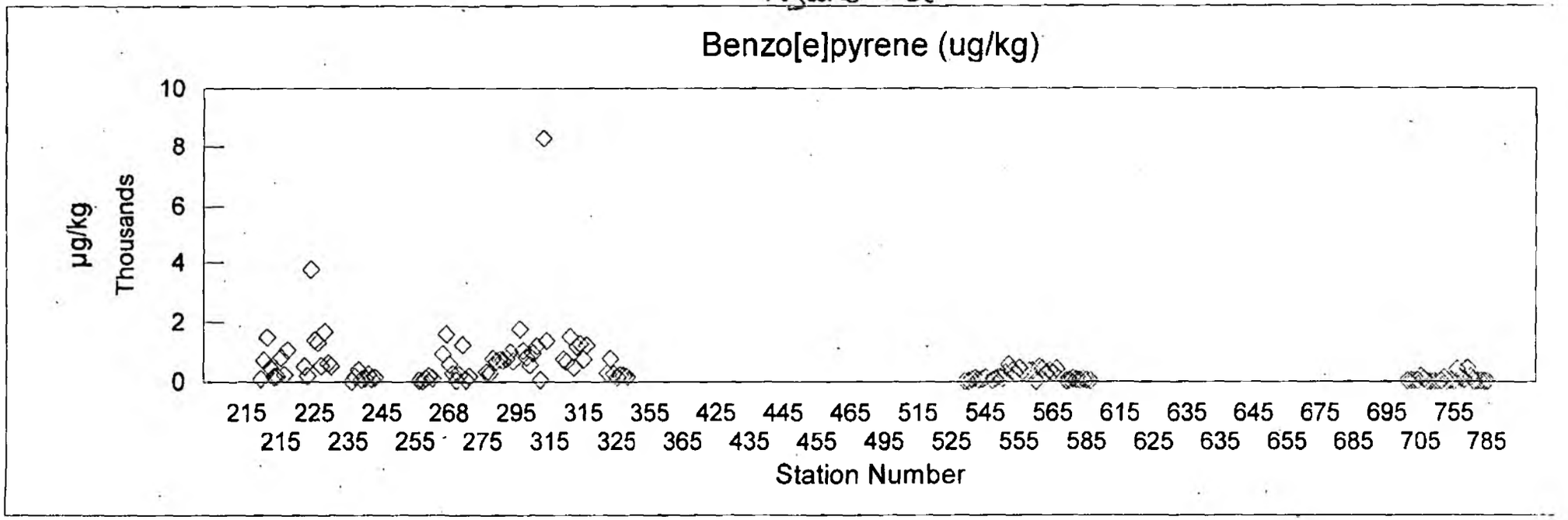


Figure 8.3u

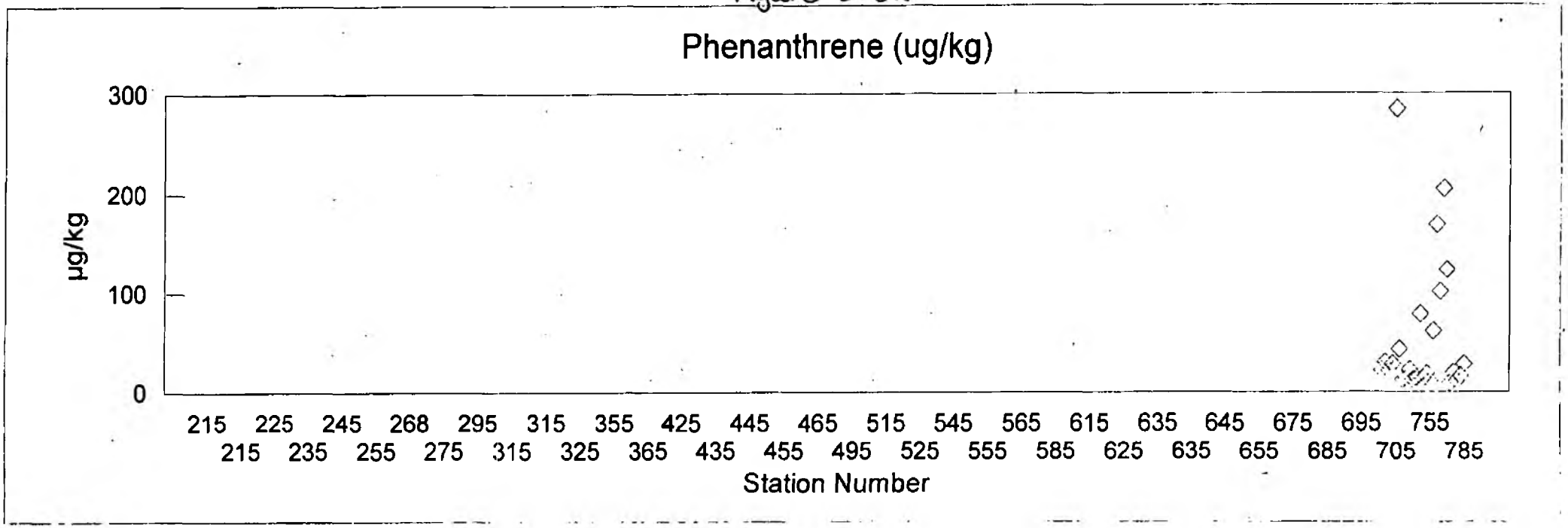


Figure 8.3v

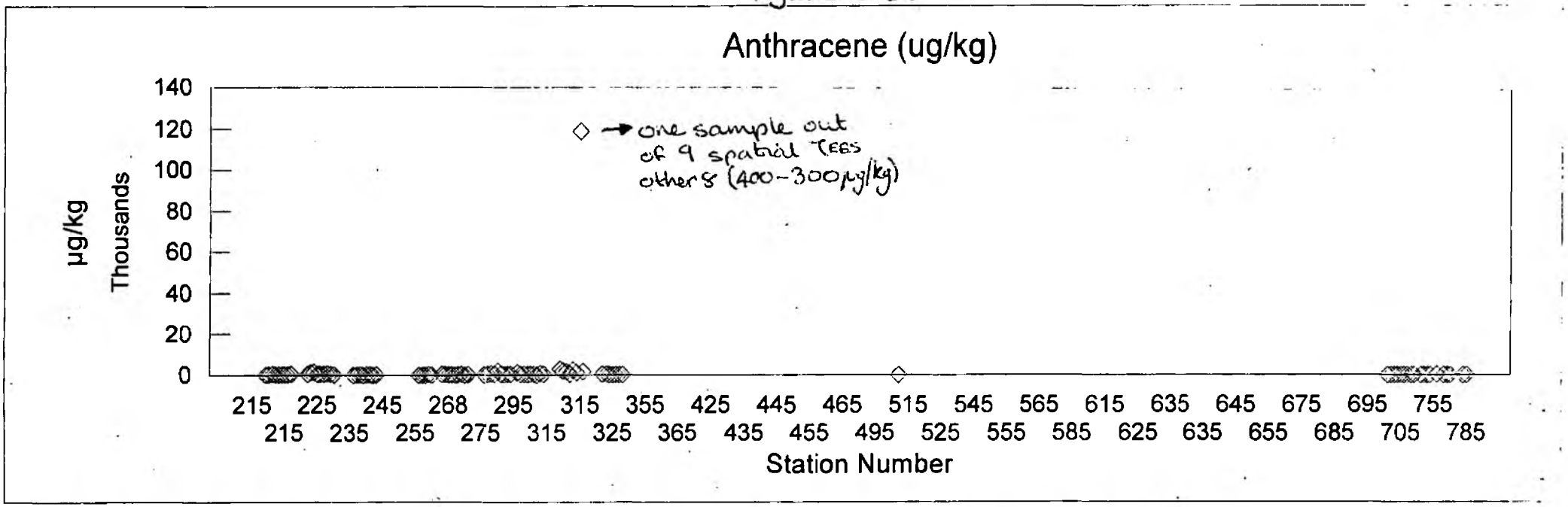


Figure 8.3w

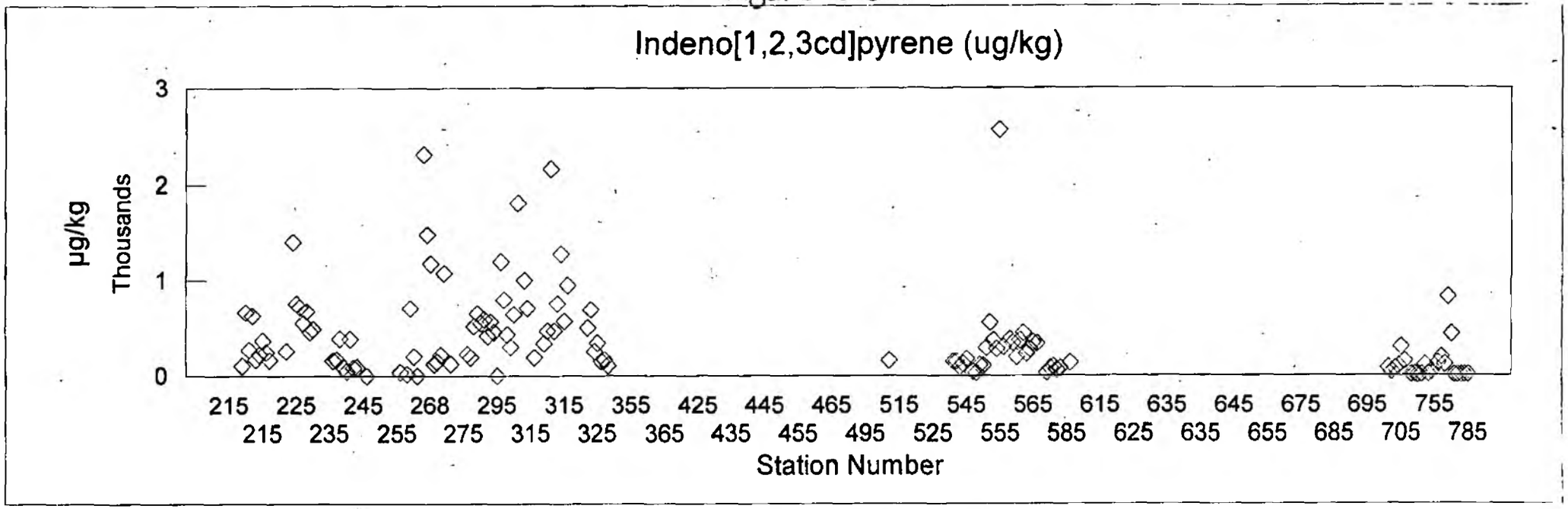


Figure 8.3x

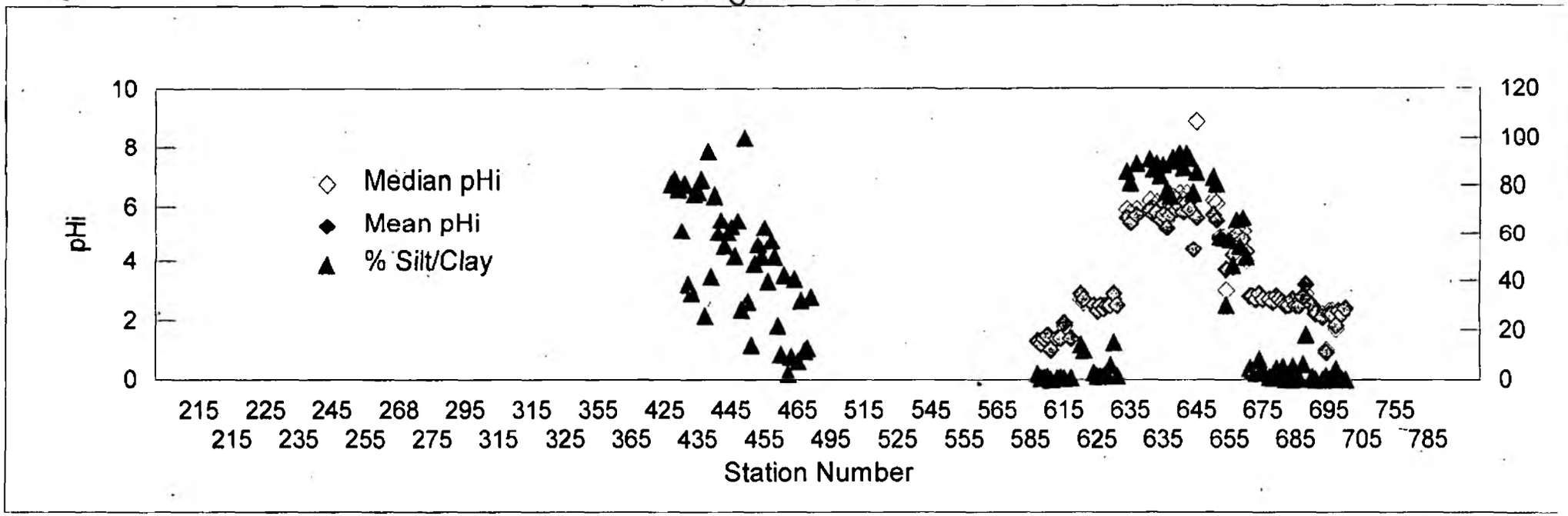


Figure 8.4a

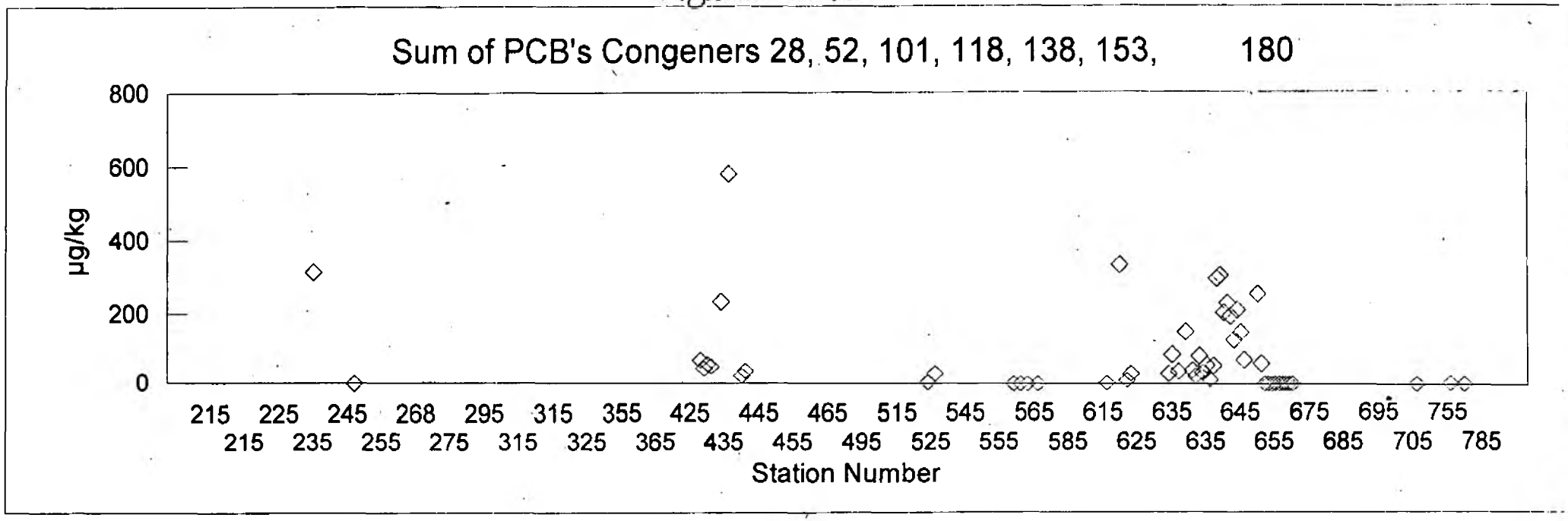

Sum of PCB's Congeners 28, 52, 101, 118, 138, 153, 180
800
600
400
200
0
µg/kg
215 225 245 268 295 315 355 425 445 465 515 545 565 615 635 645 675 695 755
215 235 255 275 315 325 365 435 455 495 525 555 585 625 635 655 685 705 785
Station Number

