

Sea Vigil Water Quality Monitoring The East Coast : 1992 - 1993



National Rivers Authority
Anglian Region - Marine Section
Peterborough

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Sea Vigil Water Quality Monitoring

The East Coast

1992 - 1993

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July, 1995.

ENVIRONMENT AGENCY



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EXECUTIVE SUMMARY

The NRA has an obligation to monitor and safeguard the coastal waters of England and Wales out to a designated 3 nautical mile limit. To meet this obligation, Anglian Region uses a purpose-designed coastal survey vessel, *Sea Vigil*, purchased in 1991.

Data from surveys carried out along the coast of East Anglia, from the edge of the Wash to the Thames, are reported here. Their purpose was to gain information on the nutrient levels along the coast of East Anglia. Some additional data from helicopter surveys is also included. This complements the two "Zone" reports already issued by the Eastern Area of NRA Anglian Region, which provide a broader picture of water quality, with emphasis on the estuaries.

The character of the coastline changes as one moves eastwards and southwards from the Wash to the Thames Estuary. The Wash features shallow water with extensive drying saltmarsh and mudflats. The North Norfolk coast is generally low lying with no river inputs to sea except at Great Yarmouth. Here and at Lowestoft, the Bure and Waveney rivers discharge to the part of the coast with least tidal movement and hence dispersing effect. There are small rivers discharging to sea between Lowestoft and Felixstowe, with larger ones discharging between Felixstowe and the Thames Estuary. There are a number of Bathing Beaches along most of the coast of East Anglia.

During 1992 and 1993, *Sea Vigil* carried out sampling for the National Coastal Surveillance Programme. Surface water samples were collected from 34 sites. With *Sea Vigil* needing to make passage between other survey programmes, the opportunity was taken to collect further nutrient samples on these occasions. Between March 1992 and December 1993, data was collected at approximately monthly intervals.

From June 1992, samples were analysed on-board *Sea Vigil* for nitrate, ammonia, phosphate, silicate and nitrite. Field data was also collected for Temperature, Salinity and Dissolved Oxygen.

In the summer months, nutrient levels in the coastal waters of East Anglia were noticeably lower at all sites to the north of Lowestoft than at all sites to the south.

The results of a cluster analysis correlate with the differing characteristics of individual stretches of coastal water.

It is anticipated that the monitoring programme will continue in the short term, as part of the National Coastal Surveillance Programme, with more emphasis on the collection of chlorophyll data and turbidity. Knowledge of the phytoplankton and zooplankton would be an added benefit.

EAST ANGLIAN COAST

WATER COLUMN SURVEYS

SEA VIGIL, 1992 - 1993.

BACKGROUND.

Following its formation in September, 1989, the National Rivers Authority has had an obligation to monitor and safeguard the coastal waters of England and Wales out to a designated 3 nautical mile limit. This responsibility was defined differently for the previous Water Authorities. Consequently, there was very little data collected for offshore coastal water sites between the Humber and the Thames, the area covered by the Anglian Region of the NRA.

During August, 1991, the Anglian Region of the NRA took delivery of a coastal survey vessel. Analytical techniques were developed during the following months to analyse water samples for the low levels of nutrients encountered in outer estuaries and coastal waters. *Sea Vigil* has been collecting nutrient information from a set of offshore sample points along the East Coast since March 1992, using an on-board auto-analyser, permitting immediate analysis. The data from those surveys along the East Anglian Coast, from the edge of the Wash to the Thames Estuary, are presented here. Separate reports cover the Wash, The Lincolnshire Coast and the Humber Estuary.

The 3-mile limit is not solely measured from the coastline; sandbanks are also used to determine territorial responsibilities. This leads to the unusual contour lines shown in Figure 1 where the limit is over 5 miles offshore at Great Yarmouth and Lowestoft and 15 miles or more offshore south of Clacton. There is also a discontinuous patch off Bacton, about 1½ miles outside the regular limit. This means that these surveys have not collected data from the 3 mile limit, but from points about 1½ miles offshore, thought to be representative of the coastal zone.

As there is a lack of historical data, it is difficult to make comparisons and provide explanations. A continuing programme of nutrient monitoring is planned for the coastal zones of Anglian Region, in order to overcome these deficiencies.

The Eastern Area of NRA Anglian Region have already issued two "Zone" reports covering the Norfolk Coast and the Suffolk and Essex Coast. These present a broader picture of water quality, with emphasis on the estuaries, although some of the *Sea Vigil* data is also included in a different format.

DESCRIPTION OF THE EAST COAST AREA.

The North Norfolk Coast from the Wash to east of Sheringham is a low barrier beach system with a number of small creeks with areas of intertidal flats, saltmarshes and sand dunes. The tidal catchment area has a low population.

From Sheringham to Mundesley there are low lying chalk cliffs with sandy beaches. Parts of the coastal water have an underlying shallow chalk platform. With there being no river inputs in this stretch, the coastal waters are the clearest within the Anglian Region of the NRA. The larger towns are also seaside resorts, with Bathing Beaches.

From Mundesley to Great Yarmouth, the coast is low-lying with sandy beaches and no river inputs.

At Great Yarmouth, the Bure and Yare Estuaries discharge to sea via Breydon Water and at Lowestoft the Waveney Estuary discharges to sea via Oulton Broad and Lake Lothing, although both estuary systems are interconnected. Both estuaries, with moderate fresh water inputs, discharge into that part of the coast with least tidal movement, and this leads to comparatively slower dilution with the sea.

Southward from Lowestoft to Felixstowe, the low-lying and sandy coast is broken by the estuaries of the Rivers Blyth, Alde and Deben, each with comparatively small freshwater inputs.

From Felixstowe to the Thames Estuary, there are major riverine inputs from the Stour, Orwell, Colne and Blackwater estuaries and lesser ones from the Crouch and Roach estuaries. There are a number of EC designated Bathing Waters in this area, although from the Blackwater to the Thames, the coast is low-lying saltmarsh with very shallow and extensive mudflats. However, there is a further EC designated Bathing Water inside the Thames Estuary at Southend-on-Sea.

Bathymetry and Tides

The depths of water within 3 miles of the coast of East Anglia do vary along its length. In the outer Wash on the Norfolk coast, between Thornham and Wells, most of the sea within the 3-mile limit is charted at a depth of less than 10m. This increases to nearly 15m at Cromer. Between Cromer and the Deben Estuary, the charted depth is mostly less than 20m. From here to the Thames, the charted depth is less than 10m.

The tides also vary along the coast. At the Wash, there is a mean Spring Range of about 6m. This gradually diminishes along the coast, down to about 2½m between Great Yarmouth and the Alde Estuary. From here it rises again until the Spring Range is about 5m at the outer Thames Estuary.

The strongest tidal currents occur between Cromer and Lowestoft, often reaching 3 knots, maximum 3.4 knots.

OBJECTIVES.

The initial purpose of these surveys was to gain information on nutrient levels and their variation along the coast of East Anglia, particularly on a seasonal basis, there being no

historical data. Subsequently, the new EC Urban Waste Water Treatment and Nitrate Directives, along with the high political profile of North Sea matters, particularly nutrients, require information on nutrients, chlorophyll and water quality for designation purposes in 1997.

Some surveys were part of the National Coastal Surveillance programme, initiated by the NRA's National Centre for Marine Surveillance at Bridgwater (now located at Twerton, Bath). Since this programme used a coarse grid of sites, 15 km apart, additional samples were taken to "fill-in" for Regional monitoring purposes.

In addition to the sample programme for the National Coastal Surveillance programme, "opportunistic" sampling was also undertaken during passages between work on the various Area Marine Monitoring programmes.

The intention has been to collect data from all the coastal waters of the Anglian Region and produce a series of reports. The other reports are of the Lincolnshire Coast (issued March '94), The Wash (issued May '95) and the Humber Estuary (in preparation).

WORK PROGRAMME DETAILS.

For operational reasons, surveys of the East Anglian coast occupied two of the three days of a coastal run covering from Hull in the Humber Estuary to Shoeburyness in the outer Thames Estuary (or vice versa, since the survey may be in either direction).

Tidal constraints meant that it is more effective for *Sea Vigil* to travel with the tide than against it. As a consequence, surveys usually took place under a similar tidal state for a particular direction.

The sample sites were based on those originally set up by Eastern Area when carrying out helicopter surveys in 1990. The complete set of these sites, at about 4 km intervals, number 77 in total, and would not all be used except for a special intensive survey, carried out not more than once every few years.

The more routine *Sea Vigil* surveys used a subset of 34 sites, usually every third one, except in areas of special interest in the vicinity of estuarine outputs to sea. The original sites off Maplin Sands in Essex, site 70 onward, were all felt to be too far inshore for the shallowness of the coast, and appropriate new sites were created in deeper water.

As there was no reason to suspect stratification, water was collected from the surface layer of the sea, at pre-defined sites, shown in Figure 1, with site details in Table 1. Not all sites were sampled on each survey. Field data was collected at the same time, including temperature, salinity and dissolved oxygen. Samples were immediately filtered and then put through the auto-analyser. Results were then sent to Peterborough for entering onto the laboratory database. The methods employed contained built-in Analytical Quality Control procedures and have satisfactorily passed special marine AQC exercises, particularly the stringent ones prepared for ICES (International Council for the Exploration of the Seas). Chlorophyll a samples were filtered on-board, preserved and sent to the Ipswich biology laboratory for analysis. No formal AQC was undertaken.

PRESENTATION OF RESULTS.

The nutrient data reported here are from water column samples, which after collection, were filtered through 0.45µm membrane filters and are therefore termed "dissolved nutrients". The nutrients are: nitrate, reactive phosphate, silicate, ammonia and nitrite. All results are in microgrammes per litre (µg.l⁻¹) and are given, by survey, in Tables 4 to 25. There is some chlorophyll a data. Available field data are also given.

In this summary, the term nitrate is used in preference to T.O.N. (Total Oxidised Nitrogen). There is an analytical distinction, caused by nitrite. Since the levels of nitrate are generally vastly higher than those of nitrite, the distinction does not significantly influence the data interpretation.

The data is presented as a series of graphs, by survey. Table 3 lists the figure and table numbers. For each survey (i.e. 2-day period) there is a:

- Table of Data;
- Chart of Nutrient data against Site Location (Wash to Thames Estuary).

In addition, graphs are presented, four to a page, showing Nutrients versus Date, by Site, in Figures 25 to 33.

GENERAL COMMENTS.

Mid-summer is usually the peak period for planktonic growth and nutrient uptake. Consequently, dissolved nutrients are expected to be at minimum concentrations within the water column.

The nutrient levels along the coast are expected to be low relative to concentrations within estuaries, with higher values expected where the larger estuaries of Suffolk and Essex input to sea.

Nitrate is normally the most abundant of the nutrients at a level around twice the silicate concentration. There is only limited data for Nitrite which is at much lower levels than the other nutrients. It is rapidly oxidised to nitrate, but it can provide meaningful information on nutrient processes.

The survey provides information in two forms:

- 1) Variations in spatial distribution of nutrient concentrations;
- 2) Variations in seasonal distribution of nutrient concentrations.

There are a number of factors to be borne in mind when considering the data:

- there are no large fresh water inputs along the North Norfolk coast between the Wash and Great Yarmouth;
- there are major fresh water nutrient inputs along the Essex and Suffolk coasts;
- there are numerous sewage outfalls discharging along the coast, particularly between Cromer and Jaywick;

- the tidal currents and tidal ranges vary along the coast and give rise to differing degrees of mixing;
 - the tidal effects would be most noticeable at sample points close to the mouths of estuaries, since the ebb and flood tides would provide different influences;
 - whilst a thermocline is unlikely to develop in such shallow waters in summer, nutrient stripping is a possibility because of this shallowness;
 - the deposition and resuspension of sedimentary material will influence the budgets of the dissolved nutrients;
 - the consistent, high salinity levels should enable a stable plankton species diversity in the water column;
 - soluble nutrients are part of a very complex chemical equilibrium, involving phytoplankton, zooplankton and sediments;
 - turbidity is low compared to the estuaries of the Region, particularly along the North Norfolk coast, where the highest light levels and thus greatest amount of photosynthetic activity would be expected.
-

EARLY MARCH, 1992 SURVEY.

Results are given in Table 4 with nutrient and chlorophyll a data presented in Figure 2.
The sampling order was southward.

There was a distinctive depression in Nitrate and Phosphate between Easton Broad and Holland Radar

LATE MARCH, 1992 SURVEY.

Results are given in Table 5 with nutrient and chlorophyll a data presented in Figure 3.
The sampling order was northward.

There was no nutrient depression evident in comparison to the southward run 3 weeks earlier, although concentrations were similar.

Ammonia concentrations were variable.

APRIL, 1992 SURVEY.

Results are given in Table 6 with nutrient and chlorophyll a data presented in Figure 4.
The sampling order was southward.

Except for the sites near the Wash, concentration levels were consistent throughout the survey.

Silicate and Phosphate concentrations were lower than in March, in line with a seasonal diatom bloom.

MAY, 1992 SURVEY (PARTIAL HELICOPTER).

Results from the Thames to Felixstowe are given in Table 7a with nutrient data presented in Figure 5. The sampling order was northward.

Data from the helicopter survey carried out at the same time between Felixstowe and the Wash are shown in the same Figure 5. Results are in Table 7b. The sampling order was southward.

The two surveys finished near Felixstowe about 2 hours apart.

Ammonia levels were higher than in the March and April surveys, except at the 3 sites near the edge of the Wash.

Other nutrient levels for sites between the Wash and Kessingland were depleted in comparison to the March and April surveys.

There was a noticeable peak in nutrient concentrations around Easton Broad and Dunwich. The Phosphate concentration was higher than during the March and April surveys.

JUNE, 1992 SURVEY.

Results given in Table 8 with nutrient data presented in Figure 6. The sampling order was northward overall, although the sites from Hamford Water to the Thames were sampled on a southward passage to the Thames.

Silicate concentrations were very low everywhere.

Between the Wash and Winterton, Nitrate, Phosphate, Ammonia and Nitrite were below their limits of detection, a possible example of "nutrient stripping".

Nutrient levels were higher than this between Easton Broad and the Thames, particularly for Phosphate and Ammonia.

JULY, 1992 SURVEY.