Figure 8.4b

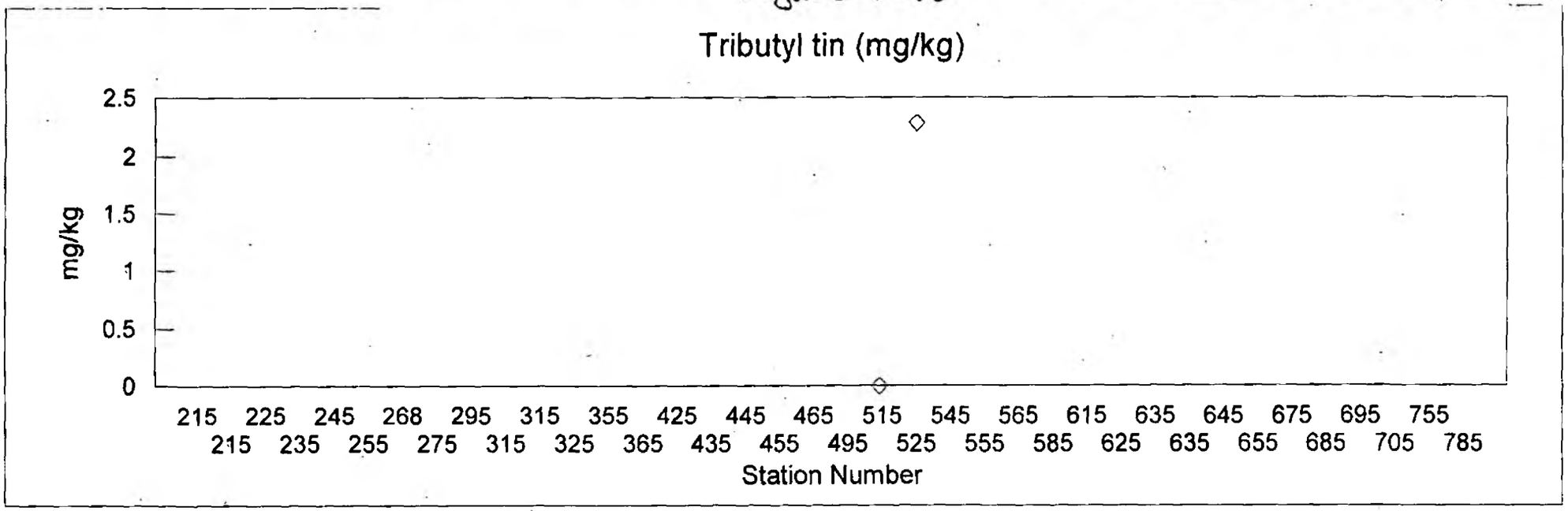


Figure 8.4c

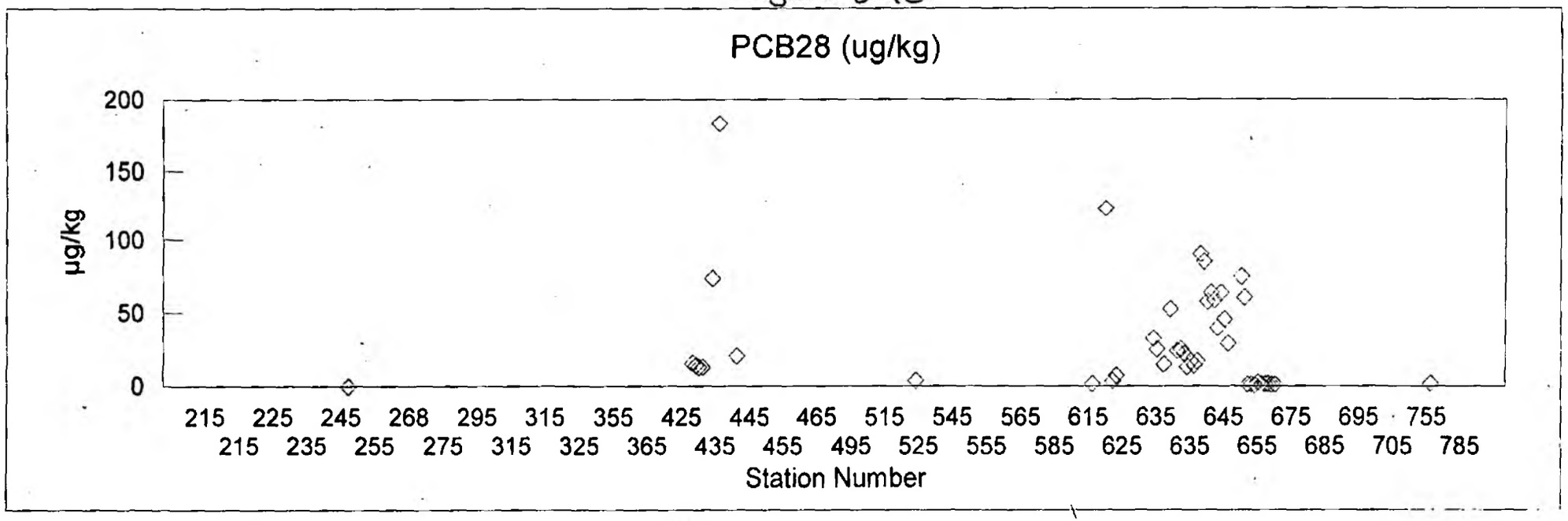
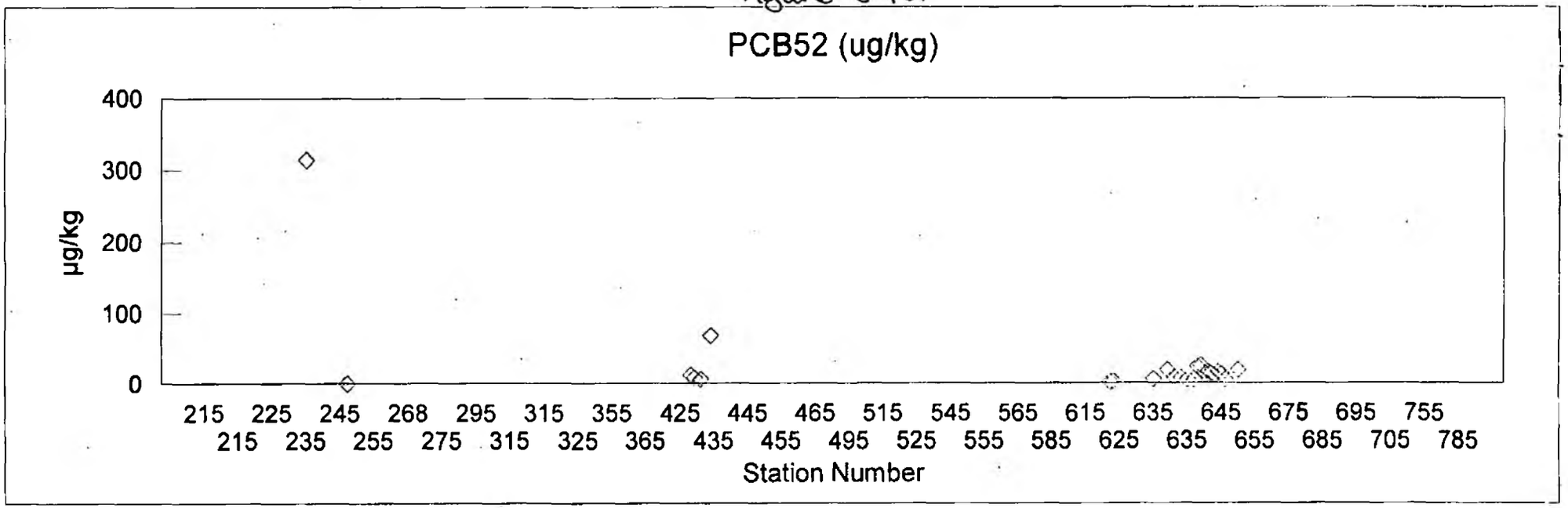


Figure 8.4d



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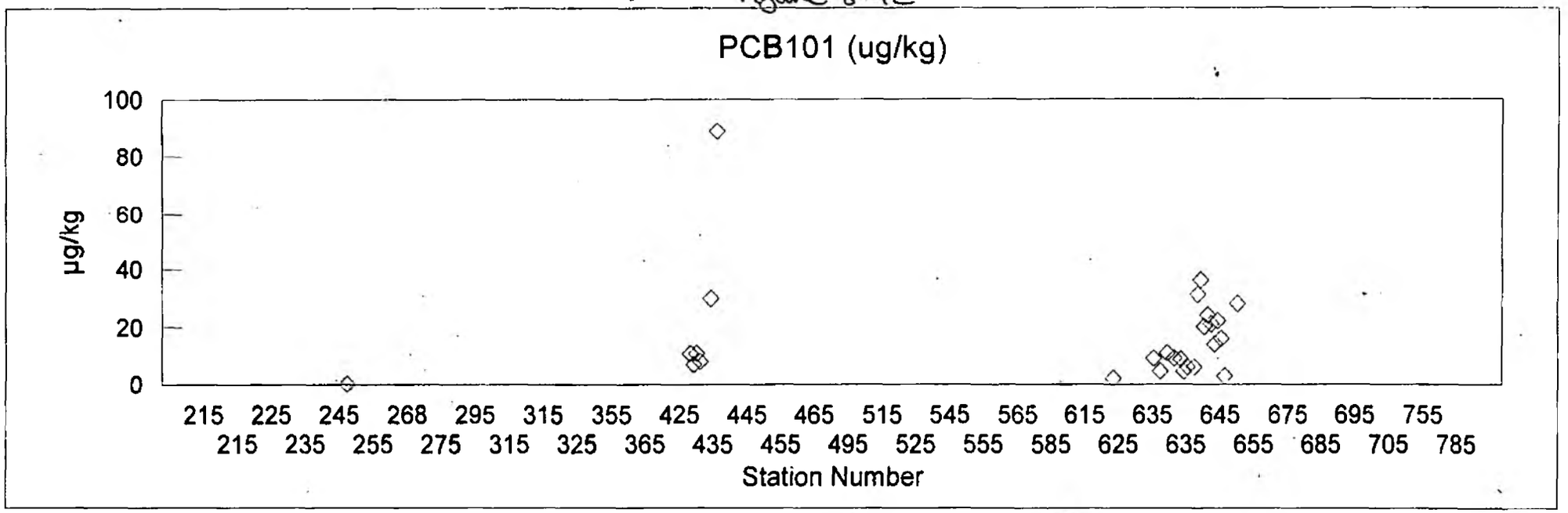