Results are given in Table 9 with nutrient data presented in Figure 7. The sampling order was southward.

Between the Wash and Lowestoft, nutrient concentrations were very low, with Nitrate and Phosphate close to or below their limits of detection. Ammonia levels were noticeably higher than in June.

Nutrient levels rose in a southward direction between Lowestoft and the Thames. Ammonia levels were very much higher than the sites to the north, although similar to those in June.

There were noticeable chlorophyll peaks around Scrabby and Dunwich.

AUGUST, 1992 SURVEY.

Results for sites between Hamford Water and the Wash are given in Table 10 with nutrient data presented in Figure 8. The sampling order was northward.

This data was collected within a few days of the July survey because of the needs of *Sea Vigil* to return to a survey programme in the Wash. It allows a comparison between northward and southward surveys.

In general this northward survey showed nutrient and chlorophyll profiles and concentrations comparable to the southward survey only a few days earlier in July.

The chlorophyll peak had shifted slightly eastwards to Caister and was higher.

Phosphate levels were consistently higher between the Wash and Lowestoft.

The Ammonia profile showed lower levels between Lowestoft and Orfordness.

SEPTEMBER, 1992 SURVEY.

Results are given in Table 11 with nutrient data presented in Figure 9. The sampling order was southward.

With the exception of Ammonia, nutrient concentrations were noticeably higher at all sites south of Lowestoft than those to the north between Lowestoft and the Wash.

Ammonia concentrations were variable but similar at all sites.

OCTOBER, 1992 SURVEY.

Results are given in Table 12 with nutrient data presented in Figure 10. The sampling order was northward. Opportunity did not permit sampling between Felixstowe and the Thames, or westward of Sheringham.

With the exception of Ammonia, there was no obvious distinction in nutrient levels between sites north of Lowestoft and sites to the south of Lowestoft, as observed in the summer surveys.

Ammonia concentrations were higher along the Norfolk coast than during the Spring and Summer surveys.

NOVEMBER, 1992 SURVEY.

This set of surveys was part of a National Coastal Baseline Survey. Results are given in Table 13 with nutrient data presented in Figure 11. The sampling order was southward.

A few days later, when *Sea Vigil* was returning to the Humber Estuary, the opportunity was taken to collect samples from Great Yarmouth to the Wash. Results are given in Table 14 with nutrient data presented in Figure 12.

In general the shorter survey showed nutrient profiles and concentrations comparable to the southward survey a few days earlier.

JANUARY/FEBRUARY, 1993 SURVEY.

This set of surveys was part of a National Coastal Baseline Survey. Results are given in Table 15 with nutrient data presented in Figure 13. The sampling order was southward.

A few days later, when *Sea Vigil* was returning to the Humber Estuary, the opportunity was taken to collect samples from Cromer to the Wash. Results are given in Table 16 with nutrient data presented in Figure 14.

With the exception of Nitrite, nutrient concentrations were measured at their highest levels since the previous March.

Distinctive peaks for all nutrients are apparent off the mouths of the Stour/Orwell and Colne/Blackwater.

The nutrient concentrations measured during both surveys were similar, although levels at the Wash end were higher.

MARCH, 1993 SURVEY.

Results are given in Table 17 with nutrient data presented in Figure 15. The sampling order was southward.

The concentrations of all nutrients and chlorophyll were consistent along the coast, much more than during the previous March surveys.

APRIL, 1993 SURVEY.

Results are given in Table 18 with nutrient data presented in Figure 16. The sampling order was northward. As this was a return passage to the Humber, opportunity did not permit sampling south of Felixstowe.

The levels of each nutrient were similar to those of during the March survey, although less consistent.

MAY, 1993 SURVEY.

This set of surveys was part of a National Coastal Baseline Survey. Results are given in Table 19 with nutrient data presented in Figure 17. The sampling order was southward.

With the exception of Ammonia and Nitrite, nutrient levels were lower than during the March and April surveys.

Silicate levels were highest between Easton Broad and Hamford Water.

The Ammonia and Phosphate levels were consistently higher at all sites south of Great Yarmouth than to the north.

The Nitrate levels were consistently higher at all sites south of Kessingland than to the north.

Concentrations of chlorophyll were noticeably higher than during the April surveys, particularly so along the north Norfolk coast.

JUNE, 1993 SURVEY.

Results are given in Table 20 with nutrient data presented in Figure 18. The sampling order was northward.

Except for Ammonia, nutrient concentrations between the Wash and Easton Broad were close to or below their limits of detection, as was observed during the surveys of the previous June. Levels rose gradually from Easton Broad to the Thames, but still lower than during the May survey.

Silicate concentrations were consistently low at all sites, reflecting seasonal diatom growth.

Ammonia concentrations were variable with an obvious trend from lower than May values along the Norfolk coast to much higher than May values at the Thames end of the survey.

AUGUST, 1993 SURVEY.

This set of surveys was part of a National Coastal Baseline Survey. Results are given in Table 21 with nutrient data presented in Figure 19. The sampling order was northward.

Except for Ammonia, nutrient levels were low between the Wash and Great Yarmouth, with Phosphate, Silicate and Nitrate rising towards the Thames.

Ammonia concentrations were variable around the March and April values, but with no obvious trend other than an extended peak between Corton and Dunwich.

Nitrite peaked between Dunwich and the Deben Estuary.

SEPTEMBER, 1993 SURVEY (HELICOPTER).

Results are given in Table 22 with nutrient data presented in Figure 20. The sampling order was northward from the Thames to Hamford Water; southward from the Wash to Lowestoft and then northward from Felixstowe to Kessingland.

There was a noticeable peak in concentration of Phosphate, Silicate and Ammonia at the mouth of the Colne and Blackwater estuaries.

Ammonia concentrations were consistently higher at sites north of Dunwich to east of the sites near the Wash, than sites south to the Thames.

There was a trend of increasing Phosphate concentration from the Wash towards the Thames.

OCTOBER, 1993 SURVEY (HELICOPTER).

Results are given for sites from the Wash as far as Kessingland in Table 23 with nutrient data presented in Figure 21. The sampling order was southward from the Wash to Kessingland.

Concentrations of Phosphate, Nitrate and Ammonia were higher than during the September survey.

There was a noticeable peak in Silicate, Nitrate and Ammonia concentrations at the Caister site. The Silicate level was abnormally high.

NOVEMBER, 1993 SURVEY.

Results are given in Table 24 with nutrient data presented in Figure 22. The sampling order was southward.

Silicate and Nitrate concentrations were at levels comparable to those measured during March and April, but with some variability.

Phosphate concentrations were at levels comparable to those measured during March and April.

Ammonia levels were generally lower than during the summer surveys.

There was a distinctive peak in concentration for Nitrate, Silicate and Ammonia at the mouth of the Stour and Orwell estuaries.

DECEMBER, 1993 SURVEY.

Results are given in Table 25 with nutrient data presented in Figure 23. The sampling order was northward.

Silicate, Nitrate and Phosphate concentrations were at higher levels than those measured during March and April, but with some variability. Levels at the Wash end of the survey were noticeably higher.

Phosphate concentrations were at levels comparable to those measured during March and April.

There were distinctive peaks in concentration for Nitrate, Silicate and Ammonia at the mouths of the Stour/Orwell and Colne/Blackwater estuaries, the latter also including Phosphate.

Ammonia levels were generally lower than during the summer surveys, except at the noted peaks and the Wash end of the survey.

COASTAL NUTRIENTS BY SITE.

The data from all surveys is presented showing nutrient and chlorophyll-a concentrations against date for each of the 34 sites in Figures 25 to 33, four sites to a page.

From these plots, the expected seasonal trends are evident, with the major nutrients of Nitrate, Silicate and Phosphate being diminished by plankton uptake in the Summer months and being regenerated during the Autumn and Winter months.

The nutrient profiles for the 3 sites closest to the Wash have the sharpest Autumn rise and Spring depletion in nutrients of all the sites.

Sites between the Wash and Great Yarmouth show nutrient levels to be at summer minimum for longer periods of time than all sites south of Great Yarmouth.

In general, the Ammonia profile at each site shows this as the first nutrient to be consumed and the first to be regenerated.

ELECTRONIC DATA.

On-board electronic sensors and towed arrays have been used to measure temperature, dissolved oxygen, salinity, pH, turbidity and chlorophyll a in coastal waters. The latter two are determined by fluorescence. The recording interval was 10 seconds, equating to a distance of about 40m. This data will be presented in a future report.

CLUSTER ANALYSIS.

A multivariate procedure for detecting natural groupings in data was applied to all the nutrient data along the East Anglian coast used in this report, excluding the nitrite data (there being relatively few results). A cluster analysis using the Canberra Metric equation was performed to determine the similarity between sites. Cluster analysis groups sets of data with similar attributes. The more similar the sets, the closer they are grouped on the resulting dendogram.

The sites clustered tightly, by geographical location, with two main branches: sites north of Lowestoft and sites south of Lowestoft. These two branches are to be expected, since there is very little freshwater input to the coast north of Lowestoft.

Figure 24 shows the resultant groups, numbered 1 to 7, marked against the actual sample sites.

The individual groups are also as can be expected. Group 1 reflects the influence of very shallow and relatively turbid water in the outer Wash. Group 3 reflects the increase in estuarine influence, from the Yare and Waveney Estuaries, relative to Group 2, the remainder of the Norfolk coast. Group 5 reflects the inputs from the Alde, Deben, Orwell and Stour estuaries. Group 7 reflects the influence of the Colne, Blackwater, Crouch, Roach and Thames estuaries. Group 6 is one site (#61 between Frinton and Clacton) which is dissimilar to any other nearby sites and hence stands alone in a group by itself.

CONCLUSIONS.

- It is clear that there are differences between sections of the coast of East Anglia.
 - The data presented show evidence of a number of inputs to the coastal zone, the most obvious being associated with estuaries.
 - Ammonia concentrations were the most variable of all the nutrients measured.
 - During summer surveys, the soluble phosphate concentration in coastal waters was noticeably higher at all sites to the south of Lowestoft than at all sites to the north.
 - The minimum salinity measured during each survey along the coast was in most cases greater than 30‰. The exceptions were 29.0‰, 26.0‰ and 29.8‰ during the September, October and November surveys of 1992.
 - During Autumn and Winter surveys, distinctive peaks in nutrient concentration were evident at the mouths of the Stour/Orwell and Colne/Blackwater estuaries.
 - There was some evidence that the tidal state had an effect on the nutrient profiles close to the estuarine inputs to the coastal zone.
 - The results of the cluster analysis reflect the differing characteristics of individual stretches of coastal water.
-

FUTURE YEARS.

It is planned to continue the programme of quarterly National Coastal Baseline surveys along the East Coast during 1995, this having taken place in 1994.

The additional opportunistic sampling will be continued during the National Coastal Surveillance Programme, as well as during coastal passages.

The electronic data is in the process of being worked up and will be reported on in due course. It consists of continuous surface profiles collected during these reported coastal surveys.

It may be necessary to sample further out from current sites between Felixstowe and the Thames, possibly out to the three mile limit, in order to gain full information on the influence of the estuaries in that area.

It is also hoped to investigate further the levels of phytoplankton, zooplankton, chlorophyll a and turbidity.



Figure 1 : *Sea Vigil* Sampling Points
along the Anglian East Coast

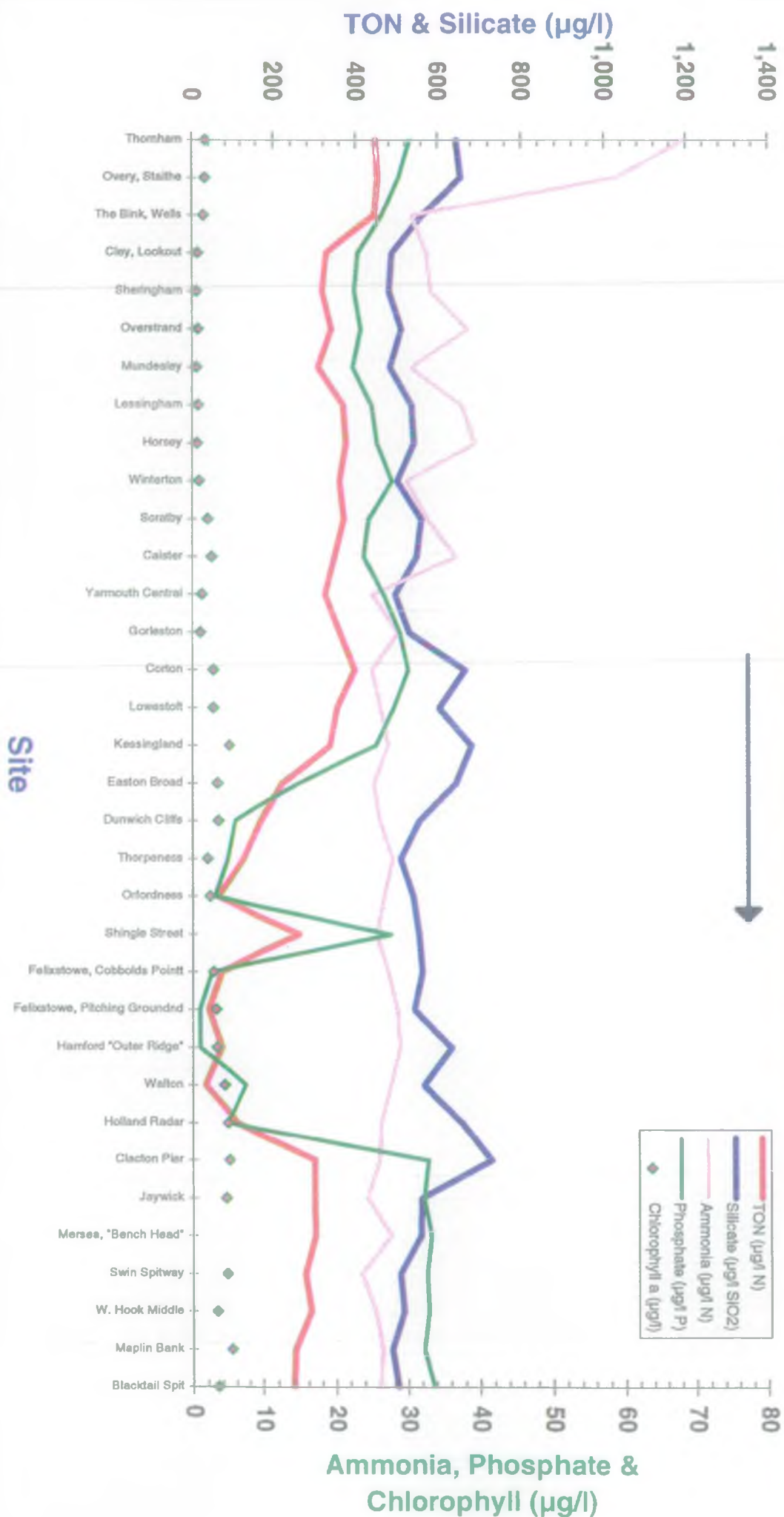


Figure 2

Coastal Nutrients - Wash to Thames 30th March-1st April 1992

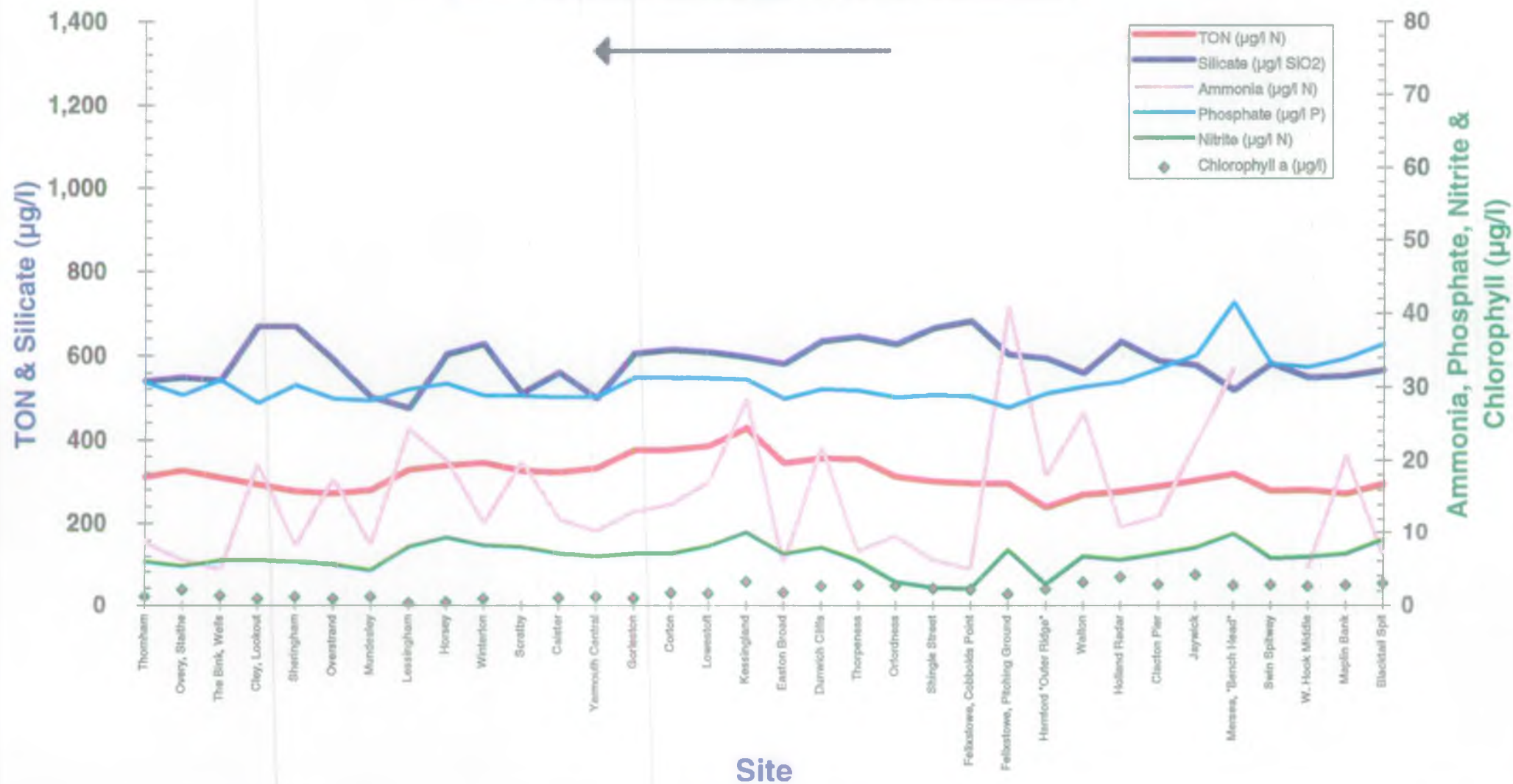


Figure 3

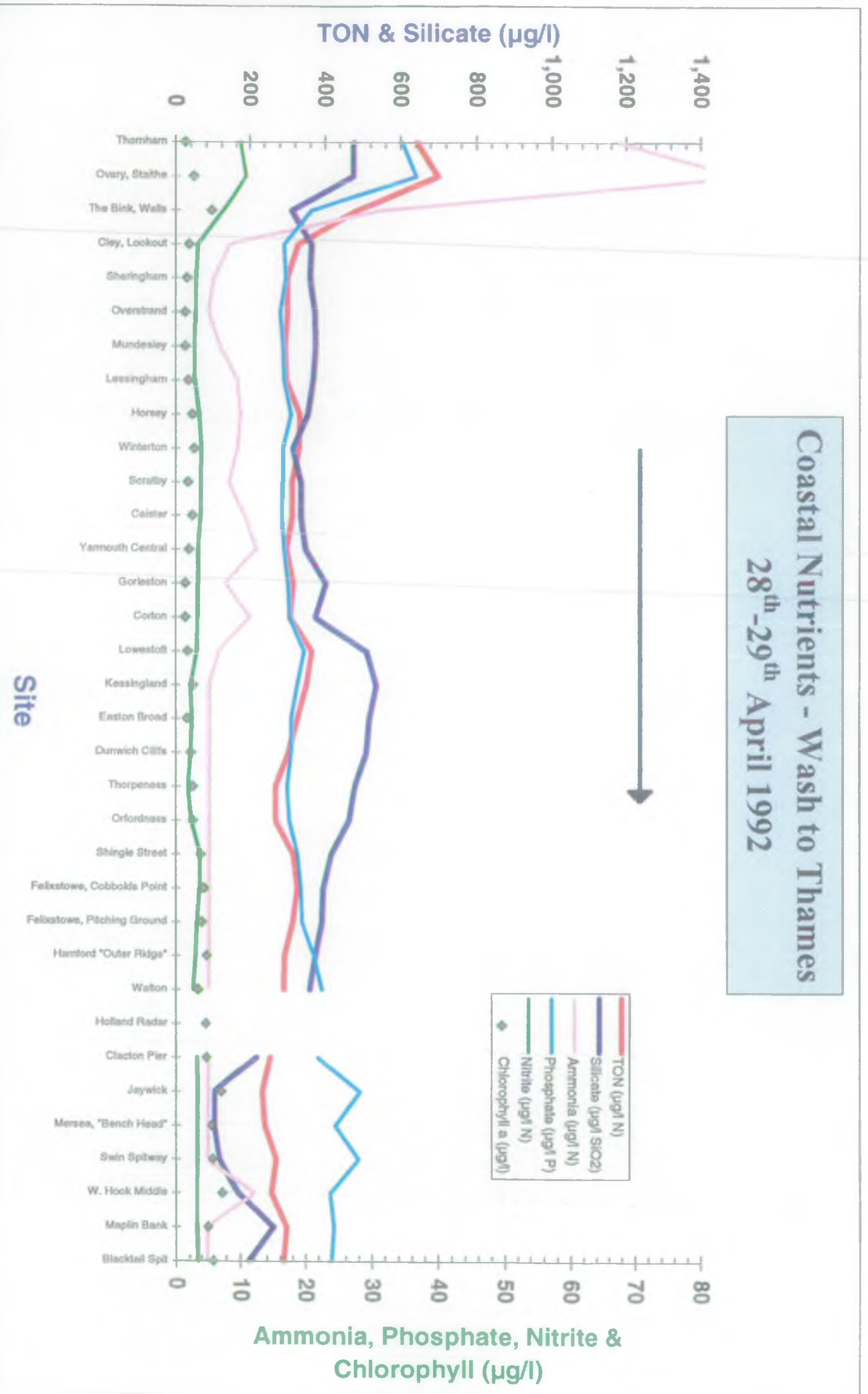


Figure 4

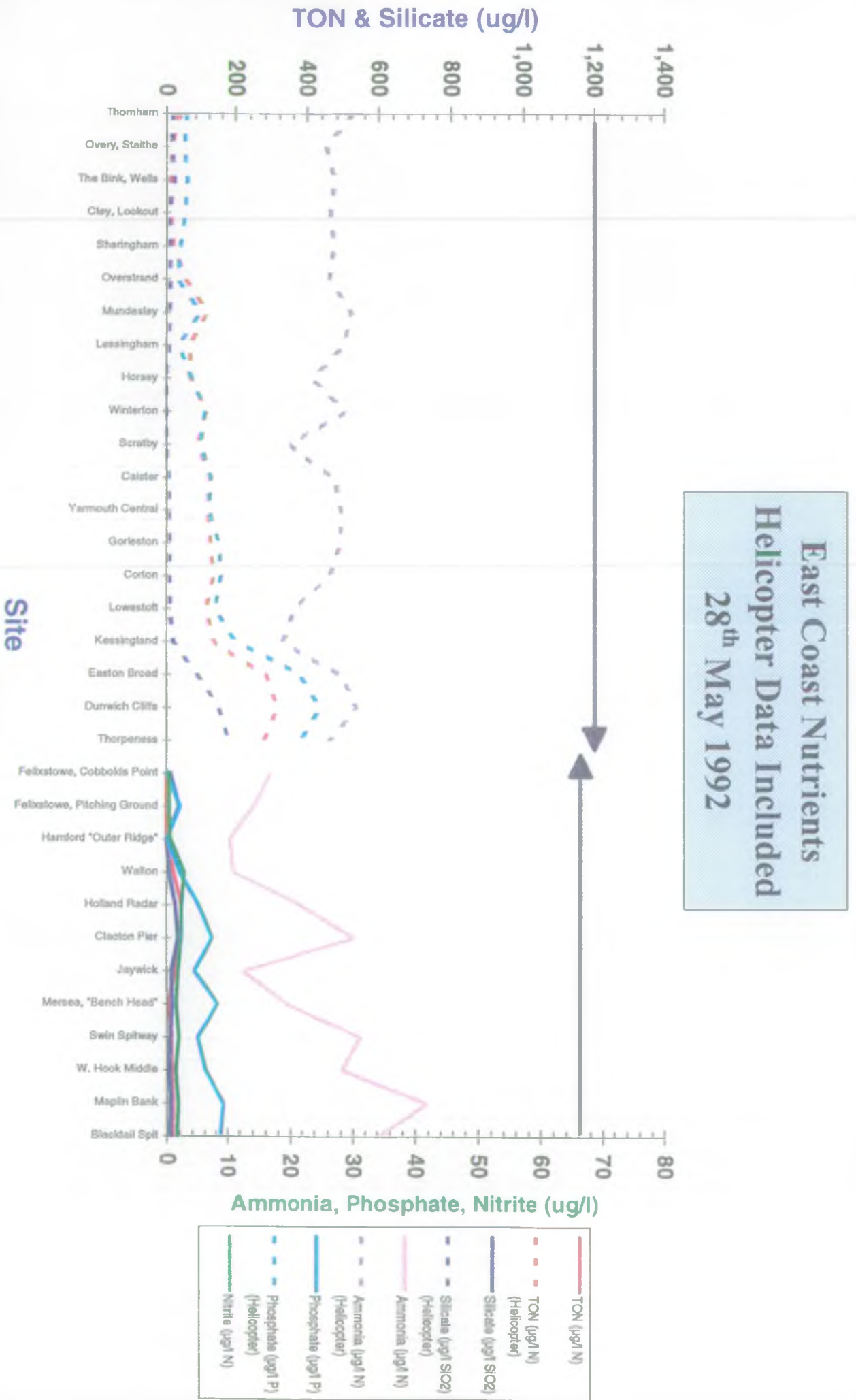