Figure 8.4f

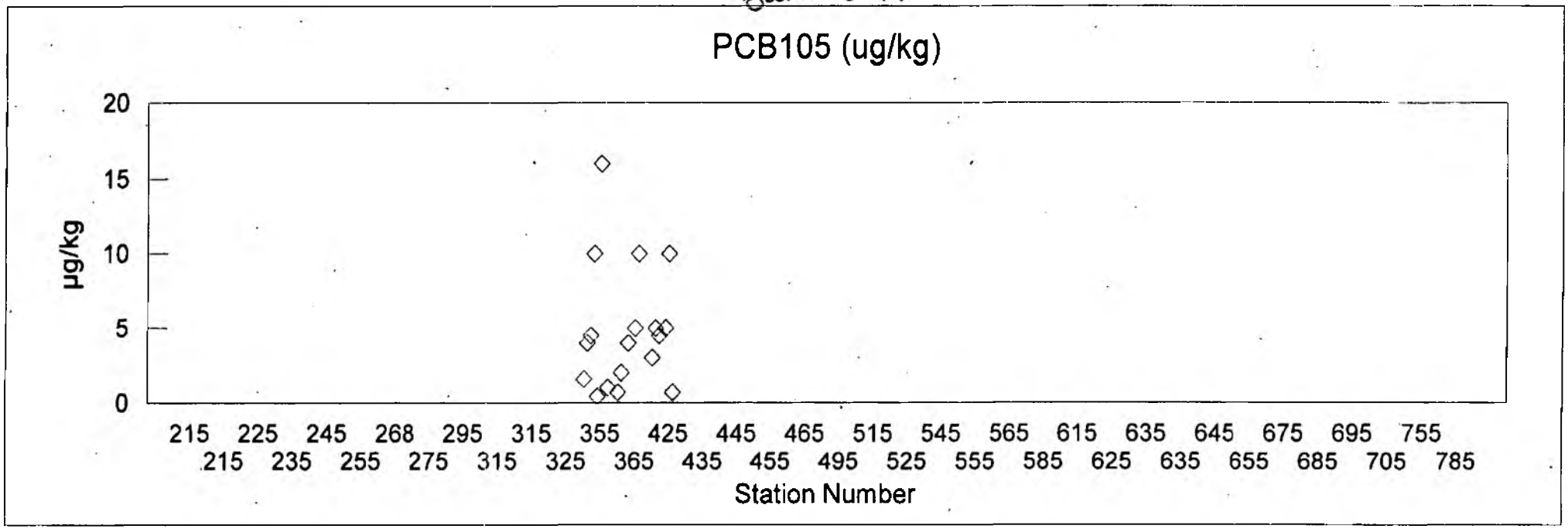


Figure 8.4g

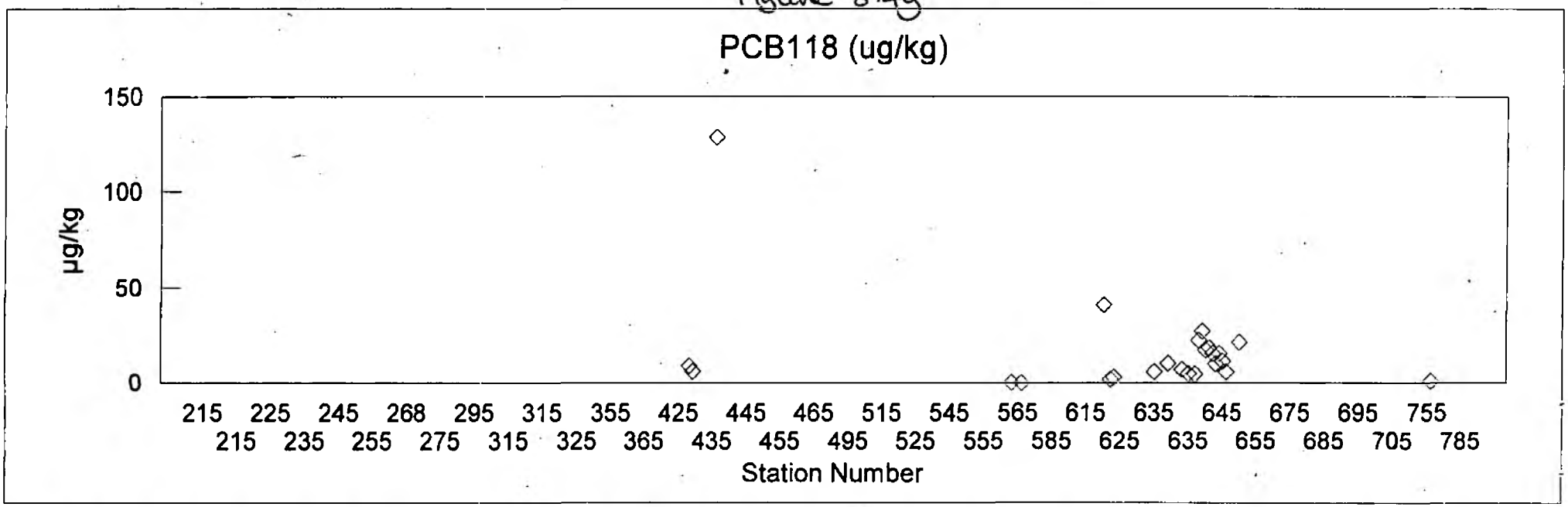


Figure 8.4h

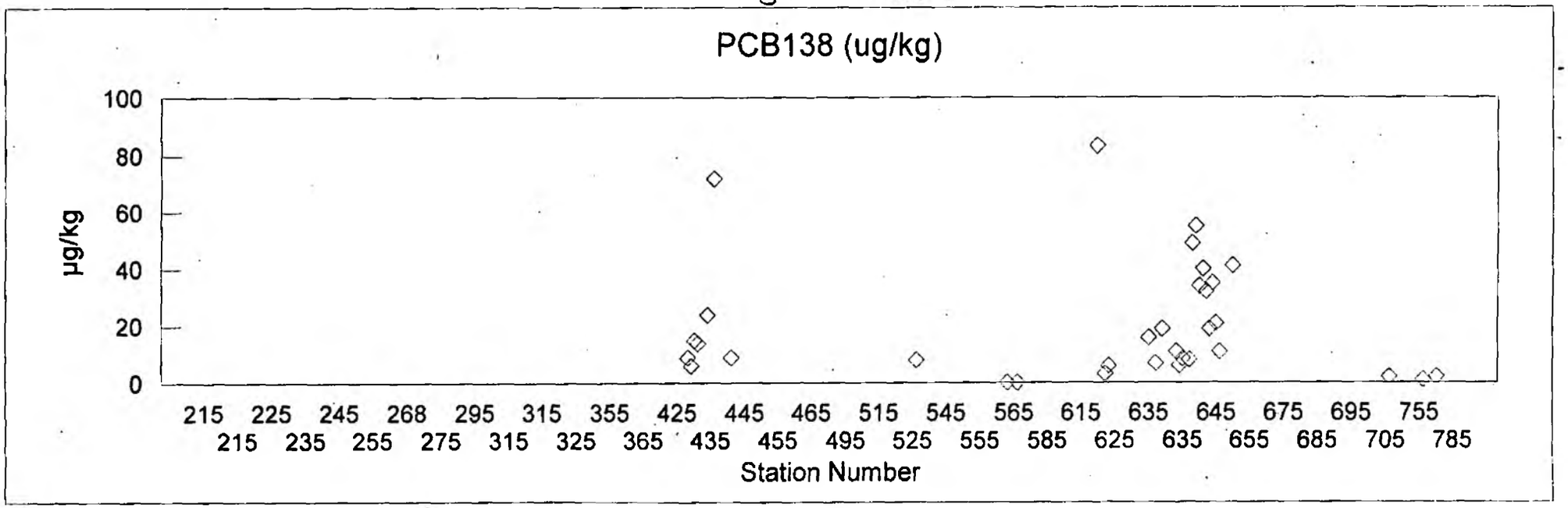


Figure 8.4i

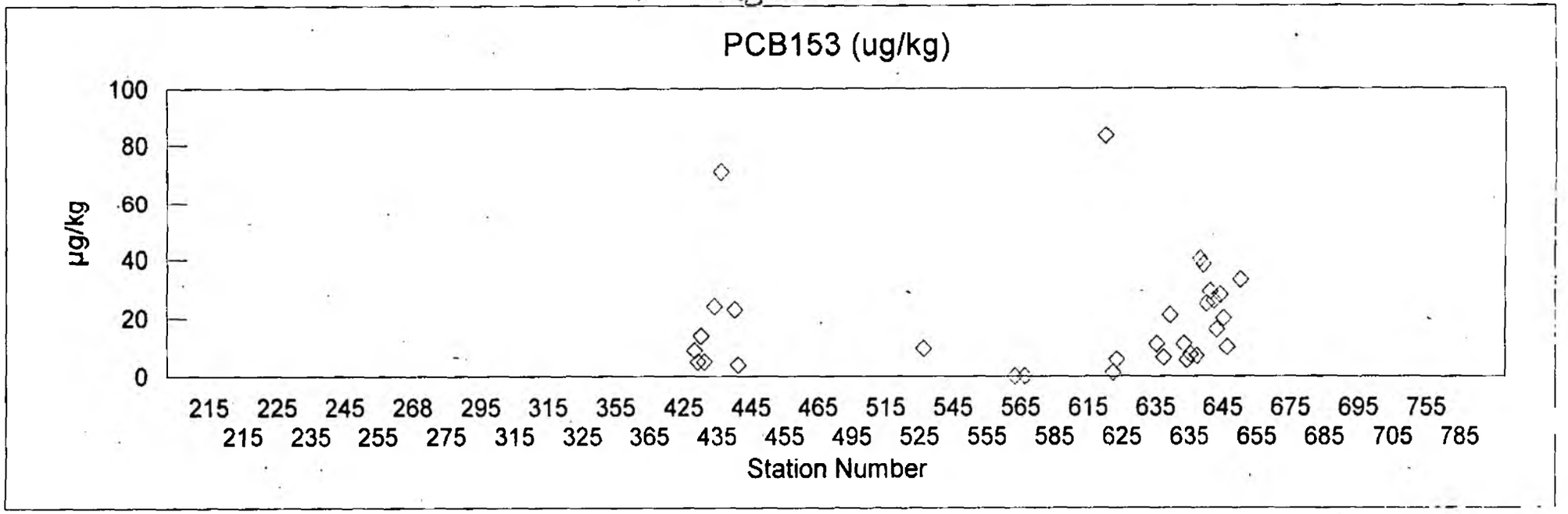


Figure 8.4j

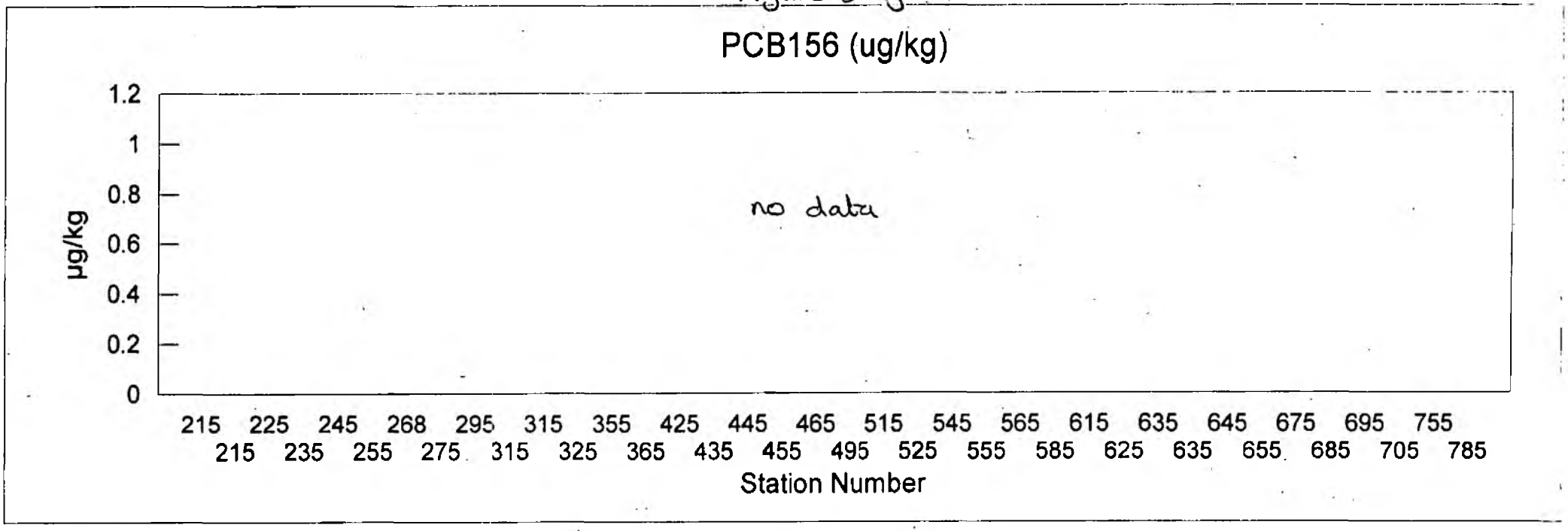
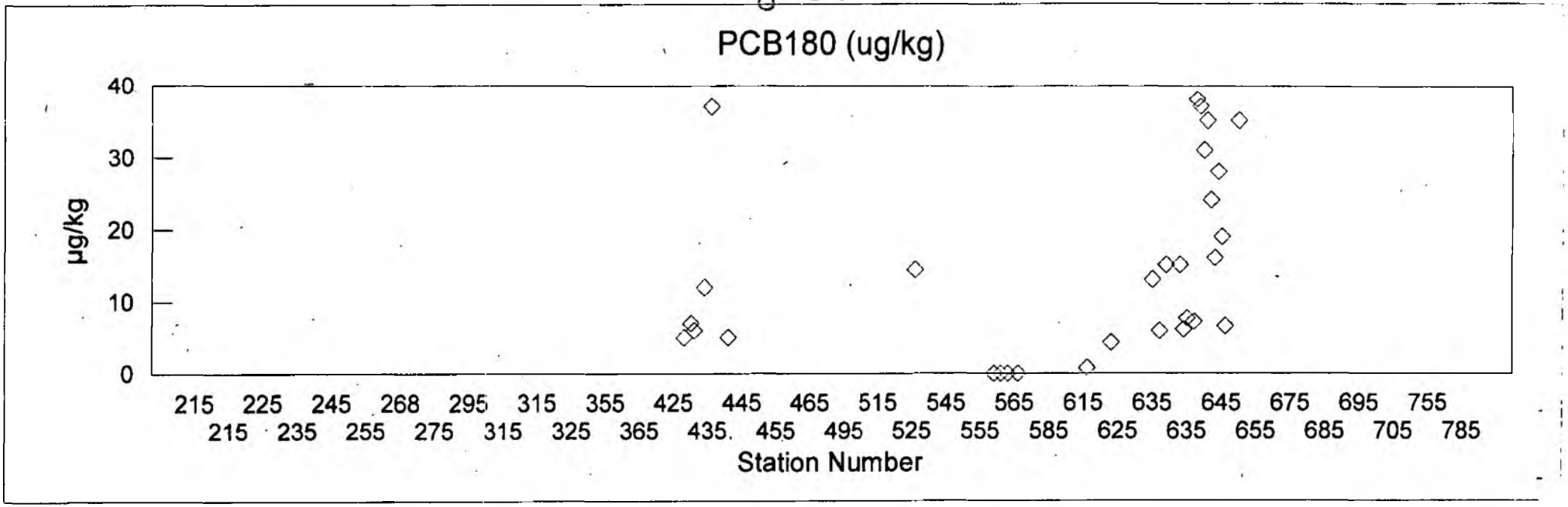


Figure 8.4k



APPENDIX I

Summary statistics for selected mandatory determinands, by NMP site.

In these tables: n = number of samples taken, nLT = number of samples reported below the LOD, CoV (coefficient of variation) = standard deviation / mean value.

NMP WQ Summary Statistics for Dissolved Oxygen (mg/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	0						
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	0						
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	0						
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	0						
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	0						
R.OUSE STOW BRIDGE (405)	E	TF6030007000	0						
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	0						
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	0						
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	10	0	6.48	12.2	9.113	8.85	0.183
SEA AT TEES (295)	I	NZ7190038200	1	0	12.8	12.8	12.8	12.8	
SEA OFF TYNE (245)	I	NZ5540068500	2	0	11.6	13.4	12.5	12.5	0.102
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	4	0	0.791	10.6	4.175	2.655	1.053
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	15	0	5.1	12.1	8.998	8.88	0.243
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	4	0	1.75	10.2	5.485	4.995	0.652
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	7	0	6.4	12.6	10.34	11.1	0.194
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	37	0	0.597	11.8	7.364	7.54	0.373
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	14	0	4.55	11.9	8.391	8.385	0.228
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	11	0	5.81	16.3	10.395	9.37	0.282
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	13	0	6.4	11.4	9.223	9.4	0.184
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	6	0	7.5	11.3	9.948	10.25	0.13
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	6	0	6.8	13.4	9.787	9.955	0.23
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	6	0	6.9	11.4	9.66	9.6	0.166
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	2	0	9.9	13.24	11.57	11.57	0.204
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	12	0	6.07	9.1	7.943	8.3	0.124
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	8	0	5.43	10.96	8.854	8.815	0.202
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	16	0	0.5	9.97	7.91	9.15	0.376
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	13	0	0.53	9.9	6.449	7.52	0.468
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	15	0	7.32	11.4	9.303	9.4	0.124
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	13	0	1.3	9	5.837	5.6	0.358
OFF LUNE / WYRE (785)	I	SD3170052300	4	0	6.33	10.4	8.585	8.805	0.196
SOLWAY (15)	I	NY0910054300	5	0	8.09	12	9.614	8.99	0.179
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	1	0	8.2	8.2	8.2	8.2	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	7	0	6.05	11.07	9.004	8.82	0.207
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	7	0	7.06	10.22	8.676	8.07	0.158
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	7	0	6.92	11.46	8.83	7.81	0.232
CALSHOT (525)	E	SU4930002450	0						
DOCK HEAD (505)	E	SU4270009250	0						
EAST BRAMBLES BUOY (515)	E	SZ5455099150	0						
SELSEY BILL (495)	I	SZ8300085500	0						
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	11	0	4.9	12.6	7.327	7.2	0.288
THE WARP (465)	I	TR0527083350	5	0	7.8	11.8	9.42	8.7	0.166
WEST THURROCK (445)	E	TQ7175080250	9	0	4.1	12.4	6.389	5.2	0.418
WOOLWICH (435)	E	TQ4330079550	5	0	4	6.5	4.78	4.4	0.206
CARDIGAN BAY (655)	I	SN5190075630	2	0	7.2	10.06	8.63	8.63	0.234
DEE BUOY NO.2 (695)	E	SJ2020082100	10	0	7.6	112.45	21.406	9.665	1.511
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	9	0	7.2	12.5	9.43	9.5	0.155
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	9	0	7.4	12.4	9.387	9.47	0.165
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	1	0	7.4	7.4	7.4	7.4	
SEVERN AT NASH POINT (615)	I	SS9200056800	1	0	8.4	8.4	8.4	8.4	
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	1	0	6.9	6.9	6.9	6.9	
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	3	0	6.5	12.62	9.903	10.59	0.315

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Salinity

Site Name	E/O	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	11	0	9	27	18.618	19.8	0.294
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	3	0	2.5	33.3	22.6	32	0.771
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	0						
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	6	0	0.5	20	7.667	5.5	1.063
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	10	0	0.25	28	10.135	7	1.029
R.OUSE STOW BRIDGE (405)	E	TF6030007000	8	0	0.3	20	3.088	0.75	2.215
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	12	0	1	31	15.842	13.75	0.656
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	4	0	29.3	31	30.075	30	0.023
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	29	0	14.5	37.4	29.405	31	0.182
SEA AT TEES (295)	I	NZ7190038200	0						
SEA OFF TYNE (245)	I	NZ5540068500	0						
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	10	0	12	29.05	22.775	23.85	0.227
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	11	6	0.4	6.5	1.4	0.4	1.45
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	11	0	17	31.5	29.091	30.5	0.141
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	33	0	18.2	34.1	31.465	32.6	0.113
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	29	0	0.1	32	14.019	14.5	0.5
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	32	0	0.8	24.4	14.833	14	0.439
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	31	0	11	31.6	23.584	24.1	0.28
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	32	2	0.5	15.8	4.561	3.5	0.917
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	9	0	1	29	20.933	25	0.453
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	10	0	13	31	26.15	28	0.22
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	9	1	1	25	16.6	21	0.572
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	4	0	30.2	32.7	31.628	31.806	0.039
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	14	0	19.5	32.7	28.536	30.3	0.143
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	13	0	28.986	33.8	31.937	32.2	0.041
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	14	0	22.5	33.1	30.157	30.8	0.091
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	16	7	.01	7.22	2.408	1.2	0.893
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	15	0	21.3	33.1	28.867	30.2	0.13
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	17	3	.017	25.7	15.483	20.3	0.635
OFF LUNE / WYRE (785)	I	SD3170052300	5	0	31.3	35	33.042	33	0.049
SOLWAY (15)	I	NY0910054300	4	0	19.2	32.6	27.64	29.38	0.218
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	2	0	35	35.1	35.05	35.05	0.002
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	15	0	1	23.8	14.8	17.3	0.527
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	17	0	12.6	34.3	28.041	30.6	0.229
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	17	0	4.9	32.6	25.312	28.1	0.336
CALSHOT (525)	E	SU4930002450	28	0	28.3	34.6	32.31	32.7	0.057
DOCK HEAD (505)	E	SU4270009250	29	0	22.6	33.3	30.311	31.1	0.086
EAST BRAMBLES BUOY (515)	E	SZ5455099150	29	0	31	35	33.447	33.6	0.035
SELSEY BILL (495)	I	SZ8300085500	25	0	33.5	35.3	34.524	34.62	0.015
CHAPMAN BUOY	E	TQ8140061300	4	0	28.3628	31.7953	29.989	29.896	0.052
ERITH	E	TQ5170078600	5	0	9.03275	16.4396	11.706	10.478	0.265
LONDON BRIDGE	E	TQ2140076300	5	0	0.25292	2.72608	1.521	1.445	0.723
MUCKING (455)	E	TQ5975078620	6	0	23.3045	31.7953	27.791	27.279	0.113
THE WARP (465)	I	TR0527083350	1	0	33.6018	33.6018	33.602	33.602	
WEST THURROCK (445)	E	TQ7175080250	6	0	6.50358	23.6658	16.56	19.059	0.389
WOOLWICH (435)	E	TQ4330079550	5	0	1.08393	7.94882	3.505	1.807	0.837
CARDIGAN BAY (655)	I	SN5190075630	2	0	33.654	34.4	34.027	34.027	0.016
DEE BUOY NO.2 (695)	E	SJ2020082100	8	0	29.8	34.2	32.003	32.1	0.044
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	9	0	25.2	32.4	29.622	29.7	0.069
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	8	0	15.4	32.4	27.138	27.95	0.197
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	19	0	19.3	28.9	25.608	26.3	0.098
SEVERN AT NASH POINT (615)	I	SS9200056800	21	0	27.1	33.2	31.259	31.7	0.048
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	22	0	7.7	27.5	21.548	22.7	0.231
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	16	0	1.77	22.18	16.797	17.025	0.297

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Oxygen (% Saturation)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	4	0	2.8	80.8	25.65	9.5	1.441
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	3	0	94	98.6	96.867	98	0.026
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	0						
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	5	0	4.1	88	33.78	9.4	1.113
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	7	0	6.9	85	66.486	74	0.406
R.OUSE STOW BRIDGE (405)	E	TF6030007000	7	0	60	88.9	82.514	86	0.122
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	9	0	6.8	92	75.344	84	0.354
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	4	0	91.5	96.3	93.7	93.5	0.025
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	0						
SEA AT TEES (295)	I	NZ7190038200	0						
SEA OFF TYNE (245)	I	NZ5540068500	0						
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	0						
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	0						
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	0						
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	0						
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	0						
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	1	0	108	108	108	108	
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	0						
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	0						
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	0						
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	0						
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	0						
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	2	0	100.6	158	129.3	129.3	0.314
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	4	0	76.55	84.9	77.212	76.7	0.085
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	3	0	78.9	131.5	103.633	100.5	0.255
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	5	0	5	99.9	77.08	92	0.525
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	5	0	70.05	79.9	74.062	72.52	0.057
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	6	0	81.7	111.7	92.087	90.88	0.104
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	5	0	10.5	74.8	55.718	66.96	0.473
OFF LUNE / WYRE (785)	I	SD3170052300	1	0	109.5	109.5	109.5	109.5	
SOLWAY (15)	I	NY0910054300	2	0	96.1	99.5	97.8	97.8	0.025
OFF PLYMOUTH SOUND (585)	O	SX3053017530	1	0	102.18	102.18	102.18	102.18	
OFF TAMAR (575)	I	SX4601046200	2	0	103.4	107	105.2	105.2	0.024
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	16	0	71	119	92.375	92.5	0.116
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	16	0	81	117	96	93	0.093
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	16	0	76	115	92.125	91	0.115
CALSHOT (525)	E	SU4930002450	39	0	77	134.31	94.997	93.4	0.108
DOCK HEAD (505)	E	SU4270009250	41	0	70	139	92.25	90.92	0.117
EAST BRAMBLES BUOY (515)	E	SZ5455099150	40	0	18.7	132	93.765	94.75	0.171
SELSEY BILL (495)	I	SZ8300085500	35	0	83	129	97.693	95.5	0.1
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	0						
THE WARP (465)	I	TR0527083350	0						
WEST THURROCK (445)	E	TQ7175080250	0						
WOOLWICH (435)	E	TQ4330079550	0						
CARDIGAN BAY (655)	I	SN5190075630	0						
DEE BUOY NO.2 (695)	E	SJ2020082100	1	0	117	117	117	117	
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	0						
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	0						
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	0						
SEVERN AT NASH POINT (615)	I	SS9200056800	0						
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	0						
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	0						

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Ammonia (mg/l N)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	14	1	0.00542	0.526	0.075	0.042	1.799
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	5	1	0.007	0.0779	0.035	0.035	0.843
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	13	1	0.007	0.0417	0.026	0.028	0.435
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	14	4	0.00657	0.433	0.083	0.022	1.647
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	4	1	0.0054	0.612	0.254	0.201	1.045
R.OUSE STOW BRIDGE (405)	E	TF6030007000	10	2	0.007	0.466	0.167	0.132	0.861
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	10	1	0.007	0.3	0.12	0.121	0.69
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	7	0	0.0287	0.11	0.074	0.086	0.44
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	9	0	0.3	7.9	2.604	1.08	1.129
SEA AT TEES (295)	I	NZ7190038200	2	1	0.03	0.85	0.332	0.332	1.352
SEA OFF TYNE (245)	I	NZ5540068500	2	1	0.03	0.9	0.457	0.457	1.369
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	8	0	3.77	15.8	8.579	7.945	0.477
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	12	3	0.03	2.1	0.494	0.16	1.459
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	9	0	0.34	10.89	4.431	3.61	0.709
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	12	0	0.03	6.04	1.018	0.33	1.633
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	12	0	0.31	16.3	6.633	5.65	0.847
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	12	0	0.07	0.78	0.327	0.22	0.678
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	14	2	0.03	0.92	0.344	0.32	0.752
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	13	0	0.05	0.63	0.252	0.22	0.649
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	16	0	0.12	5.1	0.812	0.56	1.466
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	16	0	0.09	0.94	0.326	0.26	0.67
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	15	0	0.08	3.28	0.749	0.39	1.223
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	4	0	0.106	0.44	0.205	0.136	0.777
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	11	1	.05	1.63	0.415	0.202	1.114
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	9	2	.05	0.46	0.144	0.124	0.909
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	12	1	.05	.238	0.13	0.11	0.516
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	9	0	1.45	8.33	4.883	4.81	0.464
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	11	2	.05	1.08	0.262	0.152	1.131
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	11	0	.829	2.61	1.51	1.44	0.325
OFF LUNE / WYRE (785)	I	SD3170052300	4	1	0.00005	0.142	0.049	0.026	1.314
SOLWAY (15)	I	NY0910054300	4	1	0.00004	0.058	0.025	0.021	1.189
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	1	0	0.02	0.02	0.02	0.02	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	8	0	0.02	0.15	0.082	0.09	0.57
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	8	0	0.011	0.14	0.069	0.069	0.608
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	8	0	0.02	0.18	0.087	0.077	0.634
CALSHOT (525)	E	SU4930002450	40	0	0.005	0.7	0.108	0.07	1.249
DOCK HEAD (505)	E	SU4270009250	40	0	0.0041	0.4	0.153	0.132	0.612
EAST BRAMBLES BUOY (515)	E	SZ5455099150	40	0	0.006	0.187	0.054	0.04	0.792
SELSEY BILL (495)	I	SZ8300085500	37	1	0.0047	0.25	0.038	0.025	1.19
CHAPMAN BUOY	E	TQ8140081300	5	2	0.011	0.05	0.026	0.025	0.373
ERITH	E	TQ5170078600	5	0	0.0295	0.406	0.284	0.372	0.574
LONDON BRIDGE	E	TQ2140076300	5	2	0.0069	0.108	0.051	0.025	0.891
MUCKING (455)	E	TQ5975076620	13	2	0.006	3.65	0.333	0.05	2.996
THE WARP (465)	I	TR0527083350	7	2	0.006	0.47	0.153	0.17	1.057
WEST THURROCK (445)	E	TQ7175080250	10	2	0.005	0.16	0.051	0.032	1.04
WOOLWICH (435)	E	TQ4330079550	9	1	0.006	0.44	0.138	0.1	0.945
CARDIGAN BAY (655)	I	SN5190075630	1	1	0.003	0.003	0.001	0.001	
DEE BUOY NO.2 (695)	E	SJ2020082100	15	2	0.004	0.25	0.109	0.081	0.793
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	15	3	0.004	0.464	0.164	0.111	0.974
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	15	2	0.004	1.402	0.343	0.335	1.017
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	25	5	0.003	0.148	0.03	0.011	1.336
SEVERN AT NASH POINT (615)	I	SS9200056800	24	5	0.0025	0.172	0.026	0.011	1.558
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	25	6	0.003	0.092	0.023	0.01	1.18
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	24	4	0.003	0.212	0.049	0.022	1.158