Figure 5

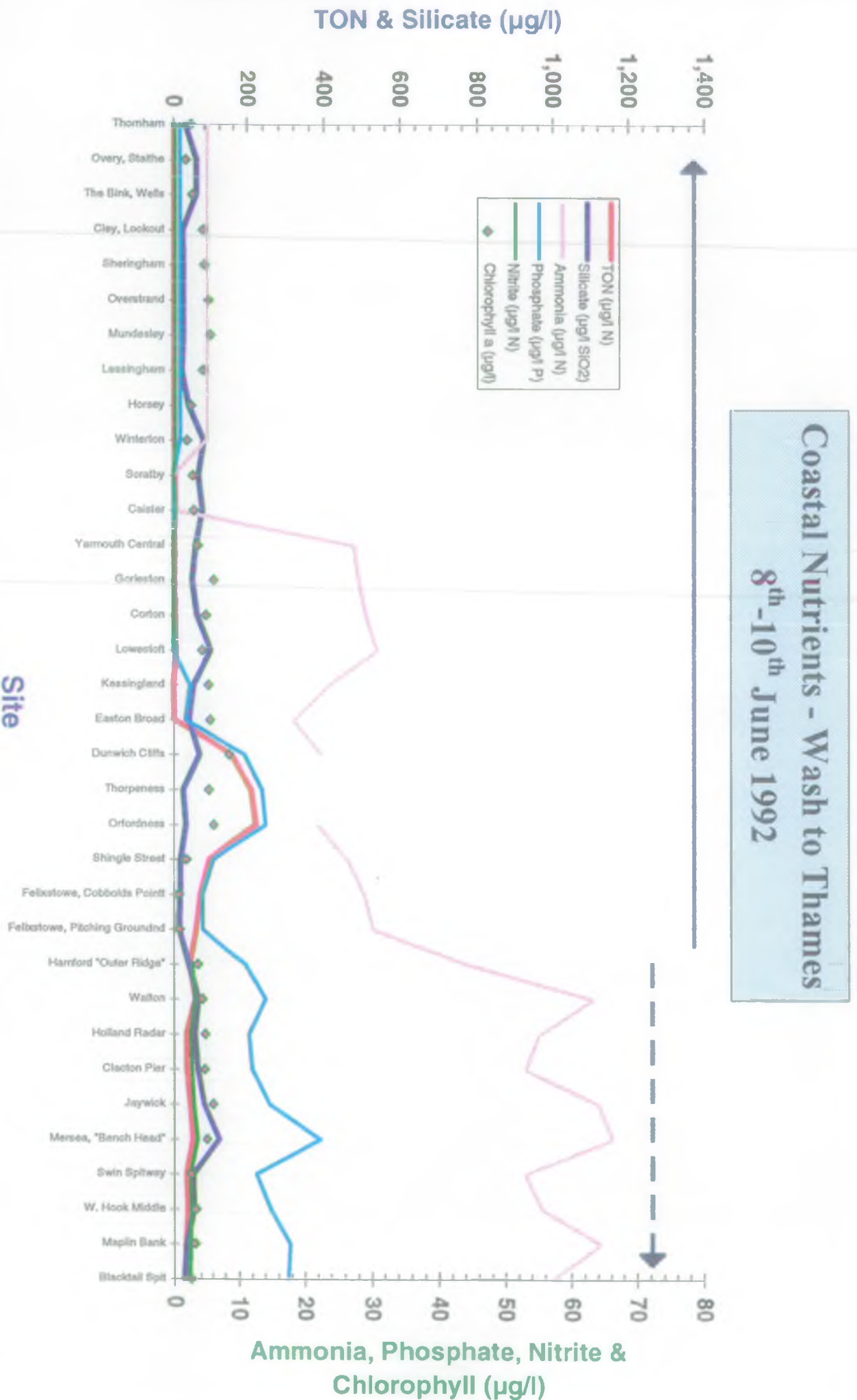
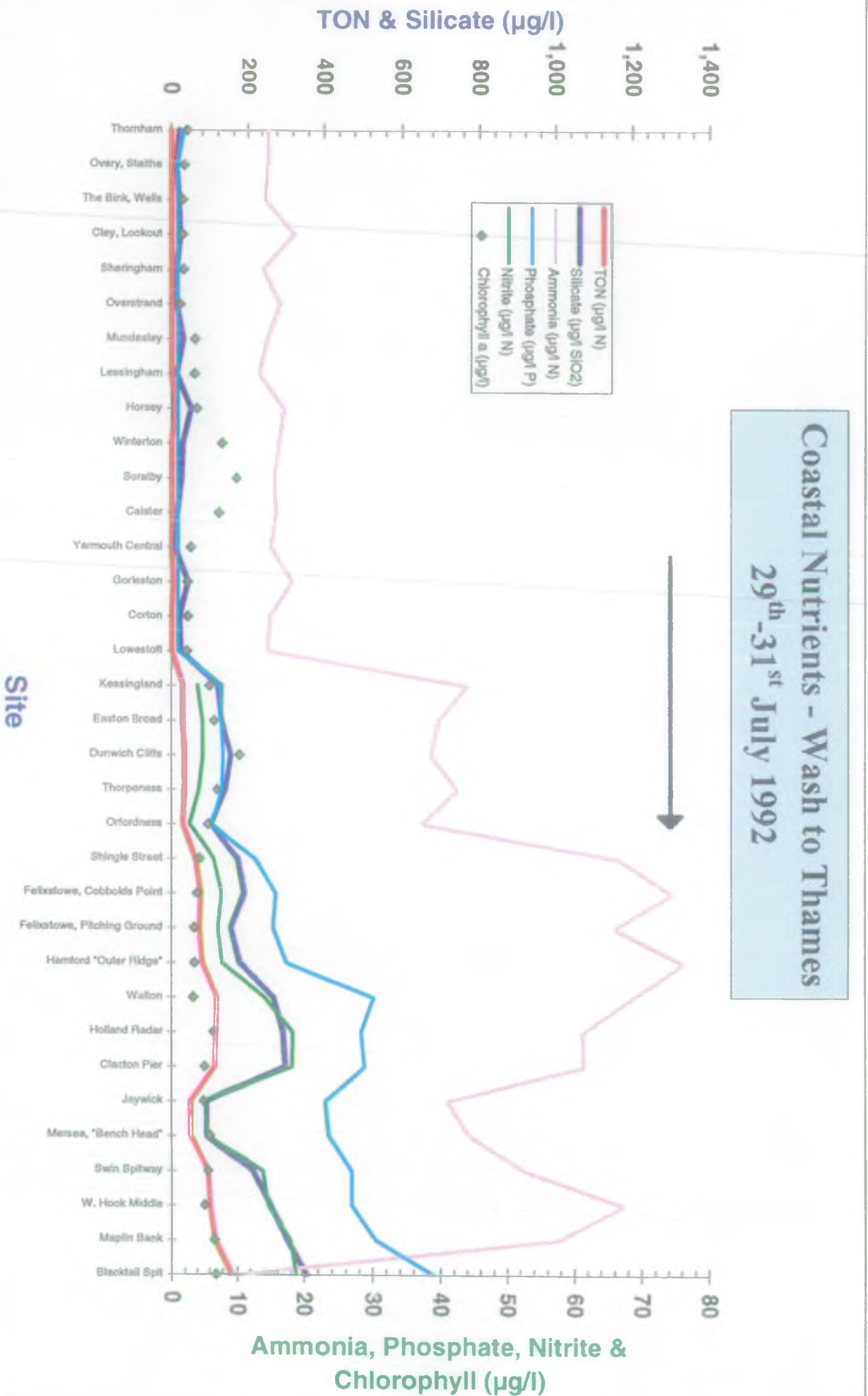


Figure 6



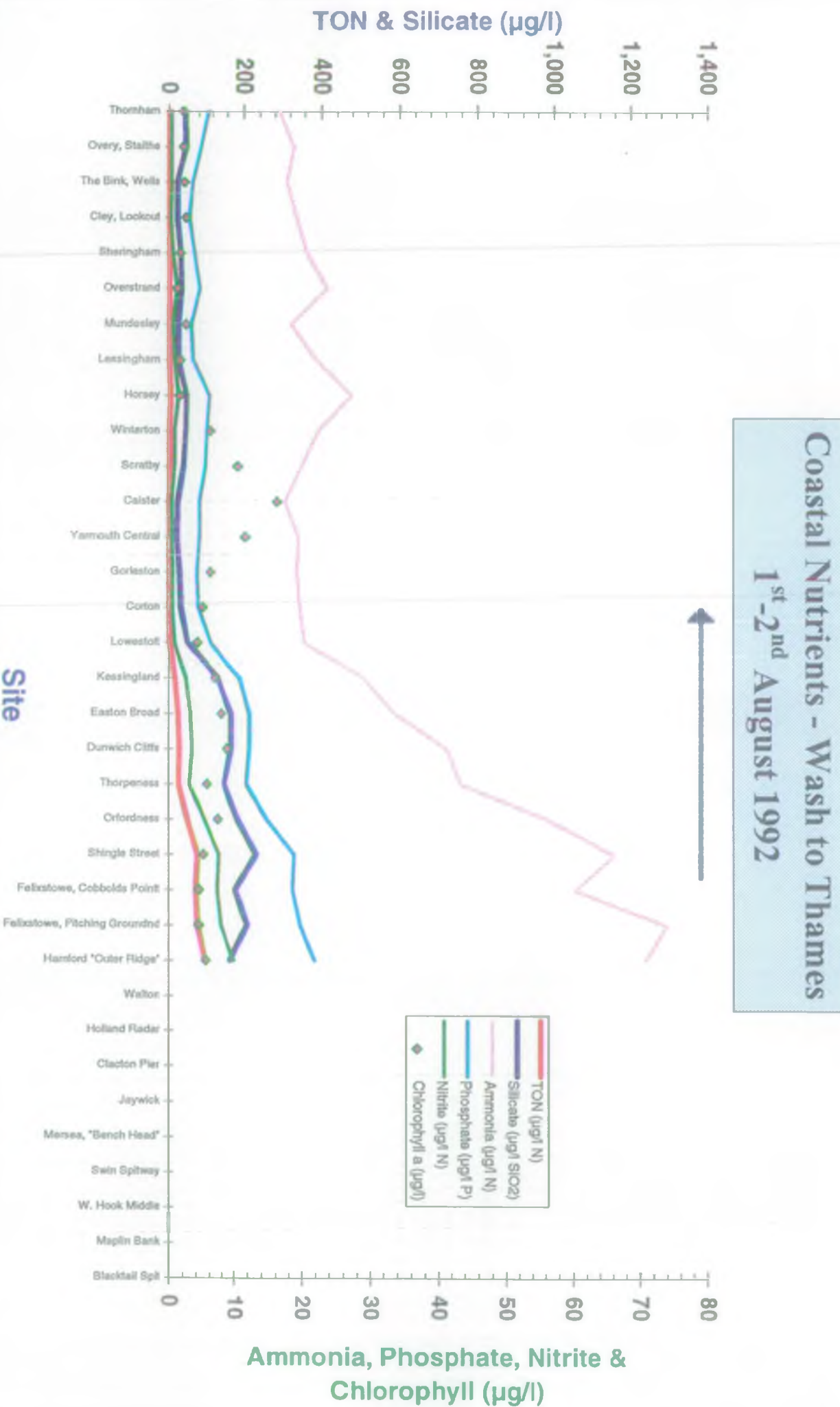


Figure 8

Coastal Nutrients - Wash to Thames 28th-30th September 1992

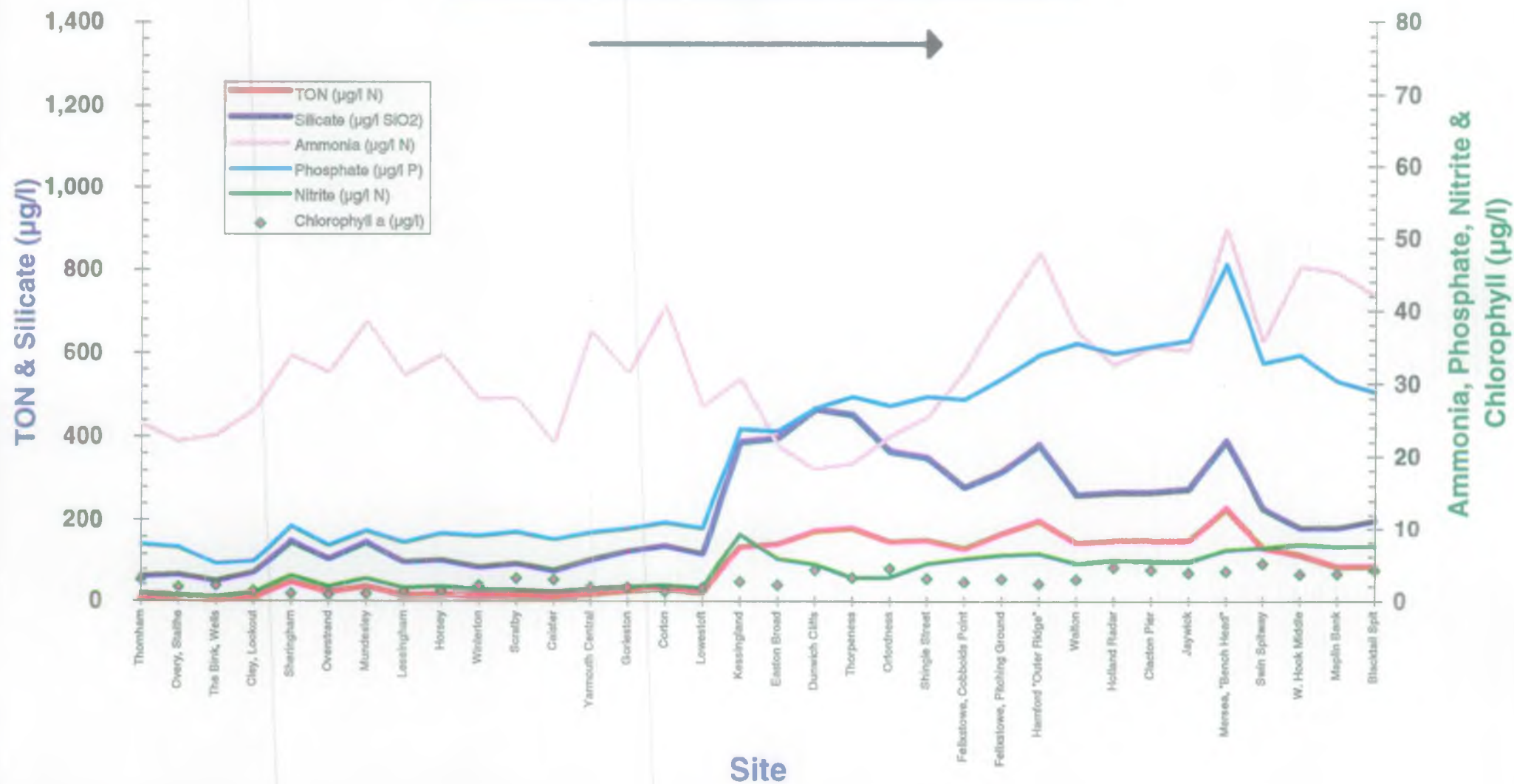
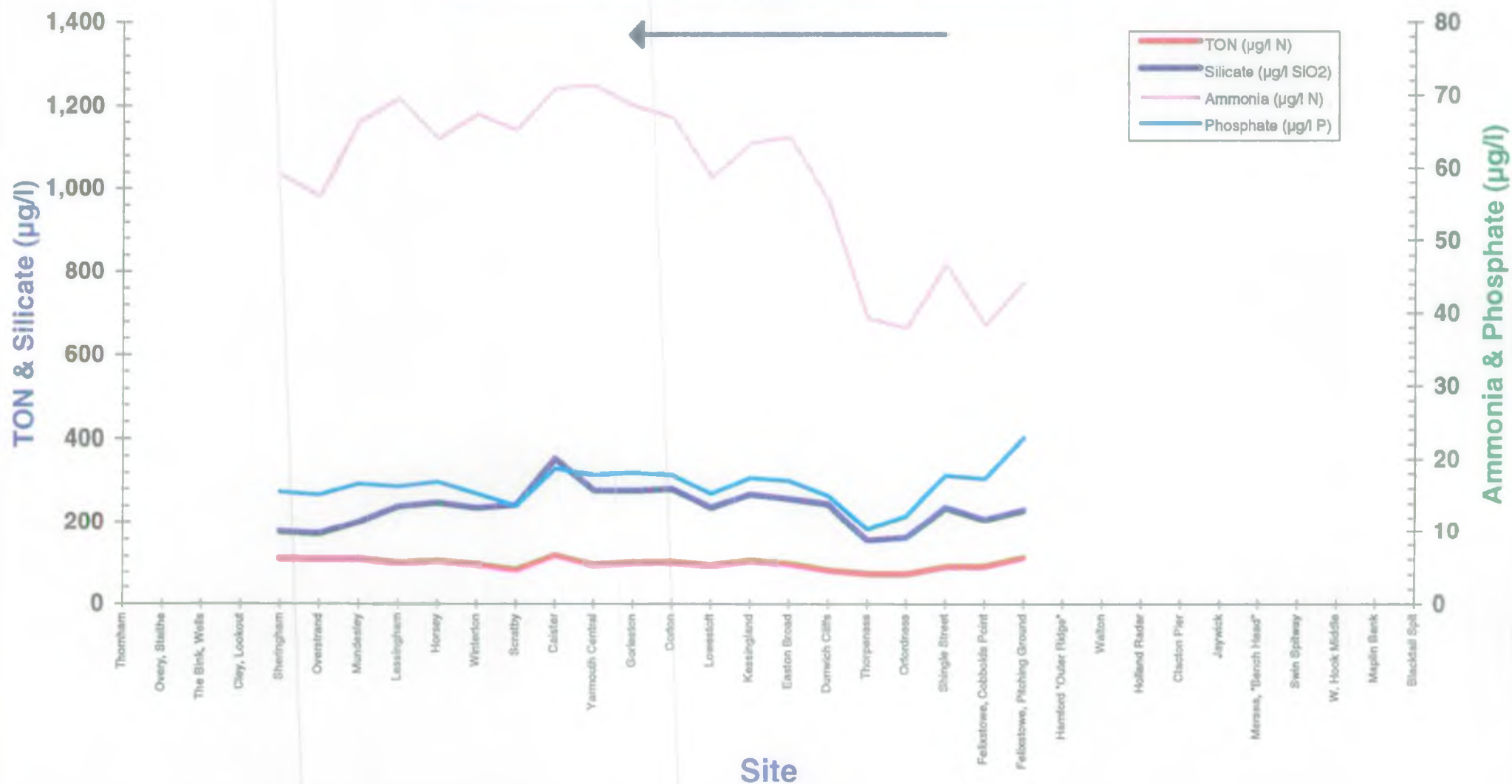


Figure 9

Coastal Nutrients - Shotley to Wash 22nd October 1992

**Figure 10**

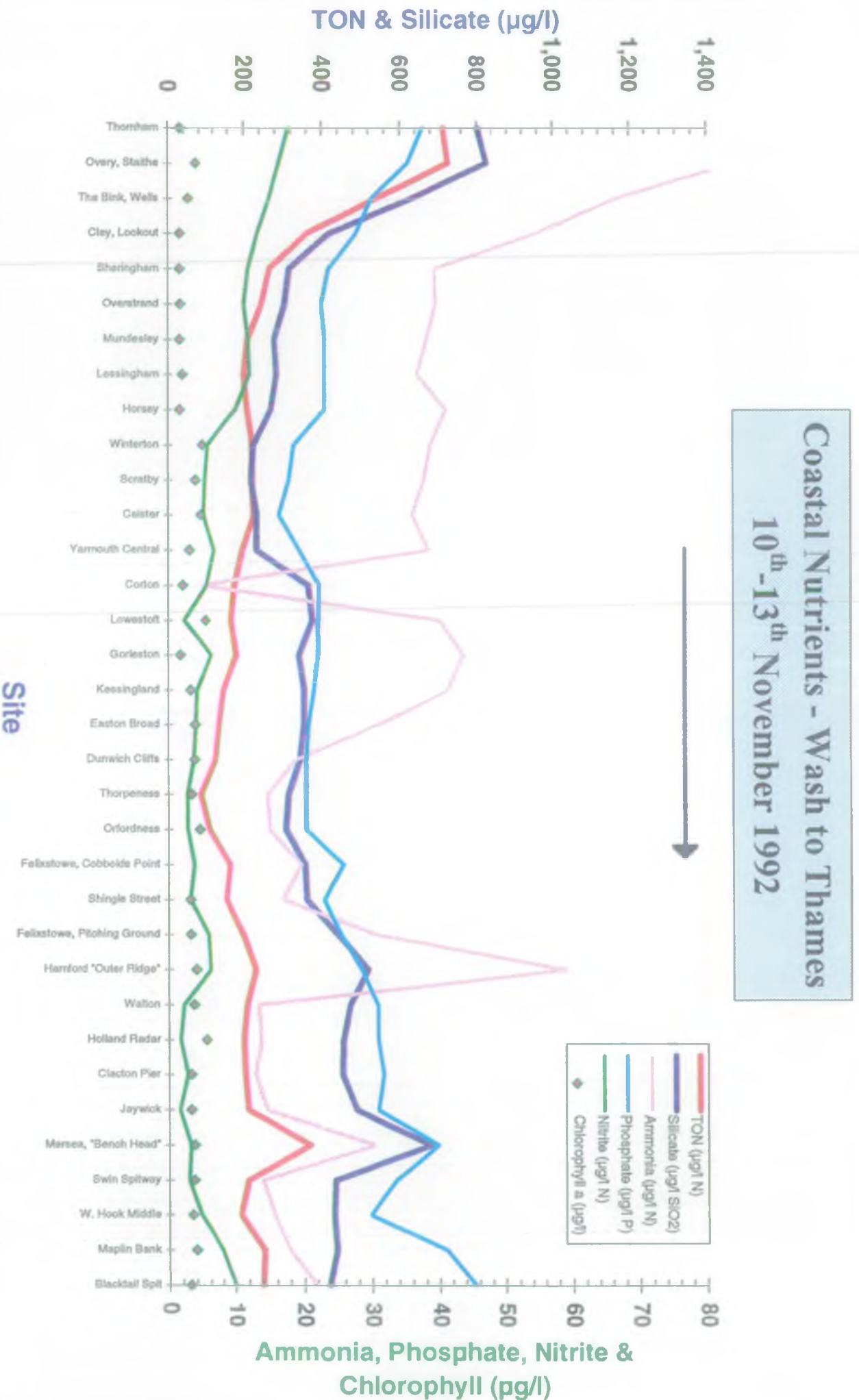


Figure 11

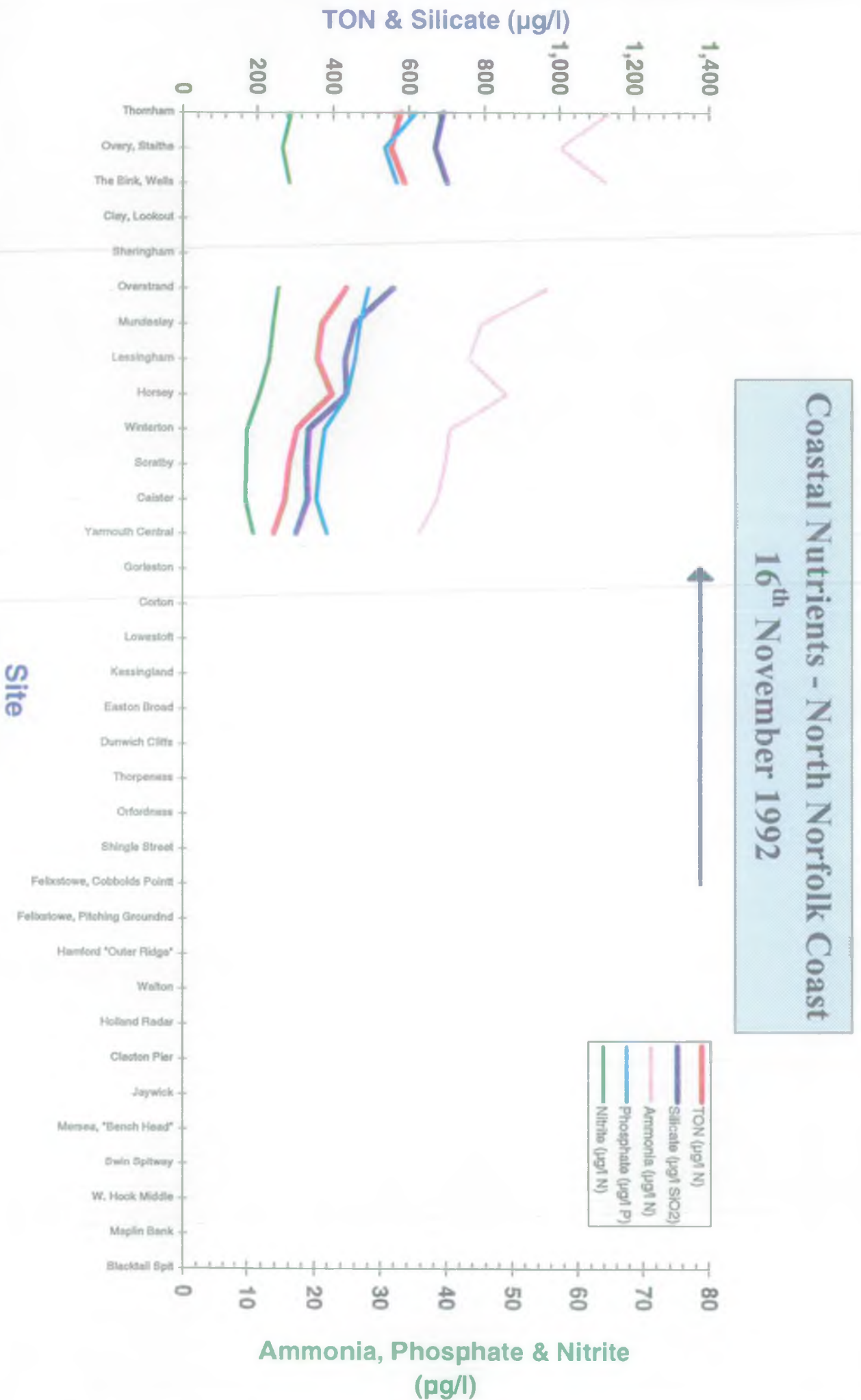


Figure 12

Coastal Nutrients - Wash to Thames 29th January-1st February 1993

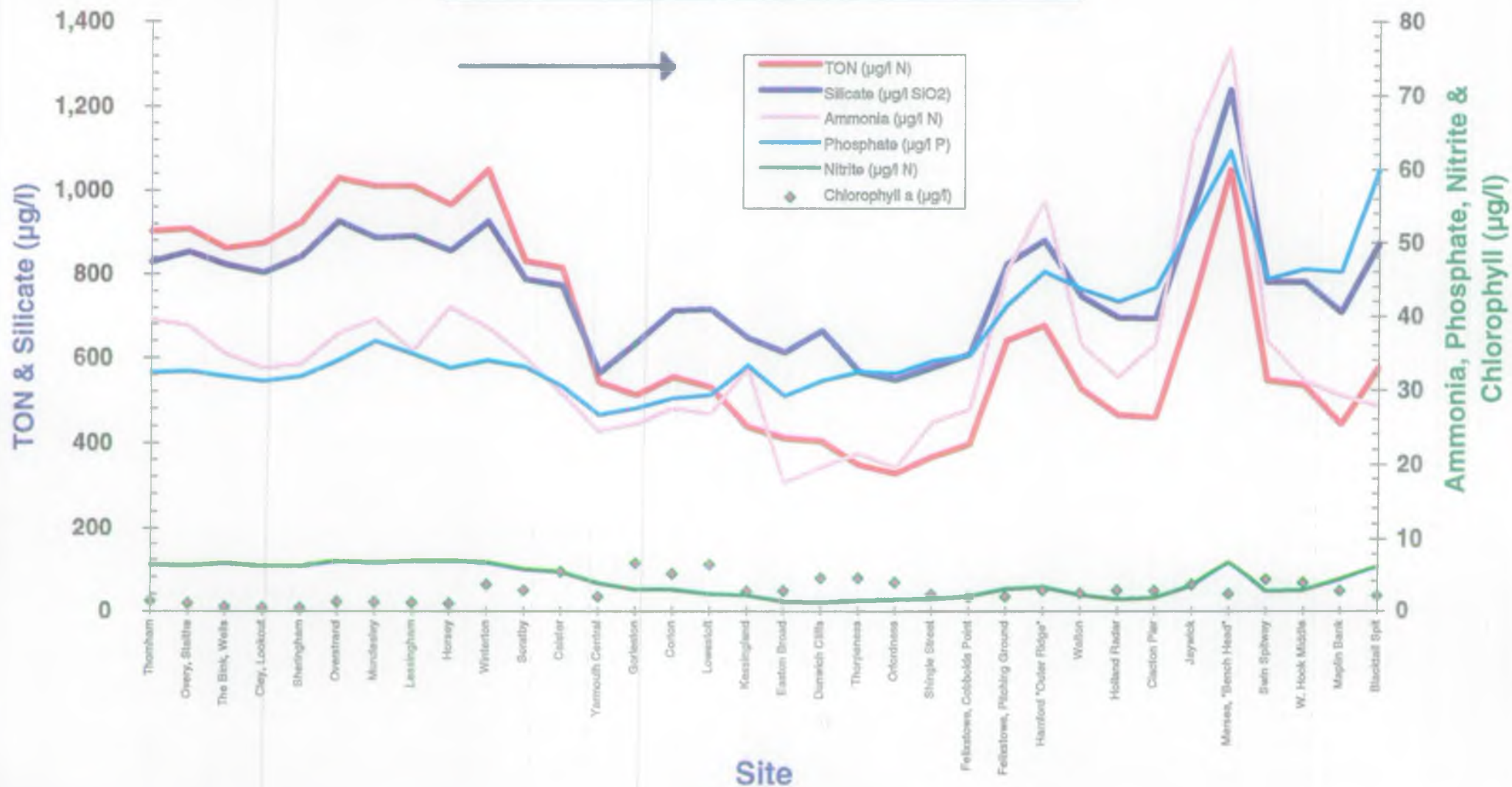


Figure 13