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Nitrate (mg/l N)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	1	0	2.11	2.11	2.11	2.11	
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	2	1	0.007	0.256	0.13	0.13	1.373
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	1	0	1.18	1.18	1.18	1.18	
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	2	1	0.007	6.01	3.007	3.007	1.412
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	0						
R.OUSE STOW BRIDGE (405)	E	TF6030007000	1	0	0.00929	0.00929	0.009	0.009	
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	2	1	0.007	0.015	0.009	0.009	0.904
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	1	0	0.62	0.62	0.62	0.62	
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	8	0	0.2	1.89	0.545	0.245	1.138
SEA AT TEES (295)	I	NZ7190038200	2	1	0.2	0.2	0.15	0.15	0.471
SEA OFF TYNE (245)	I	NZ5540068500	2	1	0.2	0.2	0.15	0.15	0.471
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	8	0	0.2	4.52	1.569	1.285	0.942
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	12	0	0.1	5.07	2.945	3.305	0.492
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	8	1	0.2	2.45	0.877	0.46	1.109
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	10	3	0.2	1.7	0.445	0.2	1.283
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	12	2	0.2	4	1.718	1.445	0.616
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	12	2	0.16	1.45	0.496	0.375	0.779
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3840068300	14	3	0.19	1.05	0.399	0.283	0.787
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	13	2	0.27	1.5	0.612	0.67	0.622
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	15	1	0.2	2.8	1.172	0.87	0.63
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	15	2	0.2	2.59	0.886	0.61	0.793
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	15	0	0.39	3.09	1.57	1.5	0.57
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	4	0	0.27	0.6	0.423	0.41	0.359
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	12	1	0.299	2.45	0.97	1	0.65
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	11	2	0.012	0.756	0.351	0.288	0.648
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	9	3	0.2	0.723	0.413	0.433	0.522
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	8	0	2.2	4.16	2.944	3.02	0.207
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	11	3	0.195	1.58	0.481	0.348	0.861
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	8	0	1.6	3.4	2.289	2.09	0.261
OFF LUNE / WYRE (785)	I	SD3170052300	5	2	0.0005	0.299	0.092	0.049	1.326
SOLWAY (15)	I	NY0910054300	5	3	0.0005	0.783	0.196	0.095	1.693
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	0						
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	4	0	0.57	2.38	1.4	1.324	0.622
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	4	0	0.094	0.669	0.361	0.34	0.857
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	4	0	0.131	0.884	0.457	0.406	0.81
CALSHOT (525)	E	SU4930002450	41	0	0.019	1.568	0.422	0.323	0.869
DOCK HEAD (505)	E	SU4270009250	41	0	0.139	2.00	0.729	0.61	0.611
EAST BRAMBLES BUOY (515)	E	SZ5455099150	41	0	0.016	0.97	0.262	0.225	0.83
SELSEY BILL (495)	I	SZ8300085500	37	4	0.001	0.4	0.122	0.1	0.936
CHAPMAN BUOY	E	TQ8140081300	4	0	0.759	3.7	2.098	1.968	0.577
ERITH	E	TQ5170078600	4	0	1.418	20.458	9.691	8.443	0.832
LONDON BRIDGE	E	TQ2140076300	4	0	1.11	13.3	6.256	9.306	0.621
MUCKING (455)	E	TQ5975076620	9	0	0.006	5.8	3.54	3.8	0.515
THE WARP (465)	I	TR0527083350	6	0	0.003	6.9	1.557	0.6	1.695
WEST THURROCK (445)	E	TQ7175080250	8	0	1.1	7.3	4.963	5.5	0.433
WOOLWICH (435)	E	TQ4330079550	5	0	5.2	9.5	7.76	7.8	0.217
CARDIGAN BAY (655)	I	SN5190075630	1	0	0.119	0.119	0.119	0.119	
DEE BUOY NO.2 (695)	E	SJ2020082100	10	0	0.0063	0.798	0.218	0.17	1.077
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	10	0	0.0054	1.56	0.419	0.308	1.176
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	10	0	0.0712	2.73	0.698	0.48	1.118
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	5	0	0.244	1.63	1.076	1.49	0.618
SEVERN AT NASH POINT (615)	I	SS9200056800	2	0	0.772	0.812	0.792	0.792	0.036
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	5	0	1.52	2.85	2.256	2.22	0.219
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	7	0	0.319	4.82	2.62	3.31	0.609

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Silicate (mg/l Si)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	1	0	6.68	6.68	6.68	6.68	
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	3	0	0.0777	0.444	0.255	0.242	0.72
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	1	0	1.48	1.48	1.48	1.48	
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	1	0	4.32	4.32	4.32	4.32	
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	0						
R.OUSE STOW BRIDGE (405)	E	TF6030007000	2	1	0.012	6.14	3.073	3.073	1.411
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	2	1	0.012	6.76	3.383	3.383	1.412
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	1	0	0.786	0.786	0.786	0.786	
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	2	0	0.5	0.76	0.63	0.63	0.292
SEA AT TEES (295)	I	NZ7190038200	1	0	1	1	1	1	
SEA OFF TYNE (245)	I	NZ5540068500	1	0	0.9	0.9	0.9	0.9	
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	2	0	0.9	1.71	1.305	1.305	0.439
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	3	0	0.1	3.14	1.68	1.8	0.907
TEES AT SMITHS DOCK (SURFACE)	E	NZ5260022100	2	0	0.7	1.14	0.92	0.92	0.338
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	3	0	0.5	0.9	0.733	0.8	0.284
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	3	0	1	1.9	1.583	1.85	0.32
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	2	0	1.94	6	3.97	3.97	0.723
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	3	0	1.1	5.7	2.697	1.29	0.965
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	4	0	1.6	6	3.238	2.675	0.602
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	3	0	0.9	2.2	1.467	1.3	0.454
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	3	0	0.7	2.2	1.4	1.3	0.539
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	3	0	1.1	5	2.533	1.5	0.847
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	0	0.56	0.985	0.755	0.72	0.284
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	11	1	.3	4.98	1.84	1.51	0.804
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	8	2	.135	1.1	0.629	0.729	0.675
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	12	1	.3	1.31	0.884	0.843	0.385
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	9	0	5.72	13.8	9.198	8.67	0.318
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	11	1	.3	3.51	1.22	0.94	0.839
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	10	0	.992	8.25	3.953	4.135	0.547
OFF LUNE / WYRE (785)	I	SD3170052300	4	1	0.0002	0.797	0.265	0.131	1.36
SOLWAY (15)	I	NY0910054300	4	1	0.0002	1.71	0.466	0.077	1.786
OFF PLYMOUTH SOUND (585)	O	SX3053017530	1	1	0.1	0.1	0.05	0.05	
OFF TAMAR (575)	I	SX4601046200	2	1	0.1	0.1	0.075	0.075	0.471
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	15	0	0.11	4.5	2.094	1.5	0.829
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	15	0	0.0001	2.9	0.879	0.36	0.991
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	15	0	0.0001	3.6	1.205	0.55	0.967
CALSHOT (525)	E	SU4930002450	34	2	0.012	2.30	0.644	0.351	1.024
DOCK HEAD (505)	E	SU4270009250	31	0	0.17	4.70	1.209	0.841	0.855
EAST BRAMBLES BUOY (515)	E	SZ5455099150	32	3	0.01345	1.5	0.438	0.245	0.982
SELSEY BILL (495)	I	SZ8300085500	31	7	0.0017	0.7	0.189	0.1	0.994
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	10	0	0.7	12.6	4.16	3.2	0.775
THE WARP (465)	I	TR0527083350	3	1	0.1	11.8	4.183	0.7	1.579
WEST THURROCK (445)	E	TQ7175080250	9	0	2	12.4	6.044	5	0.559
WOOLWICH (435)	E	TQ4330079550	6	0	3.4	12	8.283	8.95	0.413
CARDIGAN BAY (655)	I	SN5190075630	1	0	0.201066	0.201066	0.201	0.201	
DEE BUOY NO.2 (695)	E	SJ2020082100	14	1	0.010695	1.030998	0.328	0.298	0.843
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	15	1	0.008556	3.520794	0.752	0.438	1.218
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	15	0	0.049	5.345361	1.11	0.933	1.146
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	24	0	0.251	3.069465	1.67	1.785	0.381
SEVERN AT NASH POINT (615)	I	SS9200056800	23	1	0.004	4.36356	0.807	0.622	1.115
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	24	0	0.955	5.165685	2.272	2.252	0.433
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	23	0	0.304	7.61484	2.793	2.312	0.608

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Chlorophyll a (ug/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	19	2	0.4	94.8	16.978	3.11	1.741
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	5	2	1	7.39	2.718	1.7	1.062
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	18	3	0.4	37.4	6.531	2.225	1.731
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	19	1	1	104	15.005	3.3	1.714
R.OUSE BUOY 13A	E	TF5870028300	12	1	0.4	59.8	11.625	6.2	1.383
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	20	0	2.92	48.3	17.108	13.5	0.786
R.OUSE STOW BRIDGE (405)	E	TF6030007000	30	1	1	320	43.035	19.95	1.557
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	34	0	0.7	48.7	13.591	8.4	0.932
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	13	2	0.4	19	6.677	4.2	0.887
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	5	1	1	11.7	5.358	5.45	0.791
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	8	3	1	9	2.489	1.5	1.155
SEA AT TEES (295)	I	NZ7190038200	2	0	0.17	5	2.585	2.585	1.321
SEA OFF TYNE (245)	I	NZ5540068500	2	1	1	2.6	1.55	1.55	0.958
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	8	4	1	3.16	1.27	0.75	0.897
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	27	0	2.42	115	26.589	14	1.046
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	7	3	1	7	2.074	1	1.144
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	11	2	0.61	39	6.143	2	1.869
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	29	0	0.99	354	32.671	12	2.138
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	12	3	0.2	10.95	2.834	1.325	1.187
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	14	3	0.33	12.36	2.953	2.125	1.123
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	13	0	0.5	32	5.228	2	1.607
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	14	0	0.45	14.26	4.919	4.75	0.742
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	14	1	1	12.39	3.891	2.76	0.791
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	14	1	1	22.68	7.029	4.35	1.058
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	4	0	1	3.6	2.375	2.45	0.535
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	20	0	3.6	26.1	10.925	10.4	0.527
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	11	0	1.2	56.6	13.673	10	1.16
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	21	1	.4	27.1	10.133	7.5	0.786
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	5	0	7	42	22.54	22.8	0.638
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	19	0	2.5	25.3	12.342	11.4	0.52
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	20	0	4.3	116	25.895	19.1	1.009
OFF LUNE / WYRE (785)	I	SD3170052300	4	0	4.6	19.8	10.4	8.6	0.655
SOLWAY (15)	I	NY0910054300	6	0	3.2	9.5	6.927	6.93	0.331
OFF PLYMOUTH SOUND (585)	O	SX3053017530	1	0	2.7	2.7	2.7	2.7	
OFF TAMAR (575)	I	SX4601046200	1	0	3	3	3	3	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	16	1	1	48	12.219	7.137	1.203
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	16	3	1	24.722	5.827	3	1.234
TAMAR ESTUARY, WARREN POINT (555)'	E	SX4410060600	16	3	1	29.72	6.403	3.5	1.368
CALSHOT (525)	E	SU4930002450	29	2	0.40	28.8	3.491	1.8	1.538
DOCK HEAD (505)	E	SU4270009250	29	0	0.40	28.56	4.504	1.7	1.409
EAST BRAMBLES BUOY (515)	E	SZ5455099150	28	0	0.50	36.86	3.56	1.7	1.914
SELSEY BILL (495)	I	SZ8300085500	26	0	0.40	7.27	1.755	1.45	0.797
CHAPMAN BUOY	E	TQ8140081300	3	0	1	21	10.5	9.5	0.956
ERITH	E	TQ5170078600	2	0	3.2	4.5	3.85	3.85	0.239
LONDON BRIDGE	E	TQ2140076300	3	0	1	5.8	4	5.2	0.654
MUCKING (455)	E	TQ5975076620	11	0	4.5	27.1	11.745	7.9	0.644
THE WARP (465)	I	TR0527083350	3	0	1.3	9.1	4.933	4.4	0.796
WEST THURROCK (445)	E	TQ7175080250	10	0	3.7	22.4	11.08	9.1	0.589
WOOLWICH (435)	E	TQ4330079550	7	0	4.2	47.4	17.429	9.9	0.948
CARDIGAN BAY (655)	I	SN5190075630	1	0	0.98	0.98	0.98	0.98	
DEE BUOY NO.2 (695)	E	SJ2020082100	15	1	0.982	28.56	8.08	7	0.861
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	15	1	3.08	52.26	16.045	11.11	0.991
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	15	1	3.93	56.45	20.945	16.66	0.739
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	27	1	0.089	5.712	1.782	1.52	0.64
SEVERN AT NASH POINT (615)	I	SS9200056800	26	1	0.045	12.049	1.675	1.049	1.387
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	28	0	0.3124	7.59	3.014	3.037	0.587
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	26	0	1.2495	54.62	9.085	5.461	1.18

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Mercury 0.45um (ng/l Hg)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	19	12	10	65	26.842	25	0.633
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	5	3	20	68	30.6	25	0.697
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	18	15	10	228	37.889	25	1.459
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	19	14	10	220	31.474	25	1.493
R.OUSE BUOY 13A	E	TF5870028300	18	10	10	200	28.444	21	1.586
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	20	14	50	100	39.25	25	0.602
R.OUSE STOW BRIDGE (405)	E	TF6030007000	34	20	10	148	32.706	25	0.999
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	37	28	10	114	27.514	25	0.878
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	20	11	10	430	55	20.5	1.906
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	7	6	10	50	25.714	25	0.507
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	16	9	20	100	39.844	50	0.615
SEA AT TEES (295)	I	NZ7190038200	2	1	60	100	55	55	0.129
SEA OFF TYNE (245)	I	NZ5540068500	2	1	80	100	65	65	0.326
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	12	6	20	100	39.042	40.5	0.625
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	7	5	20	100	31.714	42	0.647
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	14	8	20	160	42.821	33.75	0.96
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	26	11	20	145	42.519	35.25	0.864
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	7	5	20	100	41.571	50	0.535
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	10	5	20	185	62.7	50	0.773
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	13	6	20	130	47.385	50	0.689
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	12	6	20	105	55.958	50	0.53
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	9	5	20	105	45.611	50	0.638
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	11	6	20	110	42.818	50	0.714
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	10	6	20	565	84.95	37	2.003
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	2	1	20	90	50	50	1.131
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	48	26	5	300	42.083	17.5	1.344
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	8	6	20	40	19.375	15	0.668
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	21	21	20	30	12.857	15	0.197
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	5	5	20	20	10	10	0
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	50	30	5	580	59.97	15	1.696
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	17	16	20	100	15.588	15	0.65
OFF LUNE / WYRE (785)	I	SD3170052300	6	5	20	140	34.167	15	1.519
SOLWAY (15)	I	NY0910054300	6	6	20	30	13.333	15	0.194
OFF PLYMOUTH SOUND (585)	O	SX3053017530	3	1	20	39	26.333	30	0.564
OFF TAMAR (575)	I	SX4601046200	2	2	20	20	10	10	0
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	19	16	8	249	23.421	10	2.342
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	19	17	8	36	12.158	10	0.633
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	19	16	18	39	13.053	10	0.617
CALSHOT (525)	E	SU4930002450	23	19	8	30	8.435	5	0.77
DOCK HEAD (505)	E	SU4270009250	22	20	8	30	7.636	5	0.662
EAST BRAMBLES BUOY (515)	E	SZ5455099150	19	16	8	20	7.632	5	0.627
SELSEY BILL (495)	I	SZ8300085500	18	16	8	20	7.5	7.5	0.478
CHAPMAN BUOY	E	TQ8140081300	4	2	10	100	28.25	26.5	0.671
ERITH	E	TQ5170078600	5	2	30	100	40	50	0.407
LONDON BRIDGE	E	TQ2140076300	5	4	8	110	36.6	15	1.234
MUCKING (455)	E	TQ5975076620	2	2	30	100	32.5	32.5	0.761
THE WARP (465)	I	TR0527083350	2	2	30	100	32.5	32.5	0.761
WEST THURROCK (445)	E	TQ7175080250	2	1	35	100	42.5	42.5	0.25
WOOLWICH (435)	E	TQ4330079550	2	1	36	100	43	43	0.23
CARDIGAN BAY (655)	I	SN5190075630	3	3	8	100	21.333	10	1.172
DEE BUOY NO.2 (695)	E	SJ2020082100	15	10	8	700	55.933	5	3.193
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	15	13	8	16.4	5.627	4	0.668
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	15	12	8	14	6.133	4	0.616
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	27	22	8	38	7.259	4	1.15
SEVERN AT NASH POINT (615)	I	SS9200056800	25	22	8	44	6.72	4	1.336
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	27	20	8	54	11	4	1.246
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	26	15	8	605	58.712	4	2.521