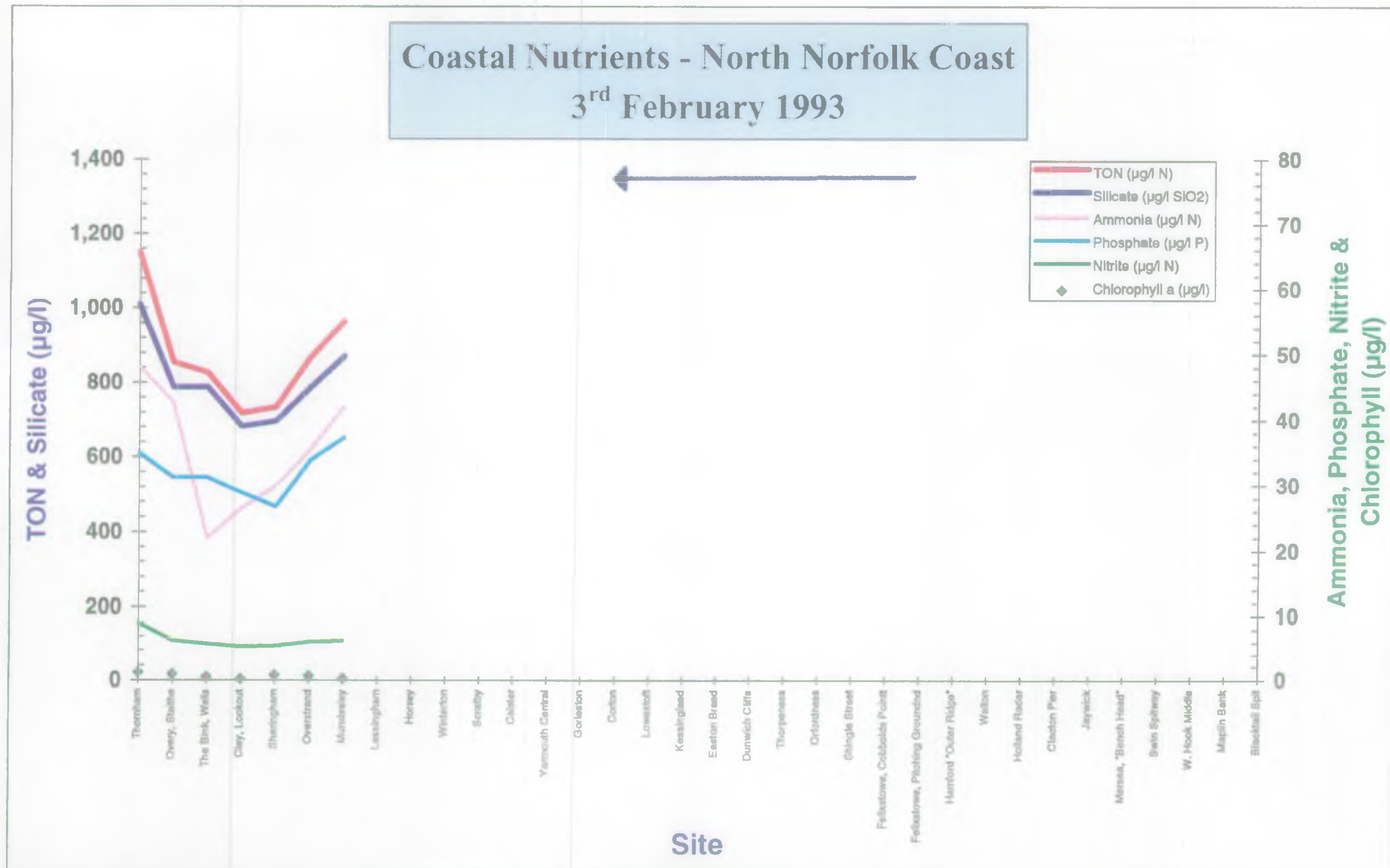


Figure 14

Coastal Nutrients - Wash to Thames 15th-19th March 1993

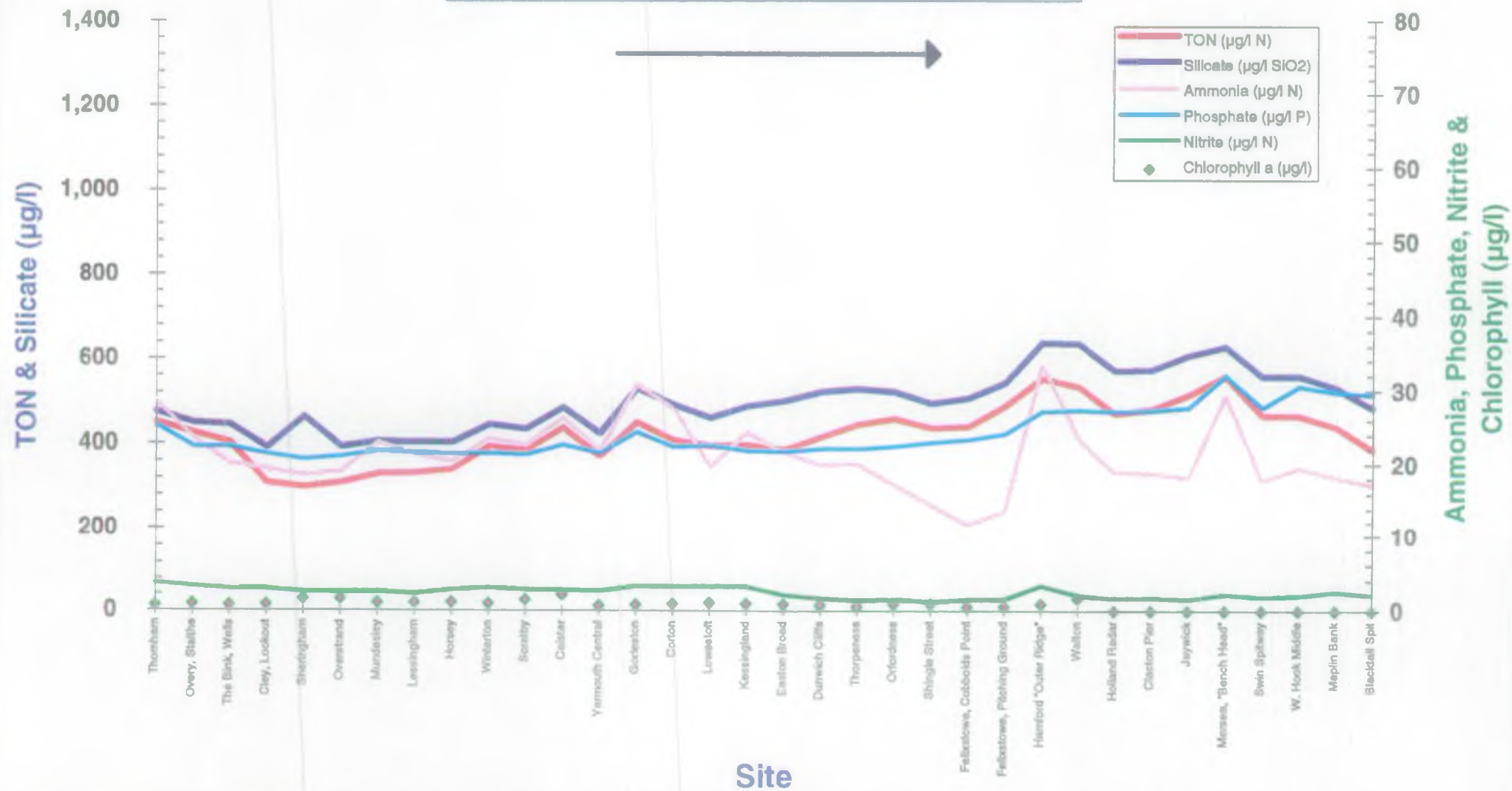


Figure 15

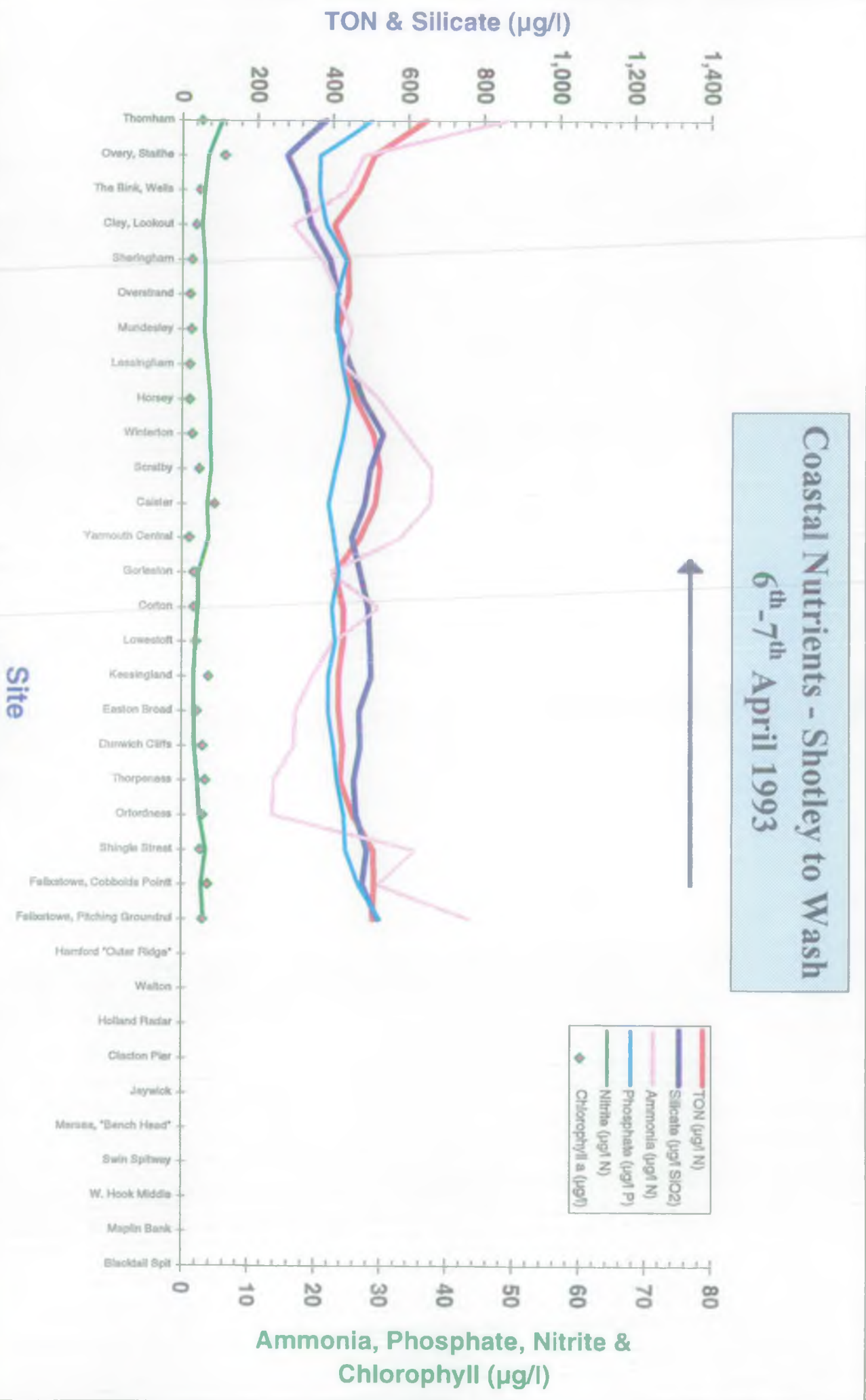


Figure 16

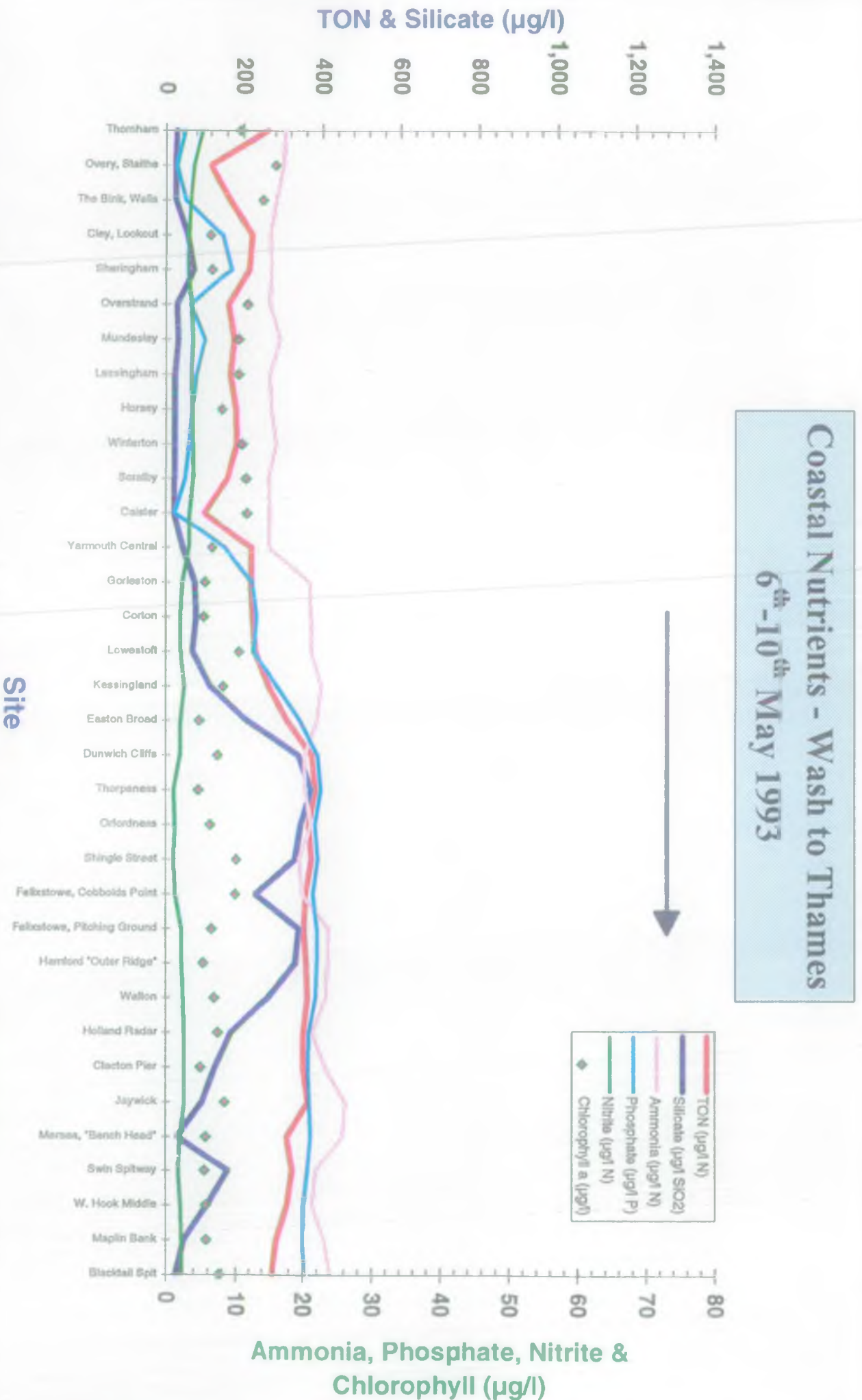


Figure 17

Coastal Nutrients - Thames to Wash 2nd-4th June 1993