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Cadmium 0.45um (ng/l Cd)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	14	10	250	640	210.714	125	0.759
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	4	4	250	250	125	125	0
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	14	11	250	2030	402.714	125	1.683
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	10	8	250	320	157.5	125	0.446
R.OUSE BUOY 13A	E	TF5870028300	13	13	250	250	125	125	0
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	7	5	250	1000	277.857	125	1.176
R.OUSE STOW BRIDGE (405)	E	TF6030007000	14	14	250	250	125	125	0
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	21	21	250	250	125	125	0
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	14	13	250	439	147.429	125	0.569
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	4	4	250	250	125	125	0
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	29	13	42	1500	215.466	100	1.518
SEA AT TEES (295)	I	NZ7190038200	2	1	50	974	499.5	499.5	1.343
SEA OFF TYNE (245)	I	NZ5540068500	2	1	50	376	200.5	200.5	1.238
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	16	12	50	654	134.75	37.5	1.434
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	12	4	50	250	98.208	85.75	0.614
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	15	12	50	2200	212.333	25	2.614
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	32	17	50	2900	262.656	107.5	2.036
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	10	3	50	600	165.5	110	1.074
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	17	4	50	3400	536.529	135	1.761
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	15	3	55	2300	397.267	150	1.507
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	18	5	50	2500	282.111	115	2.02
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	6	3	50	1700	377.5	112.5	1.731
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	15	9	50	6200	820.333	125	2.32
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	13	5	50	2300	547.692	100	1.401
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	2	50	250	68	54	0.757
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	47	24	30	710	125.957	125	0.976
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	10	9	160	250	128.5	125	0.086
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	24	19	250	360	165.875	125	0.497
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	16	13	100	500	114.813	125	0.56
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	44	22	30	900	135	125	1.045
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	20	20	250	250	125	125	0
OFF LUNE / WYRE (785)	I	SD3170052300	6	3	40	2380	479	125	1.946
SOLWAY (15)	I	NY0910054300	6	3	30	490	155.833	125	1.088
OFF PLYMOUTH SOUND (585)	O	SX3053017530	2	2	20	200	55	55	1.157
OFF TAMAR (575)	I	SX4601046200	2	2	50	200	62.5	62.5	0.849
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	20	11	20	383	82.825	71.25	0.934
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	20	13	20	450	84.375	71.25	1.1
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	20	13	20	400	81.8	66.25	1.009
CALSHOT (525)	E	SU4930002450	36	32	20	60	22.5	21	0.416
DOCK HEAD (505)	E	SU4270009250	37	31	20	60	23.973	21	0.465
EAST BRAMBLES BUOY (515)	E	SZ5455099150	39	36	20	65	22.128	21	0.476
SELSEY BILL (495)	I	SZ8300085500	34	32	20	50	20.882	21	0.296
CHAPMAN BUOY	E	TQ8140081300	5	1	100	210	122.46	112.3	0.47
ERITH	E	TQ5170078600	5	0	91	380	221.4	220	0.474
LONDON BRIDGE	E	TQ2140076300	5	0	100	290	195.8	210	0.427
MUCKING (455)	E	TQ5975076620	7	2	40	400	131.429	110	0.959
THE WARP (465)	I	TR0527083350	3	1	60	130	76.667	60	0.616
WEST THURROCK (445)	E	TQ7175080250	7	2	80	170	110	120	0.472
WOOLWICH (435)	E	TQ4330079550	6	2	80	760	188.333	95	1.494
CARDIGAN BAY (655)	I	SN5190075630	2	1	50	71	48	48	0.678
DEE BUOY NO.2 (695)	E	SJ2020082100	15	9	40	760	114.333	40	1.661
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	16	11	42	640	124	21	1.582
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	16	10	42	1240	136.438	21	2.201
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	27	0	230	2600	481.556	367	0.941
SEVERN AT NASH POINT (615)	I	SS9200056800	26	0	160	1540	381.5	275	0.797
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	28	0	120	2800	459.5	360.5	1.042
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	26	2	42	3100	402.808	280	1.416

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Copper 0.45um (ug/l Cu)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	15	0	0.51	12	4.443	4.47	0.655
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	4	0	1.08	14.8	5.82	3.7	1.087
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	14	2	0.5	8	2.774	2.345	0.887
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	10	1	0.5	23.4	6.678	5.595	0.943
R.OUSE BUOY 13A	E	TF5870028300	13	2	0.5	12.3	3.341	2.01	1.143
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	7	1	0.5	12	5.379	2.9	0.843
R.OUSE STOW BRIDGE (405)	E	TF6030007000	14	3	0.5	8	3.496	3.135	0.702
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	21	2	0.5	13.6	3.172	2.9	0.901
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	14	1	0.5	10.3	2.869	2.155	0.886
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	4	1	0.5	9.65	3.452	1.955	1.26
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	28	8	1	505	29.307	2	3.331
SEA AT TEES (295)	I	NZ7190038200	1	0	2	2	2	2	
SEA OFF TYNE (245)	I	NZ5540068500	1	0	2	2	2	2	
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	13	2	1	5	2.477	2.05	0.574
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	9	1	1	19	4.844	2.85	1.172
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	13	5	1	3.95	1.546	1.3	0.727
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	32	9	0.95	290	15.406	3	3.393
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	13	2	1	19	3.631	2.85	1.298
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	25	5	1	16	3.77	2	1.072
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	23	3	1	29	6.459	4	1.076
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	27	2	1	17	4.063	3	0.853
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	3	0	3	18	8.333	4	1.006
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	12	4	1	32	5.679	2	1.69
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	11	3	1	18	3.418	2	1.469
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	0	1.08	3.78	2.207	1.76	0.636
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	46	1	0.07	52.5	4.171	2.675	1.819
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	9	0	1.39	5.65	2.901	2.1	0.589
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	24	0	1.28	49.4	7.091	2.97	1.581
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	16	0	1.36	9.3	4.324	4.2	0.454
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	44	3	0.07	57	3.746	2.35	2.229
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	19	1	.5	5.19	2.839	2.95	0.398
OFF LUNE / WYRE (765)	I	SD3170052300	6	0	.93	3.97	2.148	1.61	0.575
SOLWAY (15)	I	NY0910054300	6	0	0.9	12.6	3.293	1.135	1.404
OFF PLYMOUTH SOUND (585)	O	SX3053017530	1	0	0.025	0.025	0.025	0.025	
OFF TAMAR (575)	I	SX4601046200	1	1	0.5	0.5	0.25	0.25	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	12	0	3.2	50	7.689	3.8	1.735
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	12	0	1.7	19	4.64	2.05	1.242
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	12	0	1.9	6.1	3.325	2.75	0.45
CALSHOT (525)	E	SU4930002450	38	0	0.052	6.70	1.824	1.43	0.751
DOCK HEAD (505)	E	SU4270009250	36	0	0.23	4.4	1.654	1.26	0.726
EAST BRAMBLES BUOY (515)	E	SZ5455099150	35	0	0.33	6.5	1.679	1.11	0.841
SELSEY BILL (495)	I	SZ8300085500	32	1	0.2	8.25	1.769	1.26	1.013
CHAPMAN BUOY	E	TQ8140081300	5	0	1	29.4	10.233	7.7	1.104
ERITH	E	TQ5170078600	5	0	5.1	30.4	11.415	8	0.937
LONDON BRIDGE	E	TQ2140076300	5	0	6.47	26	15.954	12	0.569
MUCKING (455)	E	TQ5975076620	12	0	2.06	18.8	5.408	4	0.848
THE WARP (465)	I	TR0527083350	5	2	1	5.54	2.72	1	0.884
WEST THURROCK (445)	E	TQ7175080250	12	0	0.66	16.4	5.528	4.72	0.696
WOOLWICH (435)	E	TQ4330079550	6	0	1.24	9.19	5.473	5.705	0.494
CARDIGAN BAY (655)	I	SN5190075630	2	0	0.67	0.79	0.73	0.73	0.116
DEE BUOY NO.2 (695)	E	SJ2020082100	15	0	0.4	18.5	2.923	1.5	1.525
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	16	2	0.051	6.2	1.71	1.22	0.896
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	16	3	0.051	11.6	2.096	1.265	1.29
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	27	0	0.18	10.6	2.885	2.51	0.686
SEVERN AT NASH POINT (615)	I	SS9200056800	26	1	0.3	15.01	2.701	1.83	1.133
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	28	0	1.37	13.02	3.724	2.75	0.801
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	26	1	0.051	9.12	3.889	3.16	0.586

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Lead 0.45um (ug/l Pb)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	15	14	2.5	4	1.433	1.25	0.495
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	4	4	2.5	2.5	1.25	1.25	0
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	14	14	2.5	2.5	1.25	1.25	0
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	10	10	2.5	2.5	1.25	1.25	0
R.OUSE BUOY 13A	E	TF5870028300	13	13	2.5	2.5	1.25	1.25	0
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	7	6	2.5	3	1.5	1.25	0.441
R.OUSE STOW BRIDGE (405)	E	TF6030007000	14	14	2.5	2.5	1.25	1.25	0
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	21	20	2.5	5.6	1.457	1.25	0.652
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	14	13	2.5	2.74	1.356	1.25	0.294
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	4	4	2.5	2.5	1.25	1.25	0
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE	E	NZ5410026500	38	13	0.897	41	3.907	1.65	1.839
SEA AT TEES (295)	I	NZ7190038200	2	1	1	15.3	7.9	7.9	1.325
SEA OFF TYNE (245)	I	NZ5540068500	2	0	2	12.7	7.35	7.35	1.029
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	18	7	1	70.5	6.143	1.375	2.648
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	11	2	1	29.5	5.303	2.28	1.581
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	15	7	1	10	2.471	1.07	1.157
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	39	21	1	24	3.309	0.5	1.661
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	11	2	1	65	8.027	2	2.363
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	18	4	1	43	5.217	1.98	1.942
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	17	3	1	37	5.739	2	1.659
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	19	4	1	64	7.511	2.98	2.037
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	6	3	1	4	1.635	0.75	0.973
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	15	8	1	72	8.087	0.5	2.297
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	14	6	1	36	7.31	1.545	1.547
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	2	1.18	2.5	1.227	1.25	0.033
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	48	46	1.7	2.5	1.271	1.25	0.08
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	10	10	2.5	2.5	1.25	1.25	0
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	24	24	2.5	2.5	1.25	1.25	0
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	16	9	0.82	2.81	1.512	1.25	0.362
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	45	44	2.5	3.6	1.302	1.25	0.269
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	20	20	2.5	2.5	1.25	1.25	0
OFF LUNE / WYRE (785)	I	SD3170052300	6	4	.04	2.5	0.742	0.94	0.804
SOLWAY (15)	I	NY0910054300	6	5	0.06	2.5	1.052	1.25	0.462
OFF PLYMOUTH SOUND (585)	O	SX3053017530	2	1	0.7	0.8	0.575	0.575	0.553
OFF TAMAR (575)	I	SX4601046200	2	2	0.2	0.5	0.175	0.175	0.606
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	20	7	0.2	3.4	0.733	0.54	1.007
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	20	11	0.2	5	0.5	0.25	1.168
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	20	8	0.2	5	0.731	0.3	1.059
CALSHOT (525)	E	SU4930002450	35	11	0.01	1.31	0.266	0.16	1.316
DOCK HEAD (505)	E	SU4270009250	35	10	0.024	1.46	0.283	0.2	1.302
EAST BRAMBLES BUOY (515)	E	SZ5455099150	36	14	0.02	1.54	0.281	0.135	1.456
SELSEY BILL (495)	I	SZ8300085500	33	16	0.02	1.09	0.21	0.059	1.362
CHAPMAN BUOY	E	TQ8140081300	5	2	0.085	8	3.477	4	0.818
ERITH	E	TQ5170078600	5	1	2	12.3	4.205	2.527	1.089
LONDON BRIDGE	E	TQ2140076300	5	1	2	23.6	9.899	6	0.917
MUCKING (455)	E	TQ5975076620	14	4	0.09	2	0.457	0.46	0.602
THE WARP (465)	I	TR0527083350	6	2	0.1	7	1.492	0.315	1.821
WEST THURROCK (445)	E	TQ7175080250	12	1	0.26	5	0.988	0.71	0.731
WOOLWICH (435)	E	TQ4330079550	6	0	0.068	5	1.681	1.14	1.028
CARDIGAN BAY (655)	I	SN5190075630	2	1	0.44	2.5	0.845	0.845	0.678
DEE BUOY NO.2 (695)	E	SJ2020082100	15	8	0.024	2.78	0.611	0.32	1.289
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	16	4	0.024	7.2	0.756	0.15	2.417
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	16	6	0.024	9.8	0.95	0.186	2.527
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	27	10	0.024	4.491	0.368	0.114	2.369
SEVERN AT NASH POINT (615)	I	SS9200056800	26	13	0.024	3.6	0.424	0.075	2.138
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	28	5	0.024	4.6	0.447	0.124	2.036
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	26	4	0.024	1.6	0.321	0.224	1.049

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Nickel 0.45um (ug/l Ni)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	15	2	2.95	17	5.803	4.07	0.712
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	4	2	0.25	5	1.879	1.195	1.147
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	14	5	0.87	8.8	2.207	1.5	0.943
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	10	0	6.35	12	8.236	8.09	0.198
R.OUSE BUOY 13A	E	TF5870028300	13	0	0.87	6.52	2.574	2.36	0.585
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	7	0	3.1	9.6	6.1	5.4	0.415
R.OUSE STOW BRIDGE (405)	E	TF6030007000	14	1	2.44	6.6	3.929	3.53	0.319
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	21	4	1.16	14	3.37	2.29	0.912
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	14	0	0.9	2.06	1.321	1.295	0.263
THE WASH N:SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	3	1	0.7	9.5	3.9	1.5	1.248
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE	E	NZ5410026500	32	12	1	70	7.748	2.5	1.722
SEA AT TEES (295)	I	NZ7190038200	2	1	2	5	2.25	2.25	0.157
SEA OFF TYNE (245)	I	NZ5540068500	2	1	3.17	5	2.835	2.835	0.167
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	14	1	1	19.25	6.229	4.25	0.819
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	9	1	1	72	13.578	5	1.648
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	12	6	1	14	4.163	2.5	1.14
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	32	15	1	77	6.836	2.375	2.037
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	8	1	1	70	14.466	6.965	1.576
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	15	5	1	70	8.049	2.55	2.179
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	14	3	1	69	10.331	3.35	1.731
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	12	5	1	68	7.726	1.925	2.47
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	7	0	1	70	16.686	6	1.45
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	12	2	1	130	20.035	4.575	1.911
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	12	3	1	17.4	5.158	4.375	1.015
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	1	0.48	1	0.62	0.5	0.363
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	22	0	1.07	4.07	1.938	1.95	0.324
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	10	2	.524	3.93	1.4	1.255	0.716
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	24	4	1	3.53	1.47	1.385	0.496
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	16	1	1	14.1	8.191	7.9	0.412
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	18	4	1	3.3	1.248	1.18	0.526
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	20	0	1.46	7.32	4.681	4.75	0.271
OFF LUNE / WYRE (785)	I	SD3170052300	6	1	.39	2.77	1.226	0.677	0.862
SOLWAY (15)	I	NY0910054300	6	2	0.404	2.59	1.171	0.605	0.857
OFF PLYMOUTH SOUND (585)	O	SX3053017530	2	1	0.5	3.81	2.03	2.03	1.24
OFF TAMAR (575)	I	SX4601046200	2	2	0.5	0.5	0.25	0.25	0
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	20	2	0.5	5.6	2.11	1.8	0.599
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	20	5	0.058	3	0.826	0.8	0.486
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	20	3	0.5	4.99	1.437	1.15	0.79
CALSHOT (525)	E	SU4930002450	32	4	0.06	2.2	0.832	0.75	0.609
DOCK HEAD (505)	E	SU4270009250	39	0	0.03	12	1.797	0.95	1.309
EAST BRAMBLES BUOY (515)	E	SZ5455099150	37	3	0.058	5.8	1.17	0.69	1.148
SELSEY BILL (495)	I	SZ8300085500	28	4	0.058	3.7	0.87	0.6	1.046
CHAPMAN BUOY	E	TQ8140081300	5	0	4.023	6.9	5.619	5.6	0.188
ERITH	E	TQ5170078600	5	1	6	16.1	9.82	9.7	0.429
LONDON BRIDGE	E	TQ2140076300	5	0	9	16.9	14.38	15	0.218
MUCKING (455)	E	TQ5975076620	13	0	2.33	9.4	4.062	3.56	0.43
THE WARP (465)	I	TR0527083350	5	1	0.87	5	1.424	1.29	0.447
WEST THURROCK (445)	E	TQ7175080250	11	0	2.81	11.9	5.119	4.69	0.487
WOOLWICH (435)	E	TQ4330079550	5	0	3.78	19.6	7.71	5.1	0.866
CARDIGAN BAY (655)	I	SN5190075630	2	0	0.47	0.55	0.51	0.51	0.111
DEE BUOY NO.2 (695)	E	SJ2020082100	15	4	0.44	7.9	1.264	0.821	1.469
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	16	1	0.71	2.5	1.032	0.94	0.342
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	16	2	0.05	3.5	1.22	1.12	0.664
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	27	0	0.65	4	1.381	1.29	0.472
SEVERN AT NASH POINT (615)	I	SS9200056800	26	1	0.05	4.8	1.303	0.875	0.823
SEVERN AT NO.1 BEACON (535)	E	ST5140084900	28	1	0.32	4.5	1.634	1.335	0.59
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	26	0	1.34	6.69	2.145	1.795	0.499