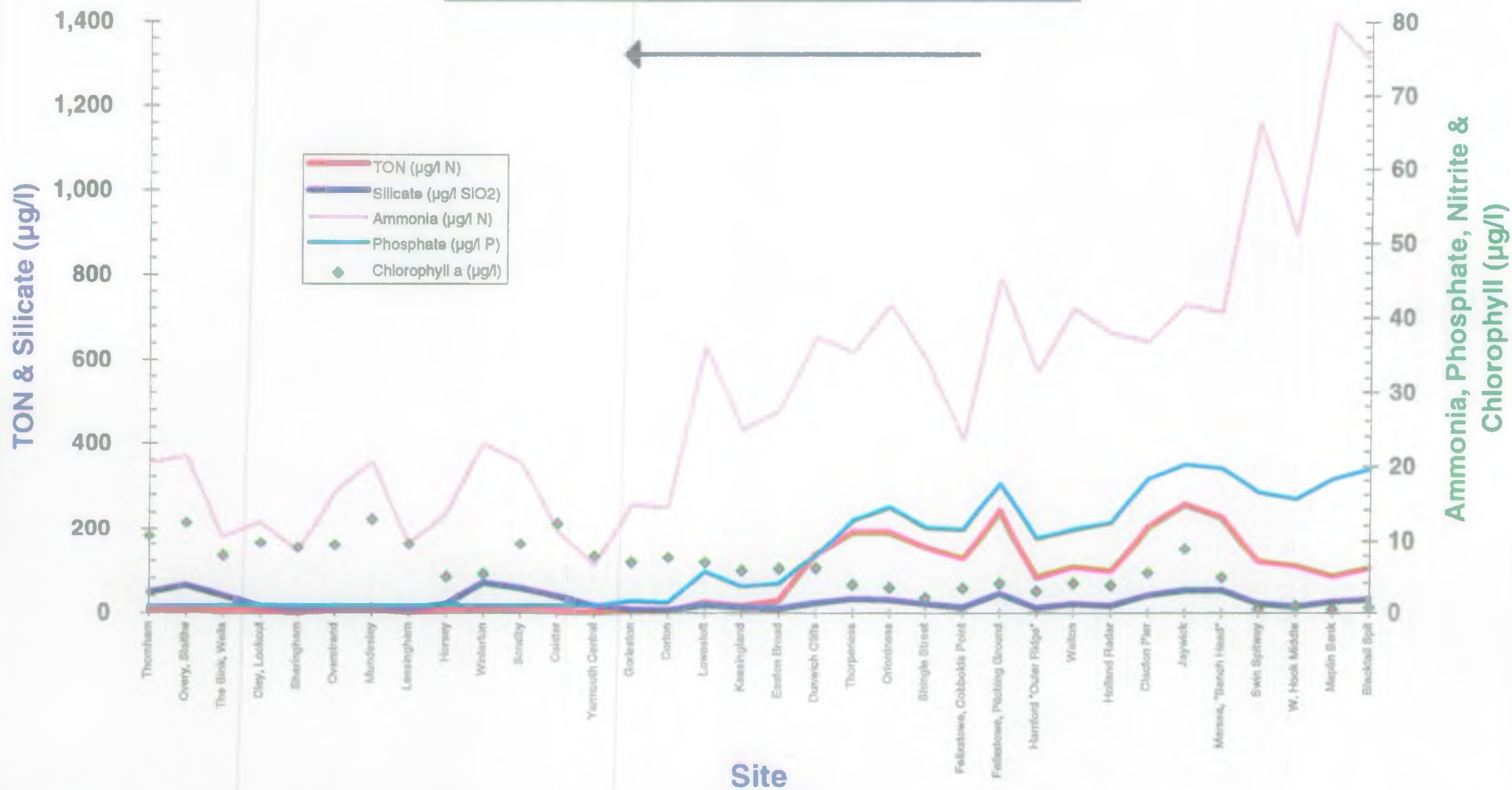


Figure 18

Coastal Nutrients - Thames to Wash 24th-31st August 1993

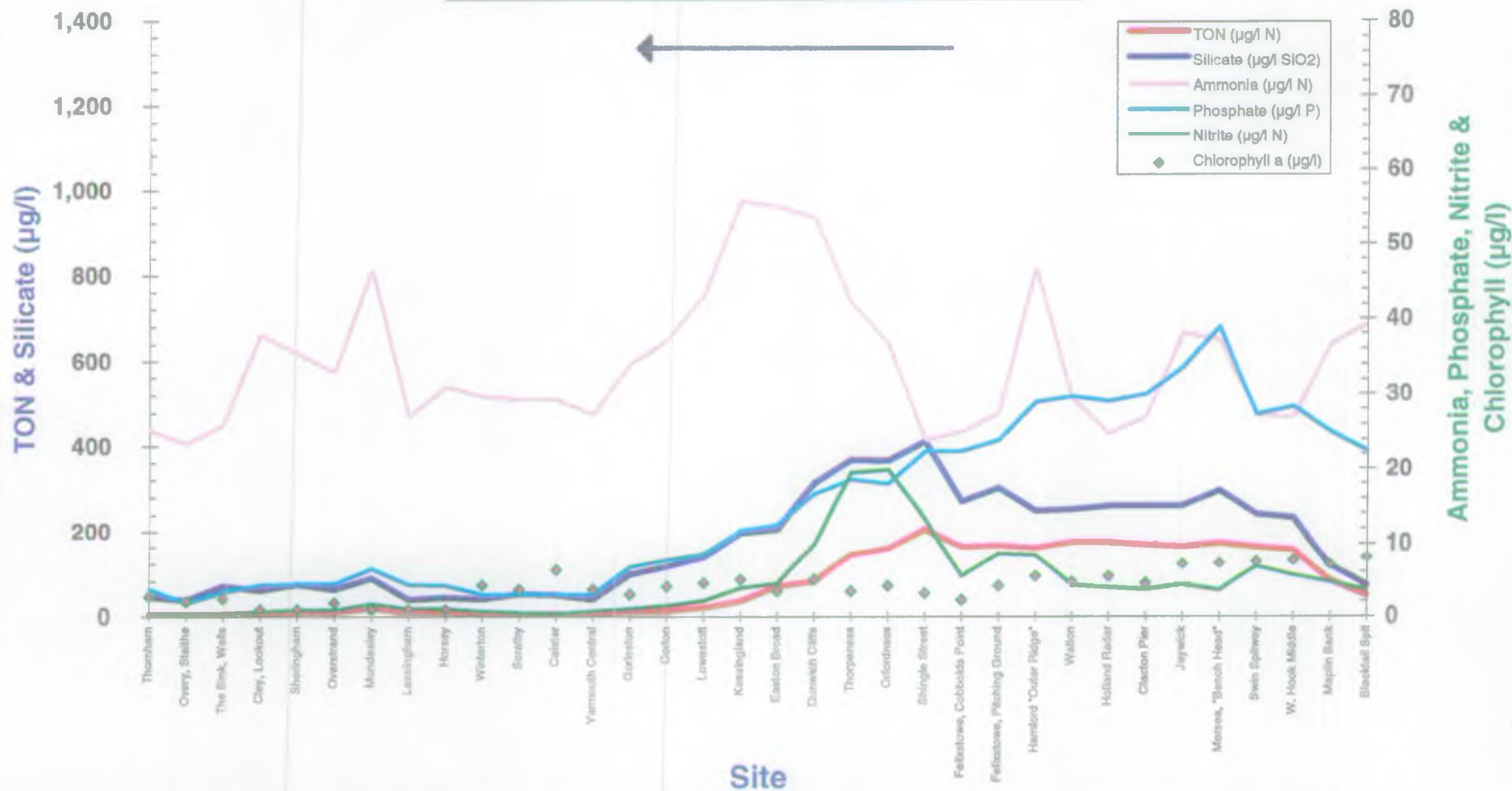


Figure 19

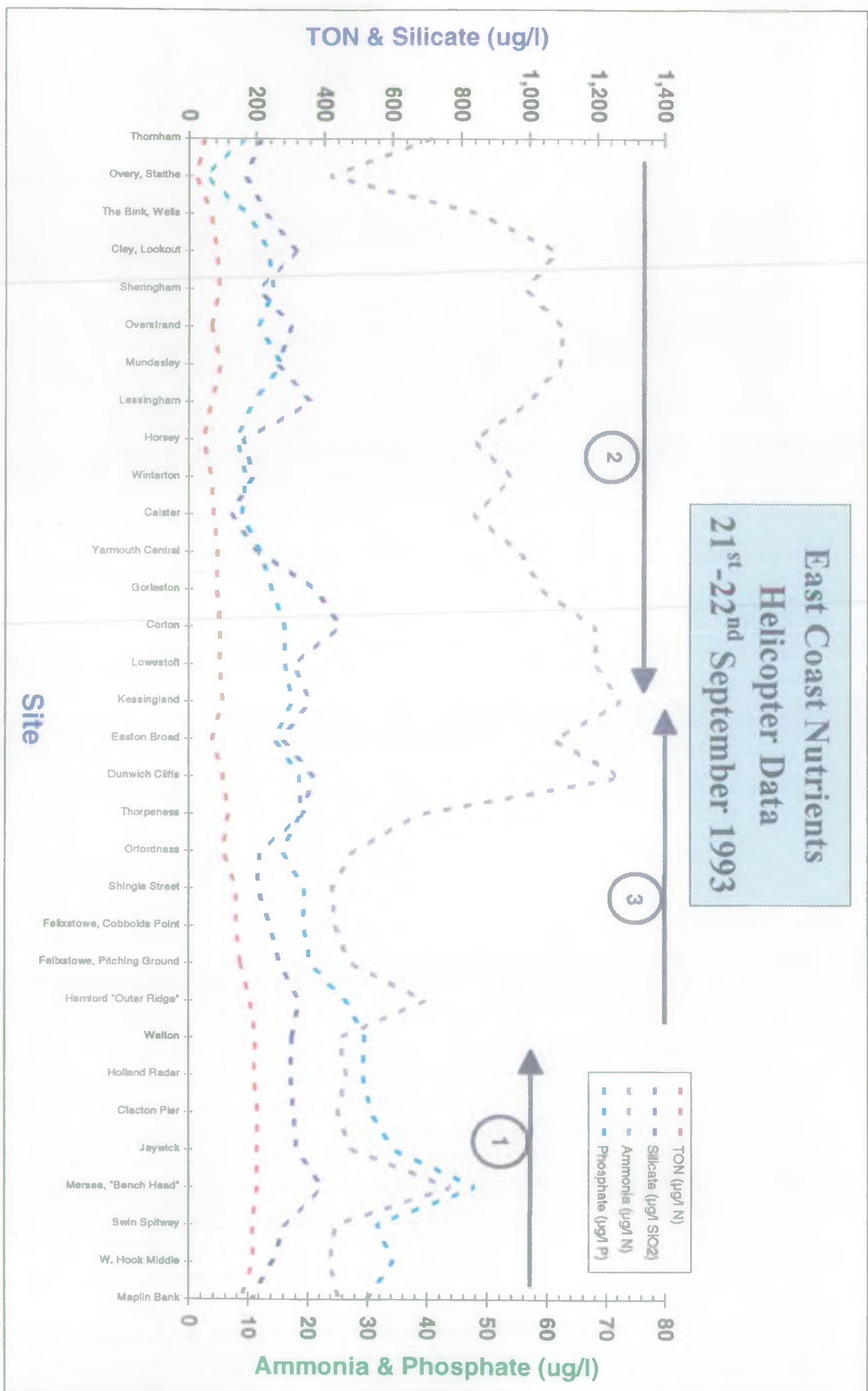


Figure 20

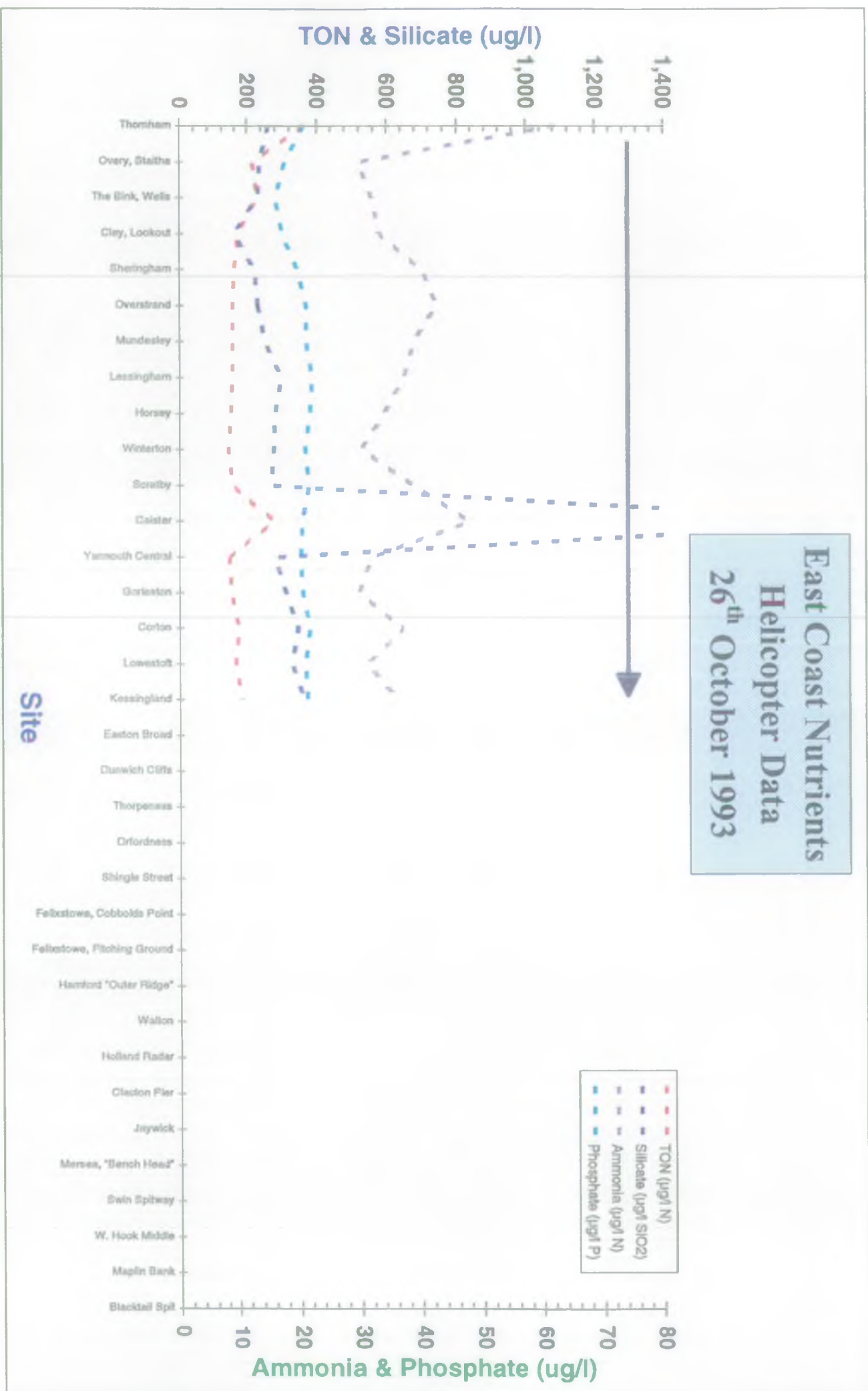


Figure 21

Coastal Nutrients - Wash to Thames 23rd-26th November 1993