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Zinc 0.45um (ug/l Zn)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	15	0	4.2	33	16.487	15	0.519
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460066600	4	0	7.2	20.5	15.425	17	0.375
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	14	2	4	38	11.679	8.85	0.775
NORTH SEA TASK FORCE - TRENT-FALLS (355)	E	SE8680023700	10	0	7.4	36.3	21.83	20.1	0.421
R.OUSE BUOY 13A	E	TF5870028300	13	1	4	51.4	14.4	10.4	0.895
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	7	0	5.5	43	21.429	20	0.646
R.OUSE STOW BRIDGE (405)	E	TF6030007000	14	3	4	25.5	9.4	6.9	0.765
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	21	0	4.2	112	24.09	13	1.236
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	14	2	4	67.9	17.057	12.75	1.06
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	4	2	4	64.7	26.175	19	1.157
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE	E	NZ5410026500	28	1	5	417	43.264	22	1.768
SEA AT TEES (295)	I	NZ7190038200	2	0	27	397	212	212	1.234
SEA OFF TYNE (245)	I	NZ5540068500	2	0	25	296	160.5	160.5	1.194
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	13	0	10.45	164	40.996	22	1.08
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	12	1	1	213	40.008	15	1.539
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	15	1	9.2	212	35.713	17.5	1.501
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	32	2	2.7	345	43.709	17.5	1.669
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	12	0	5	138	37.583	15.5	1.159
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	18	0	9.2	418	55.539	29.5	1.722
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	16	1	5	478	61.181	29.75	1.891
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	18	0	13	396	65.722	44.5	1.314
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	9	2	10	198	36.322	18.9	1.679
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	18	3	5	346	45.678	19.05	1.85
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	15	2	6.55	203	33.93	20	1.432
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	1	3.3	18.3	7.867	3.3	1.152
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	43	4	4	38.5	13.471	13.1	0.551
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	10	1	4	16.7	8.379	7.06	0.522
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	24	2	5	48.9	14.903	11.85	0.737
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	16	1	5	45.7	16.559	12.7	0.651
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	30	7	4.9	29	8.979	8.15	0.564
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	20	0	5.7	45.6	17.432	17.8	0.531
OFF LUNE / WYRE (785)	I	SD3170052300	6	2	4.8	13.3	6.353	5.23	0.667
SOLWAY (15)	I	NY0910054300	6	2	2.97	20.3	8.062	5.285	0.89
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	1	0	2.7	2.7	2.7	2.7	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	12	1	2	110	15.717	6.35	1.913
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	12	3	2	20	6.458	4.75	0.844
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	12	1	2	18.2	6.883	6.05	0.687
CALSHOT (525)	E	SU4930002450	36	10	1.2	9	3.403	3	0.682
DOCK HEAD (505)	E	SU4270009250	34	5	2	22	5.65	4.5	0.802
EAST BRAMBLES BUOY (515)	E	SZ5455099150	32	10	1	9	2.786	2.55	0.658
SELSEY BILL (495)	I	SZ8300085500	28	10	1.8	14	3.104	2.25	0.663
CHAPMAN BUOY	E	TQ8140081300	4	1	5	31	18.375	20	0.733
ERITH	E	TQ5170078600	4	0	11.7	85	46.175	44	0.651
LONDON BRIDGE	E	TQ2140076300	5	0	23	72	46.4	36	0.468
MUCKING (455)	E	TQ5975076620	13	0	12	57.6	25.023	22.6	0.556
THE WARP (485)	I	TR0527083350	6	0	7	43.7	19.583	15.9	0.706
WEST THURROCK (445)	E	TQ7175080250	11	0	10.9	71.3	28.445	22.6	0.56
WOOLWICH (435)	E	TQ4330079550	6	0	11.5	31	18.933	16.15	0.393
CARDIGAN BAY (655)	I	SN5190075630	2	0	4.4	16.1	10.25	10.25	0.807
DEE BUOY NO.2 (695)	E	SJ2020082100	15	1	2.7	48	15.62	11	0.84
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	16	0	6.9	56	20.431	13.6	0.71
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	16	0	7.2	53	19.988	13.75	0.709
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	27	2	2	42	11.933	10	0.793
SEVERN AT NASH POINT (615)	I	SS9200056800	26	4	2	44	11.008	8.75	0.905
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	28	1	2	66	12.75	9.65	0.977
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	26	1	2	45	11.585	8.3	0.732

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Arsenic 0.45um (ug/l As)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	17	3	0.5	12	2.897	2	1.042
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	5	2	1	2.78	1.606	1.05	0.659
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	18	5	0.5	2.4	1.225	1.075	0.396
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	19	0	0.905	11.5	4.609	4	0.574
R.OUSE BUOY 13A	E	TF5870028300	18	6	1	4	1.784	1.2	0.636
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	20	1	0.6	6.53	2.589	2.215	0.612
R.OUSE STOW BRIDGE (405)	E	TF6030007000	33	5	0.775	6.9	2.666	2.48	0.578
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	38	5	0.8	7.93	2.106	1.915	0.662
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	19	8	1	9.4	1.679	1	1.175
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	7	2	1	3.85	1.923	1.65	0.674
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	0						
SEA AT TEES (295)	I	NZ7190038200	0						
SEA OFF TYNE (245)	I	NZ5540068500	0						
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	0						
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	0						
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	0						
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	0						
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	0						
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	0						
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	0						
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	0						
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	0						
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	0						
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	0						
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	1	0	1.58	1.58	1.58	1.58	
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	0						
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	1	0	2.55	2.55	2.55	2.55	
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	0						
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	0						
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	0						
OFF LUNE / WYRE (785)	I	SD3170052300	0						
SOLWAY (15)	I	NY0910054300	0						
OFF PLYMOUTH SOUND (585)	O	SX3053017530	2	1	1.3	2	1.15	1.15	0.184
OFF TAMAR (575)	I	SX4601046200	1	0	1.3	1.3	1.3	1.3	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	11	1	0.2	9	5.055	5	0.523
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	11	0	0.3	3.5	2.736	3	0.326
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	11	0	0.4	6	3.555	4	0.404
CALSHOT (525)	E	SU4930002450	38	36	1	2.5	1.014	1	0.112
DOCK HEAD (505)	E	SU4270009250	38	34	1	2.5	1.049	1	0.165
EAST BRAMBLES BUOY (515)	E	SZ5455099150	39	37	1	2.5	1.014	1	0.111
SELSEY BILL (495)	I	SZ8300085500	33	30	1	2.5	1.047	1	0.201
CHAPMAN BUOY	E	TQ8140081300	4	4	0.01	2	0.751	1	0.662
ERITH	E	TQ5170078600	5	5	2	2	1	1	0
LONDON BRIDGE	E	TQ2140076300	5	5	2	2	1	1	0
MUCKING (455)	E	TQ5975076620	2	2	2	2	1	1	0
THE WARP (465)	I	TR0527083350	2	2	2	2	1	1	0
WEST THURROCK (445)	E	TQ7175080250	2	2	2	2	1	1	0
WOOLWICH (435)	E	TQ4330079550	2	2	2	2	1	1	0
CARDIGAN BAY (655)	I	SN5190075630	0						
DEE BUOY NO.2 (695)	E	SJ2020082100	0						
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	0						
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	0						
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	0						
SEVERN AT NASH POINT (615)	I	SS9200056800	0						
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	0						
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	0						

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Dissolved Chromium 0.45um (ug/l Cr)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	3	3	1.5	1.5	0.75	0.75	0
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	0						
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	2	1	1.5	6.72	3.735	3.735	1.13
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	3	2	1.5	1.51	1.003	0.75	0.437
R.OUSE BUOY 13A	E	TF5870028300	13	10	1.5	21	2.792	0.75	2.007
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	0						
R.OUSE STOW BRIDGE (405)	E	TF6030007000	13	13	1.5	2	0.769	0.75	0.09
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	13	12	1.5	2.53	0.887	0.75	0.557
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	14	14	1.5	1.5	0.75	0.75	0
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	0						
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	35	9	1	25	4.814	2.15	1.193
SEA AT TEES (295)	I	NZ7190038200	2	1	1	1	0.75	0.75	0.471
SEA OFF TYNE (245)	I	NZ5540068500	2	1	1	5.2	2.85	2.85	1.166
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	16	4	1	25	6.048	2.91	1.214
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	12	3	1	23.1	6.036	1.675	1.274
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	14	5	1	15.6	4.285	1.65	1.174
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	37	15	1	22	4.935	1.35	1.265
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	10	3	1	53	11.03	1.975	1.684
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	19	9	1	16	2.984	1	1.506
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	19	7	1	66	6.545	1.64	2.301
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	17	7	1	34	3.672	1	2.253
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	7	3	1	19	5.291	2	1.291
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	16	6	1	15	4.069	2.235	1.116
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	13	6	1	44	7.105	1.06	1.757
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	3	0.5	2	0.75	1	0.577
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	22	20	2	5.27	1.317	1	0.801
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	10	9	0.5	2.4	1.065	1	0.493
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	24	22	2	5.87	1.251	1	0.809
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	16	8	1.63	6.29	2.125	1.315	0.732
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	18	17	2	4.16	1.176	1	0.633
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	20	19	2	3.45	1.123	1	0.488
OFF LUNE / WYRE (785)	I	SD3170052300	6	5	0.5	2.89	1.19	1	0.744
SOLWAY (15)	I	NY0910054300	6	4	0.33	2.2	1.088	1	0.558
OFF PLYMOUTH SOUND (585)	O	SX3053017530	1	1	0.35	0.35	0.175	0.175	
OFF TAMAR (575)	I	SX4601046200	1	1	0.5	0.5	0.25	0.25	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	7	4	0.35	9.37	1.678	0.25	2.028
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	6	4	0.5	30	6.387	0.25	1.865
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	7	6	0.3	5.85	1.025	0.25	2.076
CALSHOT (525)	E	SU4930002450	34	29	0.35	0.71	0.234	0.175	0.546
DOCK HEAD (505)	E	SU4270009250	36	31	0.35	8.2	0.442	0.175	3.015
EAST BRAMBLES BUOY (515)	E	SZ5455099150	38	31	0.35	2.78	0.306	0.175	1.406
SELSEY BILL (495)	I	SZ8300085500	30	25	0.2925	1.875	0.284	0.175	1.161
CHAPMAN BUOY	E	TQ8140081300	5	2	0.54	5	2.328	2.5	0.75
ERITH	E	TQ5170078600	5	3	0.83	5	2.422	2.5	0.433
LONDON BRIDGE	E	TQ2140076300	5	2	1.5	17	5.35	2.5	1.223
MUCKING (455)	E	TQ5975076620	11	6	0.35	0.88	0.402	0.175	0.732
THE WARP (465)	I	TR0527083350	5	4	0.35	5	0.691	0.175	1.472
WEST THURROCK (445)	E	TQ7175080250	12	4	0.35	1.54	0.54	0.4	0.808
WOOLWICH (435)	E	TQ4330079550	6	3	0.35	1.62	0.758	0.338	1.039
CARDIGAN BAY (655)	I	SN5190075630	2	2	0.35	0.5	0.213	0.213	0.249
DEE BUOY NO.2 (695)	E	SJ2020082100	15	11	0.35	7.9	0.946	0.25	2.08
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	16	10	0.35	8	1.286	0.175	1.83
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	16	8	0.35	1.71	0.492	0.365	0.841
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	24	14	0.3	5.5	0.678	0.175	1.691
SEVERN AT NASH POINT (615)	I	SS9200056800	19	15	0.3	0.53	0.235	0.175	0.531
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	23	12	0.3	8	0.695	0.175	2.319
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	26	9	0.3	4	0.693	0.375	1.391

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for gamma-HCH (ng/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	18	7	1	14.4	4.611	2.5	0.841
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	5	3	1	5.25	2.966	2.5	0.607
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	18	11	1	16.5	2.708	2.5	1.331
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	19	7	1	17.4	5.871	6.8	0.814
R.OUSE BUOY 13A	E	TF5870028300	12	9	5	10	3.875	2.5	0.705
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	19	4	1	24.9	6.115	5	0.94
R.OUSE STOW BRIDGE (405)	E	TF6030007000	17	2	2.95	64.8	10.511	7.7	1.366
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	34	13	1	14	4.732	3.55	0.728
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	13	13	5	5	2.5	2.5	0
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	6	2	1	5	1.663	1.64	0.404
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE	E	NZ5410026500	25	22	1	4	0.92	1	0.747
SEA AT TEES (295)	I	NZ7190038200	2	2	1	1	0.5	0.5	0
SEA OFF TYNE (245)	I	NZ5540068500	2	2	1	1	0.5	0.5	0
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	19	5	1	16	3.342	1	1.148
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	10	3	1	11	4.15	3.5	0.839
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	18	7	1	6	1.722	1	0.919
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	29	25	1	30	1.914	1	2.833
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	13	6	1	5	1.962	1	0.709
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	19	10	1	210	18.5	1	2.906
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	20	12	1	30	3.825	1	1.973
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	21	12	1	30	2.862	1	2.247
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	10	4	1	10	2.5	1	1.166
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	13	6	1	16	2.577	1	1.611
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	15	6	1	7	2.767	2	0.833
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	4	4	3	5	2.25	2.5	0.222
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	15	15	5	5	2.5	2.5	0
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	9	9	3	5	2.389	2.5	0.14
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	5	4	5	25	5.8	2.5	0.808
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	15	15	5	5	2.5	2.5	0
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	16	13	5	25	5.656	2.5	1.046
OFF LUNE / WYRE (785)	I	SD3170052300	5	5	3	5	2.3	2.5	0.194
SOLWAY (15)	I	NY0910054300	4	4	3	5	2.25	2.5	0.222
OFF PLYMOUTH SOUND (585)	O	SX3053017530	3	1	1.2	5	1.733	1.5	0.393
OFF TAMAR (575)	I	SX4601046200	2	0	1.2	2.2	1.7	1.7	0.416
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	20	8	0.5	20	3.14	2	1.092
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	20	3	0.5	20	3.01	1.5	1.087
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	20	5	0.5	20	2.847	1.5	1.166
CALSHOT (525)	E	SU4930002450	38	24	0.5	7	2.878	2.5	0.532
DOCK HEAD (505)	E	SU4270009250	39	22	1	9	3.143	2.5	0.539
EAST BRAMBLES BUOY (515)	E	SZ5455099150	39	22	0.6	6	2.746	2.5	0.509
SELSEY BILL (495)	I	SZ8300085500	34	24	0.5	6	2.244	2.5	0.543
CHAPMAN BUOY	E	TQ8140081300	5	2	4	50	11.3	8	0.729
ERITH	E	TQ5170078600	4	2	10	25	13	12.5	0.224
LONDON BRIDGE	E	TQ2140076300	4	1	18	40	26.625	27	0.504
MUCKING (455)	E	TQ5975076620	14	9	2	13	4.393	2.5	0.84
THE WARP (465)	I	TR0527083350	5	4	5	9	3.8	2.5	0.765
WEST THURROCK (445)	E	TQ7175080250	12	5	5	17	6.708	5	0.756
WOOLWICH (435)	E	TQ4330079550	6	1	5	44	14.083	7	1.105
CARDIGAN BAY (655)	I	SN5190075630	2	2	3	5	2	2	0.354
DEE BUOY NO.2 (695)	E	SJ2020082100	8	8	3	5	2.375	2.5	0.149
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	8	8	5	5	2.5	2.5	0
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	8	6	5	25	5.75	2.5	1.369
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	11	10	5	8	3	2.5	0.553
SEVERN AT NASH POINT (615)	I	SS9200056800	10	9	5	6	2.85	2.5	0.388
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	12	11	5	19	3.875	2.5	1.229
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	10	10	5	10	2.75	2.5	0.287

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Carbon Tetrachloride (ug/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	16	11	0.006	0.5	0.114	0.068	1.132
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	5	3	0.006	0.5	0.076	0.022	1.38
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	18	13	0.006	1.23	0.142	0.02	2.038
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	16	12	0.006	0.5	0.091	0.049	1.114
R.OUSE BUOY 13A	E	TF5870028300	7	7	0.2	0.2	0.1	0.1	0
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	5	3	0.006	.123	0.03	0.008	1.743
R.OUSE STOW BRIDGE (405)	E	TF6030007000	16	14	0.006	0.5	0.11	0.1	0.955
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	13	9	0.006	0.2	0.064	0.1	0.696
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	8	8	0.2	0.2	0.1	0.1	0
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	5	5	0.006	0.5	0.072	0.003	1.502
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	34	26	0.1	2	0.229	0.05	2.174
SEA AT TEES (295)	I	NZ7190038200	2	1	0.1	0.1	0.075	0.075	0.471
SEA OFF TYNE (245)	I	NZ5540068500	2	1	0.1	2	1.025	1.025	1.345
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	17	12	0.1	0.272	0.082	0.05	0.802
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	5	3	0.1	0.282	0.106	0.05	0.948
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	18	13	0.1	1.6	0.178	0.05	2.078
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	40	29	0.1	2	0.233	0.05	2.019
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	11	6	0.1	1.8	0.285	0.05	1.815
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	15	13	0.1	0.328	0.083	0.05	1.066
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	15	14	0.1	0.23	0.062	0.05	0.75
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	19	15	0.1	3.11	0.244	0.05	2.862
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	9	9	0.1	0.1	0.05	0.05	0
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	15	11	0.1	11	1.014	0.05	2.766
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	14	10	0.1	1.3	0.227	0.05	1.685
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	3	.1	.1	0.05	0.05	0
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	20	16	.05	.4	0.072	0.05	1.251
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	9	9	.05	.1	0.039	0.05	0.338
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	5	4	.1	.1	0.06	0.05	0.373
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	20	18	.05	0.2	0.055	0.05	0.928
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	20	12	.05	.5	0.099	0.05	1.172
OFF LUNE / WYRE (785)	I	SD3170052300	1	1	1	1	0.5	0.5	
SOLWAY (15)	I	NY0910054300	1	1	0.05	0.05	0.025	0.025	
OFF PLYMOUTH SOUND (585)	O	SX3053017530	2	2	0.05	1	0.263	0.263	1.277
OFF TAMAR (575)	I	SX4601046200	2	2	0.05	0.1	0.038	0.038	0.465
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	20	17	0.02	0.2	0.046	0.025	0.949
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	20	18	0.02	0.2	0.037	0.025	0.661
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	19	17	0.02	0.47	0.057	0.025	1.79
CALSHOT (525)	E	SU4930002450	39	36	0.005	0.5	0.046	0.025	1.175
DOCK HEAD (505)	E	SU4270009250	39	35	0.006	0.5	0.047	0.025	1.166
EAST BRAMBLES BUOY (515)	E	SZ5455099150	38	34	0.005	0.5	0.044	0.025	1.18
SELSEY BILL (495)	I	SZ8300085500	36	36	0.005	0.5	0.043	0.025	1.242
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	12	12	0.05	1.1	0.229	0.05	1.066
THE WARP (465)	I	TR0527083350	4	4	0.05	1.1	0.169	0.05	1.506
WEST THURROCK (445)	E	TQ7175080250	10	10	0.05	1.1	0.269	0.158	0.928
WOOLWICH (435)	E	TQ4330079550	4	4	0.05	1.1	0.219	0.15	1.108
CARDIGAN BAY (655)	I	SN5190075630	1	1	1	1	0.5	0.5	
DEE BUOY NO.2 (695)	E	SJ2020082100	8	7	0.05	1	0.097	0.025	1.701
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	8	8	0.05	0.05	0.025	0.025	0
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	7	6	0.05	0.7	0.121	0.025	2.108
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	8	7	0.05	0.16	0.042	0.025	1.136
SEVERN AT NASH POINT (615)	I	SS9200056800	2	2	0.05	0.05	0.025	0.025	0
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	7	6	0.05	0.05	0.029	0.025	0.326
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	10	10	0.05	.10	0.523	0.025	3.008

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Chloroform (ug/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	16	8	0.01	0.5	0.112	0.088	0.8
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006800	5	4	0.008	0.5	0.074	0.01	1.44
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	18	11	0.008	0.5	0.083	0.023	1.198
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	16	7	.012	0.5	0.144	0.115	0.621
R.OUSE BUOY 13A	E	TF5870028300	7	7	0.2	0.2	0.1	0.1	0
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	5	0	.014	.626	0.184	0.064	1.394
R.OUSE STOW BRIDGE (405)	E	TF6030007000	16	9	.025	.575	0.158	0.1	0.894
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	13	7	0.008	.477	0.133	0.1	1.025
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	9	9	0.2	0.2	0.1	0.1	0
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	5	5	0.008	0.5	0.073	0.005	1.472
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	35	10	0.1	116.012	6.865	1.235	2.926
SEA AT TEES (295)	I	NZ7190038200	2	2	0.1	0.1	0.05	0.05	0
SEA OFF TYNE (245)	I	NZ5540068500	2	1	0.1	2.9	1.475	1.475	1.366
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	17	2	0.1	35.762	3.76	1.5	2.252
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	5	3	0.1	1.239	0.411	0.05	1.3
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	18	3	0.1	36.145	3.673	1.51	2.243
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	40	10	0.1	57.465	5.605	2.126	1.969
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	11	0	0.407	25.907	4.32	1.974	1.713
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	15	6	0.1	1.667	0.409	0.281	1.102
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	15	7	0.1	4.5	0.622	0.253	1.832
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	19	8	0.1	2.319	0.505	0.163	1.465
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	9	6	0.1	0.386	0.115	0.05	1.003
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	15	7	0.1	480	32.349	0.189	3.828
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	14	5	0.1	2.2	0.487	0.232	1.353
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	2	.2	.83	0.343	0.1	1.229
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	14	11	.2	.56	0.156	0.1	0.834
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	9	8	.2	.34	0.127	0.1	0.63
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	5	0	.62	1.99	1.264	1.2	0.396
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	13	11	.2	.8	0.173	0.1	1.16
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	15	5	.2	1.79	0.451	0.4	0.971
OFF LUNE / WYRE (785)	I	SD3170052300	1	1	1	1	0.5	0.5	
SOLWAY (15)	I	NY0910054300	1	1	1	1	0.5	0.5	
OFF PLYMOUTH SOUND (585)	O	SX3053017530	1	1	0.3	0.3	0.15	0.15	
OFF TAMAR (575)	I	SX4601046200	2	2	0.3	0.3	0.15	0.15	0
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	14	14	0.05	0.3	0.132	0.15	0.344
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	15	15	0.05	0.3	0.125	0.15	0.414
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	15	15	0.05	0.3	0.125	0.15	0.414
CALSHOT (525)	E	SU4930002450	35	27	0.01	0.57	0.08	0.025	1.371
DOCK HEAD (505)	E	SU4270009250	35	23	0.016	3.2	0.179	0.05	2.992
EAST BRAMBLES BUOY (515)	E	SZ5455099150	34	28	0.008	0.5	0.062	0.025	1.102
SELSEY BILL (495)	I	SZ8300085500	33	32	0.005	1.09	0.097	0.025	1.98
CHAPMAN BUOY	E	TQ8140081300	4	3	0.2	1	0.363	0.375	0.441
ERITH	E	TQ5170078600	4	3	0.28	1	0.383	0.39	0.356
LONDON BRIDGE	E	TQ2140076300	4	3	0.27	1	0.38	0.385	0.365
MUCKING (455)	E	TQ5975076620	13	11	0.1	1.3	0.356	0.25	0.775
THE WARP (465)	I	TR0527083350	5	4	0.05	1.3	0.23	0.15	1.083
WEST THURROCK (445)	E	TQ7175080250	11	10	0.1	1.3	0.364	0.25	0.772
WOOLWICH (435)	E	TQ4330079550	6	3	0.18	1.3	0.378	0.275	0.566
CARDIGAN BAY (655)	I	SN5190075630	1	1	1	1	0.5	0.5	
DEE BUOY NO.2 (695)	E	SJ2020082100	8	8	0.05	1	0.094	0.025	1.768
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	8	7	0.05	0.065	0.03	0.025	0.471
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	7	7	0.05	0.05	0.025	0.025	0
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	8	5	0.05	0.4	0.119	0.025	1.2
SEVERN AT NASH POINT (615)	I	SS9200056800	2	0	0.26	0.32	0.29	0.29	0.146
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	7	4	0.05	0.51	0.124	0.025	1.429
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	10	7	0.05	10	1.063	0.025	2.01

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Simazine (ug/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	14	5	0.02	0.113	0.037	0.039	0.735
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	2	2	0.025	0.030	0.014	0.014	0.126
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	13	13	0.02	0.030	0.012	0.013	0.143
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	14	2	0.027	0.145	0.064	0.063	0.583
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	4	3	0.025	0.129	0.042	0.013	1.387
R.OUSE STOW BRIDGE (405)	E	TF6030007000	14	4	0.02	0.345	0.077	0.048	1.144
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	11	9	0.02	0.131	0.027	0.013	1.353
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	4	3	0.0169	0.030	0.014	0.014	0.153
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	7	7	0.02	0.02	0.01	0.01	0
SEA AT TEES (295)	I	NZ7190038200	1	1	0.01	0.01	0.005	0.005	
SEA OFF TYNE (245)	I	NZ5540068500	1	1	0.01	0.01	0.005	0.005	
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	6	5	0.02	0.12	0.028	0.01	1.604
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	2	0	0.015	0.07	0.043	0.043	0.904
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	7	6	0.02	0.03	0.013	0.01	0.581
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	5	5	0.02	0.02	0.01	0.01	0
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	0						
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	5	4	0.01	0.02	0.009	0.01	0.426
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	6	6	0.01	0.02	0.007	0.007	0.391
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	5	4	0.01	0.027	0.011	0.01	0.825
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	4	3	0.02	0.056	0.021	0.01	1.095
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	4	3	0.02	0.068	0.024	0.01	1.208
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	4	3	0.02	0.086	0.029	0.01	1.31
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	1	1	1	1	0.5	0.5	
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	19	15	.005	.03	0.012	0.015	0.568
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	1	1	1	1	0.5	0.5	
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	0						
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	18	16	.005	.03	0.011	0.015	0.587
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	18	10	.005	.15	0.037	0.021	0.812
OFF LUNE / WYRE (785)	I	SD3170052300	1	1	1	1	0.5	0.5	
SOLWAY (15)	I	NY0910054300	0						
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	1	1	0.03	0.03	0.015	0.015	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	8	7	0.005	0.03	0.011	0.009	0.907
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	8	7	0.005	0.03	0.01	0.015	0.647
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	8	8	0.005	0.03	0.009	0.009	0.742
CALSHOT (525)	E	SU4930002450	11	11	0.02	0.0345	0.013	0.015	0.213
DOCK HEAD (505)	E	SU4270009250	11	11	0.02	0.03	0.013	0.015	0.194
EAST BRAMBLES BUOY (515)	E	SZ5455099150	11	11	0.02	0.03	0.013	0.015	0.194
SELSEY BILL (495)	I	SZ8300085500	11	11	0.02	0.0324	0.013	0.015	0.203
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	10	6	0.02	0.079	0.028	0.015	0.82
THE WARP (465)	I	TR0527083350	3	3	0.02	0.03	0.013	0.015	0.222
WEST THURROCK (445)	E	TQ7175080250	10	0	0.03	0.169	0.057	0.043	0.738
WOOLWICH (435)	E	TQ4330079550	4	2	0.02	0.078	0.036	0.028	0.909
CARDIGAN BAY (655)	I	SN5190075630	1	1	1	1	0.5	0.5	
DEE BUOY NO.2 (695)	E	SJ2020082100	7	7	0.01	1	0.076	0.005	2.462
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	8	7	0.01	0.011	0.006	0.005	0.354
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	8	6	0.01	0.016	0.008	0.005	0.608
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072681	5	4	0.01	0.015	0.007	0.005	0.639
SEVERN AT NASH POINT (615)	I	SS9200056800	0						
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	5	2	0.01	0.025	0.013	0.01	0.699
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	7	2	0.01	0.038	0.018	0.016	0.742

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Atrazine (ug/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	13	6	0.02	0.088	0.039	0.029	0.758
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	3	3	0.02	0.030	0.012	0.013	0.208
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	12	12	0.02	0.030	0.012	0.013	0.139
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	13	3	0.02	0.224	0.083	0.067	0.846
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	4	1	0.025	0.085	0.041	0.033	0.758
R.OUSE STOW BRIDGE (405)	E	TF6030007000	14	4	0.02	0.154	0.051	0.034	0.877
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	11	7	0.02	0.0382	0.019	0.015	0.534
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	4	4	0.01	0.030	0.011	0.013	0.394
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE	E	NZ5410026500	7	5	0.006	0.02	0.009	0.01	0.166
SEA AT TEES (295)	I	NZ7190038200	1	1	0.01	0.01	0.005	0.005	
SEA OFF TYNE (245)	I	NZ5540068500	1	1	0.01	0.01	0.005	0.005	
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	8	6	0.012	0.02	0.011	0.01	0.164
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	2	1	0.018	0.02	0.014	0.014	0.404
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	6	5	0.02	0.02	0.012	0.01	0.34
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	5	5	0.02	0.02	0.01	0.01	0
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	1	1	0.02	0.02	0.01	0.01	
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	5	4	0.01	0.02	0.008	0.01	0.342
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	6	5	0.01	0.02	0.008	0.01	0.342
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	5	4	0.01	0.02	0.009	0.01	0.465
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	5	4	0.02	0.051	0.018	0.01	1.019
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	5	4	0.01	0.057	0.018	0.01	1.205
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	5	3	0.012	0.091	0.027	0.01	1.334
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	1	1	1	1	0.5	0.5	
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	19	16	.005	.03	0.011	0.015	0.577
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	1	1	1	1	0.5	0.5	
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	0						
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	18	15	.005	.03	0.012	0.015	0.485
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	18	12	.005	.15	0.025	0.015	0.818
OFF LUNE / WYRE (785)	I	SD3170052300	1	1	1	1	0.5	0.5	
SOLWAY (15)	I	NY0910054300	0						
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	1	1	0.03	0.03	0.015	0.015	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	8	6	0.009	0.03	0.012	0.015	0.432
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	8	7	0.009	0.03	0.011	0.015	0.486
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	8	8	0.009	0.03	0.01	0.01	0.561
CALSHOT (525)	E	SU4930002450	11	11	0.02	0.0345	0.013	0.015	0.213
DOCK HEAD (505)	E	SU4270009250	11	11	0.02	0.03	0.013	0.015	0.194
EAST BRAMBLES BUOY (515)	E	SZ5455099150	11	11	0.02	0.03	0.013	0.015	0.194
SELSEY BILL (495)	I	SZ8300085500	11	11	0.02	0.0324	0.013	0.015	0.203
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	9	4	0.02	0.075	0.027	0.026	0.725
THE WARP (465)	I	TR0527083350	2	2	0.02	0.03	0.012	0.012	0.295
WEST THURROCK (445)	E	TQ7175080250	9	0	0.03	0.09	0.056	0.044	0.473
WOOLWICH (435)	E	TQ4330079550	4	2	0.02	0.067	0.039	0.039	0.623
CARDIGAN BAY (655)	I	SN5190075630	1	1	1	1	0.5	0.5	
DEE BUOY NO.2 (695)	E	SJ2020082100	7	7	0.01	1	0.076	0.005	2.462
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	8	7	0.01	0.02	0.007	0.005	0.758
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	8	7	0.01	0.028	0.008	0.005	1.016
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	5	3	0.01	0.011	0.007	0.005	0.433
SEVERN AT NASH POINT (615)	I	SS9200056800	0						
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	5	2	0.01	0.019	0.012	0.012	0.545
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	7	1	0.01	0.023	0.015	0.015	0.43

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Trichloroethylene (ug/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	3	3	0.2	0.2	0.1	0.1	0
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	0						
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	2	2	0.2	0.2	0.1	0.1	0
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	3	3	0.2	0.2	0.1	0.1	0
R.OUSE BUOY 13A	E	TF5870028300	7	7	0.2	0.2	0.1	0.1	0
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	0						
R.OUSE STOW BRIDGE (405)	E	TF6030007000	3	3	0.2	0.2	0.1	0.1	0
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	7	7	0.2	0.2	0.1	0.1	0
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	8	8	0.2	0.2	0.1	0.1	0
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	0						
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE	E	NZ5410026500	9	8	0.1	0.21	0.068	0.05	0.784
SEA AT TEES (295)	I	NZ7190038200	2	2	0.1	0.1	0.05	0.05	0
SEA OFF TYNE (245)	I	NZ5540068500	2	2	0.1	2	0.525	0.525	1.28
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	7	5	0.1	0.38	0.114	0.05	1.1
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	1	0	0.29	0.29	0.29	0.29	
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	7	3	0.1	0.54	0.15	0.1	1.178
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	6	6	0.1	0.1	0.05	0.05	0
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	1	0	0.37	0.37	0.37	0.37	
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	4	4	0.1	0.1	0.05	0.05	0
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	6	5	0.1	0.74	0.165	0.05	1.707
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	7	7	0.1	0.1	0.05	0.05	0
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	6	3	0.1	0.47	0.197	0.13	0.916
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	6	3	0.1	93	15.653	0.08	2.421
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	5	3	0.1	0.18	0.088	0.05	0.655
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640096000	0						
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	9	8	.1	0.17	0.063	0.05	0.635
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	4	4	.1	.1	0.05	0.05	0
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	0						
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	8	8	.1	.1	0.05	0.05	0
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	8	4	.1	0.4	0.181	0.095	0.889
OFF LUNE / WYRE (785)	I	SD3170052300	0						
SOLWAY (15)	I	NY0910054300	1	1	1	1	0.5	0.5	
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	1	1	0.2	0.2	0.1	0.1	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	12	12	0.02	0.2	0.078	0.1	0.522
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	12	12	0.02	0.2	0.078	0.1	0.522
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	11	11	0.02	0.2	0.075	0.1	0.561
CALSHOT (525)	E	SU4930002450	34	26	0.01	0.5	0.081	0.025	1.225
DOCK HEAD (505)	E	SU4270009250	34	27	0.027	0.5	0.087	0.039	1.172
EAST BRAMBLES BUOY (515)	E	SZ5455099150	33	25	0.019	0.5	0.085	0.026	1.154
SELSEY BILL (495)	I	SZ8300085500	33	29	0.038	0.5	0.09	0.045	1.237
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	8	7	0.05	0.5	0.076	0.05	0.947
THE WARP (465)	I	TR0527083350	3	3	0.05	0.1	0.042	0.05	0.344
WEST THURROCK (445)	E	TQ7175080250	6	5	0.1	0.5	0.098	0.05	0.842
WOOLWICH (435)	E	TQ4330079550	3	1	0.1	0.5	0.187	0.21	0.415
CARDIGAN BAY (655)	I	SN5190075630	0						
DEE BUOY NO.2 (695)	E	SJ2020082100	8	7	0.02	0.13	0.029	0.025	0.5
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	8	8	0.05	0.05	0.025	0.025	0
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	7	7	0.05	0.05	0.025	0.025	0
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	9	6	0.02	1.52	0.207	0.025	2.391
SEVERN AT NASH POINT (615)	I	SS9200056800	3	1	0.02	0.098	0.048	0.036	0.942
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	9	7	0.02	0.284	0.057	0.025	1.52
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	11	8	0.02	10	0.546	0.025	2.717

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Tetrachloroethylene (ug/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	3	3	0.2	0.2	0.1	0.1	0
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	0						
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	2	2	0.2	0.2	0.1	0.1	0
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	3	2	0.2	0.2	0.133	0.1	0.434
R.OUSE BUOY 13A	E	TF5870028300	7	7	0.2	0.2	0.1	0.1	0
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	0						
R.OUSE STOW BRIDGE (405)	E	TF6030007000	3	3	0.2	0.2	0.1	0.1	0
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	7	7	0.2	0.2	0.1	0.1	0
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	8	8	0.2	0.2	0.1	0.1	0
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	0						
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE	E	NZ5410026500	10	8	0.1	0.38	0.088	0.05	1.179
SEA AT TEES (295)	I	NZ7190038200	0						
SEA OFF TYNE (245)	I	NZ5540068500	0						
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	6	4	0.1	0.965	0.231	0.05	1.585
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	4	4	0.1	0.1	0.05	0.05	0
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	6	4	0.1	0.919	0.205	0.05	1.71
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	14	12	0.1	1	0.111	0.05	1.308
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	6	5	0.1	0.257	0.085	0.05	0.994
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	6	4	0.1	0.13	0.072	0.05	0.494
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	6	5	0.1	0.151	0.067	0.05	0.615
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	7	4	0.1	0.393	0.155	0.05	0.961
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	2	0	0.276	0.276	0.276	0.276	0
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	4	1	0.1	0.218	0.146	0.158	0.535
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	4	1	0.1	0.992	0.469	0.417	0.989
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	0						
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	10	7	.05	0.13	0.048	0.025	0.798
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	4	4	.05	.05	0.025	0.025	0
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	0						
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	9	7	.05	0.12	0.042	0.025	0.823
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	9	3	.05	0.23	0.098	0.11	0.695
OFF LUNE / WYRE (785)	I	SD3170052300	0						
SOLWAY (15)	I	NY0910054300	1	1	1	1	0.5	0.5	
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	1	1	0.1	0.1	0.05	0.05	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	12	12	0.02	0.1	0.03	0.025	0.543
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	12	12	0.02	0.1	0.03	0.025	0.543
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	11	10	0.02	0.1	0.031	0.025	0.519
CALSHOT (525)	E	SU4930002450	34	33	0.005	0.5	0.04	0.025	1.392
DOCK HEAD (505)	E	SU4270009250	34	28	0.005	0.5	0.041	0.025	1.344
EAST BRAMBLES BUOY (515)	E	SZ5455099150	33	31	0.005	0.5	0.039	0.025	1.447
SELSEY BILL (495)	I	SZ8300085500	30	30	0.005	0.5	0.043	0.025	1.385
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	8	4	0.03	0.5	0.1	0.06	0.763
THE WARP (465)	I	TR0527083350	3	2	0.03	0.1	0.038	0.05	0.532
WEST THURROCK (445)	E	TQ7175080250	6	3	0.03	0.66	0.22	0.15	1.098
WOOLWICH (435)	E	TQ4330079550	3	1	0.18	0.86	0.43	0.25	0.87
CARDIGAN BAY (655)	I	SN5190075630	0						
DEE BUOY NO.2 (695)	E	SJ2020082100	8	7	0.04	0.1	0.03	0.025	0.321
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	8	8	0.05	0.05	0.025	0.025	0
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	7	6	0.05	0.1	0.036	0.025	0.787
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072681	8	6	0.02	0.07	0.032	0.025	0.59
SEVERN AT NASH POINT (615)	I	SS9200056800	2	1	0.02	0.058	0.034	0.034	0.998
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	8	5	0.05	0.16	0.054	0.025	0.869
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	9	8	0.02	10	0.6	0.025	2.753

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Trichloroethane (ug/l)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	3	3	0.2	0.2	0.1	0.1	0
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	0						
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	2	2	0.2	0.2	0.1	0.1	0
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	3	3	0.2	0.2	0.1	0.1	0
R.OUSE BUOY 13A	E	TF5870028300	7	7	0.2	0.2	0.1	0.1	0
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120016500	0						
R.OUSE STOW BRIDGE (405)	E	TF6030007000	3	3	0.2	0.2	0.1	0.1	0
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	7	7	0.2	0.2	0.1	0.1	0
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	8	8	0.2	0.2	0.1	0.1	0
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	0						
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE	E	NZ5410026500	25	7	0.1	14.74	0.843	0.153	3.462
SEA AT TEES (295)	I	NZ7190038200	2	1	0.1	0.26	0.155	0.155	0.958
SEA OFF TYNE (245)	I	NZ5540068500	2	2	0.1	2	0.525	0.525	1.28
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	16	4	0.1	5.337	0.781	0.155	1.924
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	5	2	0.1	1.96	0.696	0.181	1.242
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	17	6	0.1	5.264	0.74	0.162	1.909
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	32	6	0.1	89.305	3.55	0.227	4.448
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	10	2	0.1	3.1	0.673	0.28	1.364
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	14	5	0.1	40.233	3.142	0.15	3.4
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	14	6	0.1	0.495	0.166	0.135	0.859
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	18	8	0.1	39.026	2.6	0.117	3.508
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	9	5	0.1	0.337	0.127	0.05	0.848
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	13	6	0.1	4.464	0.702	0.11	1.896
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	12	8	0.1	0.417	0.123	0.05	1.002
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	3	2	.1	.13	0.077	0.05	0.6
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	10	9	.1	.2	0.065	0.05	0.73
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	5	4	.1	.19	0.078	0.05	0.803
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	0						
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	5	0	.2	1	0.496	0.44	0.622
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	11	9	.1	.17	0.07	0.05	0.639
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	11	4	.1	.67	0.18	0.15	0.998
OFF LUNE / WYRE (785)	I	SD3170052300	0						
SOLWAY (15)	I	NY0910054300	1	1	1	1	0.5	0.5	
OFF PLYMOUTH SOUND (585)	O	SX3053017530	0						
OFF TAMAR (575)	I	SX4601046200	1	1	0.3	0.3	0.15	0.15	
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	12	11	0.02	0.5	0.145	0.15	0.875
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	12	10	0.02	0.42	0.14	0.15	0.758
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	11	8	0.02	0.46	0.143	0.15	0.842
CALSHOT (525)	E	SU4930002450	29	22	0.01	0.5	0.057	0.025	1.173
DOCK HEAD (505)	E	SU4270009250	28	17	0.023	0.5	0.065	0.027	1.033
EAST BRAMBLES BUOY (515)	E	SZ5455099150	30	24	0.01	0.5	0.058	0.025	1.172
SELSEY BILL (495)	I	SZ8300085500	28	25	0.01	0.5	0.059	0.025	1.191
CHAPMAN BUOY	E	TQ8140081300	0						
ERITH	E	TQ5170078600	0						
LONDON BRIDGE	E	TQ2140076300	0						
MUCKING (455)	E	TQ5975076620	12	10	0.018	1	0.222	0.11	0.971
THE WARP (465)	I	TR0527083350	3	2	0.006	0.1	0.027	0.025	0.817
WEST THURROCK (445)	E	TQ7175080250	10	9	0.1	1	0.259	0.195	0.835
WOOLWICH (435)	E	TQ4330079550	4	3	0.1	1	0.243	0.21	0.783
CARDIGAN BAY (655)	I	SN5190075630	0						
DEE BUOY NO.2 (695)	E	SJ2020082100	8	7	0.05	0.6	0.1	0.025	2.022
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	8	8	0.05	0.05	0.025	0.025	0
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	7	6	0.05	0.8	0.136	0.025	2.154
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	8	7	0.02	0.06	0.028	0.025	0.505
SEVERN AT NASH POINT (615)	I	SS9200056800	2	2	0.02	0.05	0.017	0.017	0.624
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	8	6	0.04	0.05	0.03	0.025	0.321
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	SO6720004200	9	8	0.02	10	0.581	0.025	2.852

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Orthophosphate (mg/l P)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	3	1	0.005	0.35	0.154	0.11	1.155
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	3	0	0.00309	0.241	0.089	0.022	1.486
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	2	0	0.014	0.028	0.021	0.021	0.471
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	3	1	0.00155	0.22	0.1	0.078	1.112
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	0						
R.OUSE STOW BRIDGE (405)	E	TF6030007000	2	1	0.00155	0.26	0.13	0.13	1.41
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	3	1	0.00155	0.112	0.07	0.098	0.865
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	2	1	0.02	0.06	0.025	0.025	0.283
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	8	0	0.03	0.15	0.081	0.085	0.478
SEA AT TEES (295)	I	NZ7190038200	2	0	0.1	0.1	0.1	0.1	0
SEA OFF TYNE (245)	I	NZ5540068500	2	0	0.01	0.1	0.055	0.055	1.157
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	7	0	0.15	0.52	0.326	0.33	0.429
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	8	1	0.03	3.46	0.729	0.415	1.534
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	8	0	0.03	0.34	0.131	0.11	0.804
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	10	0	0.03	0.17	0.075	0.065	0.61
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	8	0	0.05	0.33	0.209	0.235	0.487
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	9	0	0.04	0.44	0.129	0.1	0.943
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	11	0	0.03	0.27	0.111	0.09	0.621
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	10	0	0.02	0.3	0.082	0.055	1.028
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	12	0	0.08	0.63	0.258	0.215	0.641
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	12	0	0.07	0.81	0.228	0.175	0.837
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	11	0	0.11	1.36	0.447	0.36	0.79
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	4	1	0.05	0.083	0.06	0.067	0.454
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	11	0	.036	.29	0.118	0.111	0.533
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	9	1	.024	0.97	0.157	0.053	1.95
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	11	0	.046	.139	0.085	0.086	0.372
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	9	0	.052	1.76	0.84	0.715	0.71
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	10	0	.031	.144	0.079	0.072	0.386
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	11	0	.055	.323	0.163	0.126	0.525
OFF LUNE / WYRE (785)	I	SD3170052300	4	1	0.0005	0.0308	0.017	0.018	0.781
SOLWAY (15)	I	NY0910054300	4	2	0.005	0.04	0.02	0.021	0.684
OFF PLYMOUTH SOUND (585)	O	SX3053017530	3	0	0.0002	0.011	0.007	0.01	0.853
OFF TAMAR (575)	I	SX4601046200	2	1	0.01	0.013	0.009	0.009	0.629
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	16	1	0.02	47	7.529	0.035	2.069
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	16	0	0.02	37	7.084	0.03	1.937
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	16	0	0.02	43	8.086	0.034	1.94
CALSHOT (525)	E	SU4930002450	42	1	0.0025	0.134	0.031	0.03	0.713
DOCK HEAD (505)	E	SU4270009250	42	0	0.0038	0.5	0.067	0.051	1.108
EAST BRAMBLES BUOY (515)	E	SZ5455099150	42	4	0.0011	0.043	0.022	0.02	0.499
SELSEY BILL (495)	I	SZ8300085500	37	7	0.0004	0.04	0.014	0.01	0.647
CHAPMAN BUOY	E	TQ8140081300	4	0	0.317	1.94	0.919	0.709	0.786
ERITH	E	TQ5170078600	4	0	1.51	2.4	1.882	1.81	0.206
LONDON BRIDGE	E	TQ2140076300	5	0	1.17	2.14	1.656	1.82	0.257
MUCKING (455)	E	TQ5975076620	13	0	0.41	4.2	1.005	0.77	0.98
THE WARP (465)	I	TR0527083350	6	0	0.072	1.3	0.514	0.28	1
WEST THURROCK (445)	E	TQ7175080250	11	0	0.29	7.2	1.576	1.13	1.205
WOOLWICH (435)	E	TQ4330079550	9	0	0.89	2.7	1.457	1.11	0.424
CARDIGAN BAY (655)	I	SN5190075630	1	0	0.001	0.001	0.001	0.001	
DEE BUOY NO.2 (695)	E	SJ2020082100	15	0	0.00738	0.088	0.04	0.046	0.505
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	15	0	0.0054	0.201	0.054	0.046	0.856
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	15	0	0.00498	0.182	0.075	0.063	0.675
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	25	0	0.0081	0.246	0.111	0.108	0.419
SEVERN AT NASH POINT (615)	I	SS9200056800	22	0	0.009	0.204	0.048	0.045	0.839
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	25	0	0.033	0.243	0.138	0.142	0.363
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	25	0	0.0112	0.307	0.177	0.185	0.46

* calculated after LT values have been multiplied by 0.5

NMP WQ Summary Statistics for Nitrite (mg/l N)

Site Name	EIO	GR	n	n LT	min	max	mean*	median*	CoV*
NORTH SEA TASK FORCE - NORTH KILLINGHOLME (365)	E	TA1620023300	13	1	0.00133	0.12	0.013	0.003	2.478
NORTH SEA TASK FORCE - OFF SHORE (375)	I	TA5460006600	4	1	0.0007	0.006	0.002	0.001	1.279
NORTH SEA TASK FORCE - SPURN HEAD (335)	E	TA3870009400	13	2	0.00149	0.00749	0.003	0.002	0.71
NORTH SEA TASK FORCE - TRENT FALLS (355)	E	SE8680023700	13	1	0.00163	0.0784	0.022	0.005	1.235
R.OUSE BUOY 13A	E	TF5870028300	0						
R.OUSE FREEBRIDGE KINGS LYNN (415)	E	TF6120018500	6	0	0.0244	0.11	0.058	0.059	0.52
R.OUSE STOW BRIDGE (405)	E	TF6030007000	11	2	0.00005	0.0998	0.044	0.048	0.655
R.OUSE THE POINT KINGS LYNN (425)	E	TF6010023400	9	1	0.0007	0.0858	0.041	0.048	0.734
THE WASH CORK HOLE TIDE GAUGE	I	TF6050031900	0						
THE WASH N.SEA TASK FORCE OFFSHORE POINT (385)	I	TF6580054100	7	1	0.000415	0.05	0.006	0.002	1.44
GREATHAM CREEK PHILLIPS APPROACH SOUTH (SURFACE)	E	NZ5410026500	8	0	0.02	1.44	0.231	0.05	2.12
SEA AT TEES (295)	I	NZ7190038200	2	1	0.01	0.01	0.007	0.007	0.505
SEA OFF TYNE (245)	I	NZ5540068500	2	1	0.01	0.01	0.007	0.007	0.505
TEES AT HAVERTON HILL SHIPYARD (SURFACE)	E	NZ4890022000	8	0	0.04	0.26	0.184	0.205	0.401
TEES AT PRESTON PARK (SURFACE) (305)	E	NZ4310015800	12	1	0.01	0.09	0.035	0.03	0.719
TEES AT SMITHS DOCK (SURFACE)	E	NZ5280022100	8	0	0.03	0.55	0.156	0.1	1.097
TEES AT THE GARES (SURFACE) (325)	E	NZ5520028400	11	1	0.01	0.06	0.03	0.03	0.608
TEES AT VICTORIA BRIDGE (SURFACE) (315)	E	NZ4490018400	12	2	0.01	0.22	0.075	0.05	0.873
TYNE AT HEBBURN (SURFACE) (225)	E	NZ3040065700	12	0	0.02	0.04	0.029	0.025	0.344
TYNE AT LLOYDS HAILING STATION (SURFACE) (235)	E	NZ3640068300	14	1	0.01	0.68	0.083	0.03	2.142
TYNE AT SCOTSWOOD BRIDGE (SURFACE) (215)	E	NZ1990063600	13	4	0.01	0.08	0.029	0.03	0.734
WEAR AT QUEEN ALEXANDRA BRIDGE (SURFACE) (265)	E	NZ3820057800	15	0	0.02	0.11	0.067	0.07	0.385
WEAR AT SANDY POINT (SURFACE) (275)	E	NZ4120058300	15	1	0.01	0.07	0.042	0.05	0.484
WEAR AT SOUTH HYLTON (SURFACE) (255)	E	NZ3480056700	15	0	0.02	0.2	0.093	0.08	0.558
LIVERPOOL BAY BURBO BIGHT (705)	I	SJ1640098000	4	1	0.0082	0.047	0.025	0.023	0.775
MERSEY BROMBOROUGH E1 BUOY (745)	E	SJ3571985623	11	0	.013	.174	0.067	0.071	0.693
MERSEY CHANNEL C1 BUOY (765)	E	SD2400004400	9	2	.007	0.4	0.083	0.051	1.478
MERSEY ESTUARY AT CROSBY SHIP	E	SD2720101861	12	0	.008	.113	0.044	0.04	0.756
MERSEY ESTUARY AT MONKS HALL (725)	E	SJ5930087500	9	0	.023	.476	0.18	0.173	0.814
MERSEY ESTUARY AT SEACOMBE FERRY (755)	E	SJ3303390903	10	0	.012	.057	0.032	0.029	0.513
MERSEY RUNCORN OLD QUAY (735)	E	SJ5140083600	11	0	.027	.584	0.207	0.192	0.82
OFF LUNE / WYRE (785)	I	SD3170052300	4	2	7.00E-06	0.0044	0.002	0.001	0.998
SOLWAY (15)	I	NY0910054300	4	2	7.00E-06	0.0055	0.002	0.002	1.361
OFF PLYMOUTH SOUND (585)	O	SX3053017530	1	1	0.005	0.005	0.003	0.003	
OFF TAMAR (575)	I	SX4601046200	2	1	0.005	0.01	0.006	0.006	0.884
TAMAR ESTUARY, HALTON QUAY (545)	E	SX4130065500	16	0	0.011	0.032	0.019	0.019	0.28
TAMAR ESTUARY, HAMOAZE (565)	E	SX4410056000	16	0	0.005	0.02	0.01	0.01	0.42
TAMAR ESTUARY, WARREN POINT (555)	E	SX4410060600	16	0	0.006	0.02	0.012	0.01	0.35
CALSHOT (525)	E	SU4930002450	42	0	0.0021	0.086	0.011	0.009	1.154
DOCK HEAD (505)	E	SU4270009250	42	1	0.0053	0.07	0.017	0.014	0.641
EAST BRAMBLES BUOY (515)	E	SZ5455099150	42	0	0.0009	0.09	0.009	0.007	1.466
SELSEY BILL (495)	I	SZ8300085500	38	7	0.0005	0.104	0.009	0.005	1.979
CHAPMAN BUOY	E	TQ8140081300	4	0	0.008	0.031	0.018	0.016	0.61
ERITH	E	TQ5170078600	4	0	0.0125	0.116	0.07	0.077	0.739
LONDON BRIDGE	E	TQ2140076300	5	0	0.031	0.16	0.081	0.074	0.659
MUCKING (455)	E	TQ5975076620	10	8	0.01	0.323	0.046	0.02	2.124
THE WARP (465)	I	TR0527083350	6	3	0.002	0.05	0.012	0.007	1.049
WEST THURROCK (445)	E	TQ7175080250	10	3	0.005	5.7	0.593	0.025	3.026
WOOLWICH (435)	E	TQ4330079550	5	1	0.022	0.08	0.049	0.049	0.531
CARDIGAN BAY (655)	I	SN5190075630	1	1	0.003	0.003	0.001	0.001	
DEE BUOY NO.2 (695)	E	SJ2020082100	15	2	0.0006	0.028	0.013	0.015	0.796
DEE DS FLINT CASTLE (4507)	E	SJ2460074400	15	1	0.0006	0.042	0.016	0.011	0.847
DEE OFF SHOTTON BREAKWATER (4508)	E	SJ2820071400	15	1	0.0014	0.176	0.032	0.023	1.327
SEVERN AT ENGLISH & WELSH GROUNDS (645)	E	ST3040072661	25	5	0.0005	0.027	0.005	0.004	1.16
SEVERN AT NASH POINT (615)	I	SS9200056800	23	6	0.0005	0.038	0.006	0.004	1.346
SEVERN AT NO.1 BEACON (635)	E	ST5140084900	26	4	0.0011	0.025	0.005	0.004	1.03
SEVERN AT OLD SEVERN RAIL BRIDGE (625)	E	ST6720004200	25	3	0.0006	0.054	0.015	0.012	0.974

* calculated after LT values have been multiplied by 0.5