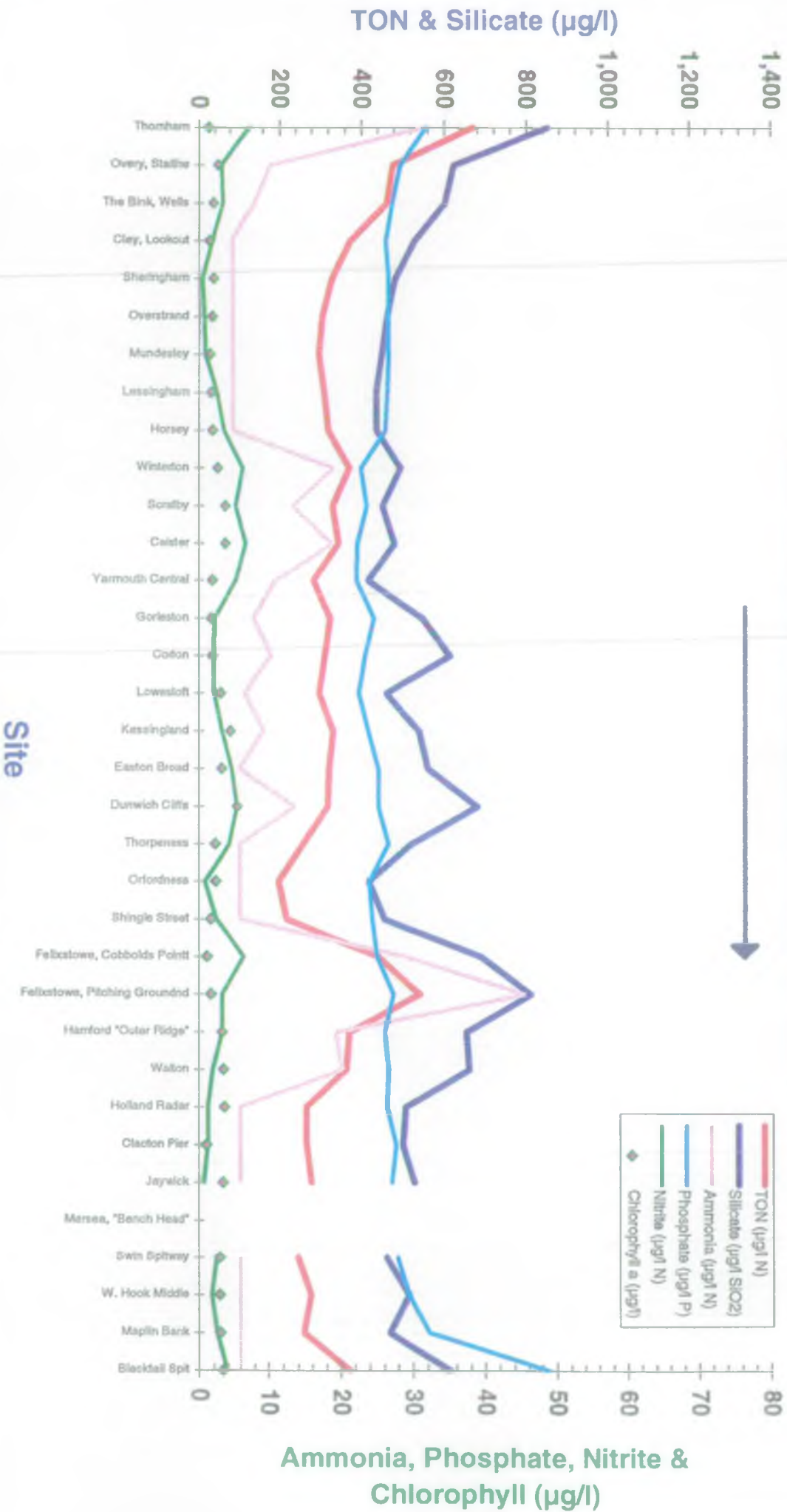


Figure 22

Coastal Nutrients - Thames to Wash

14th - 17th December 1993

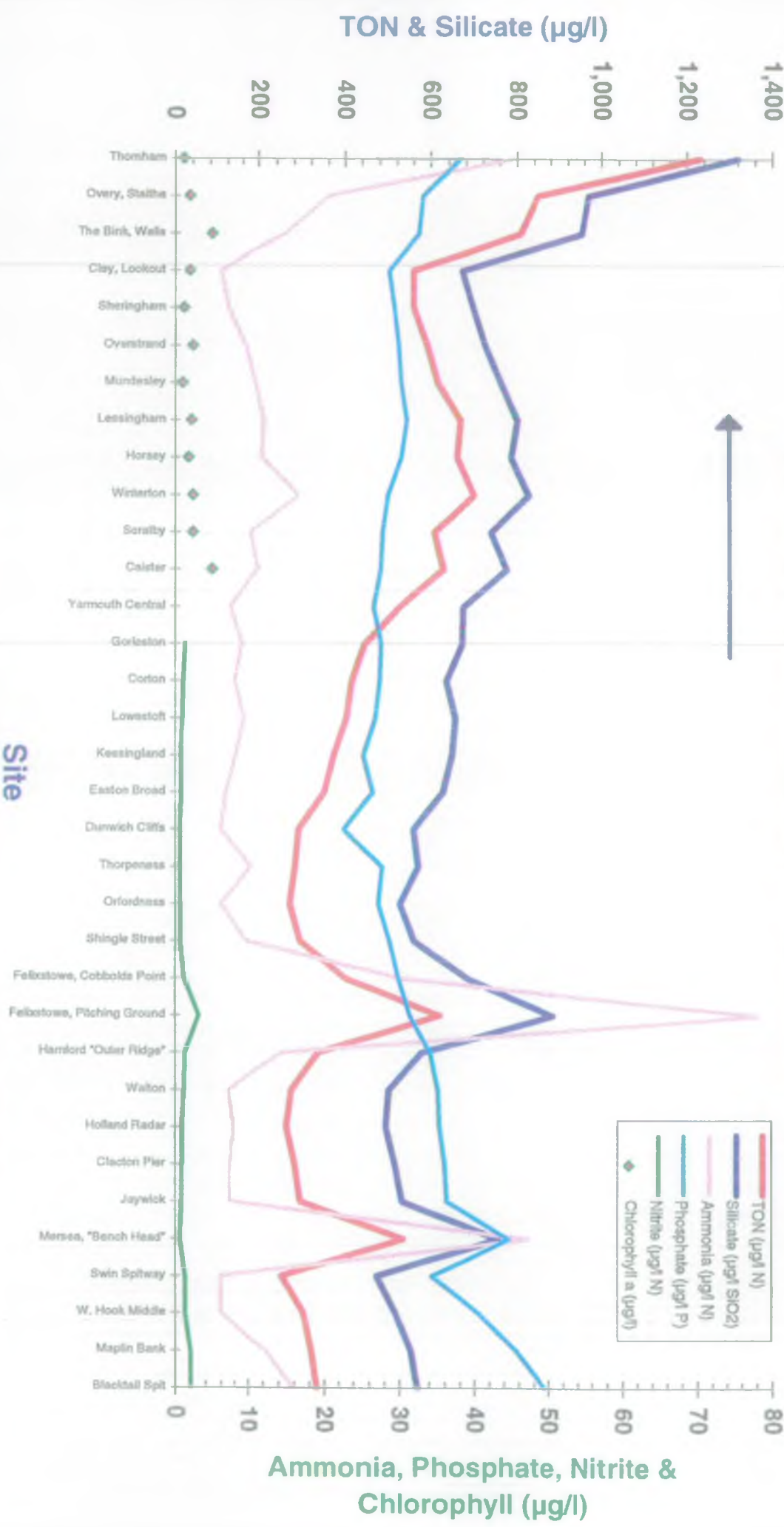


Figure 23

Figure 24 : Cluster Analysis Results of
Sea Vigil Sampling Points
along the Anglian East Coast

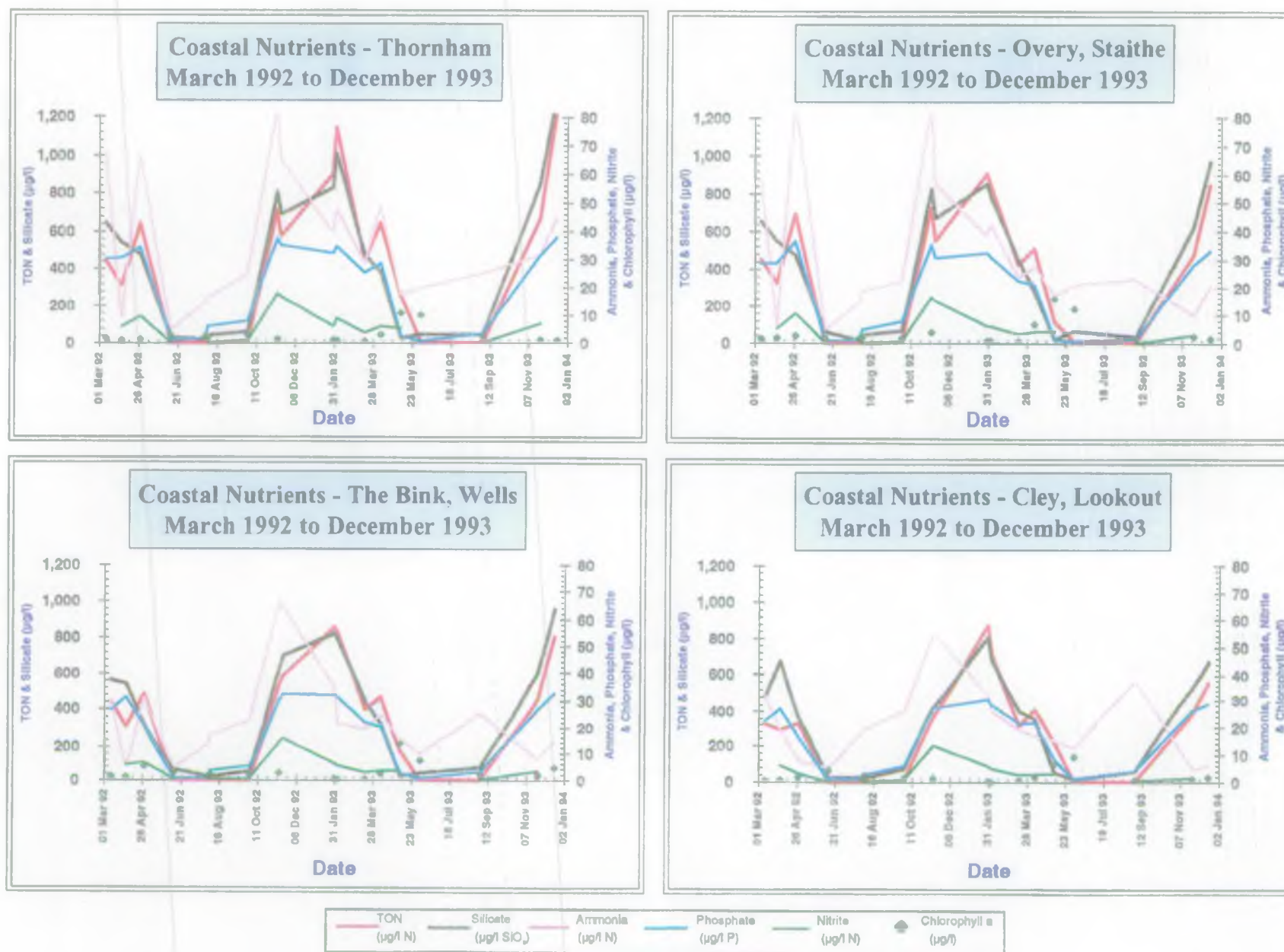


Figure 25

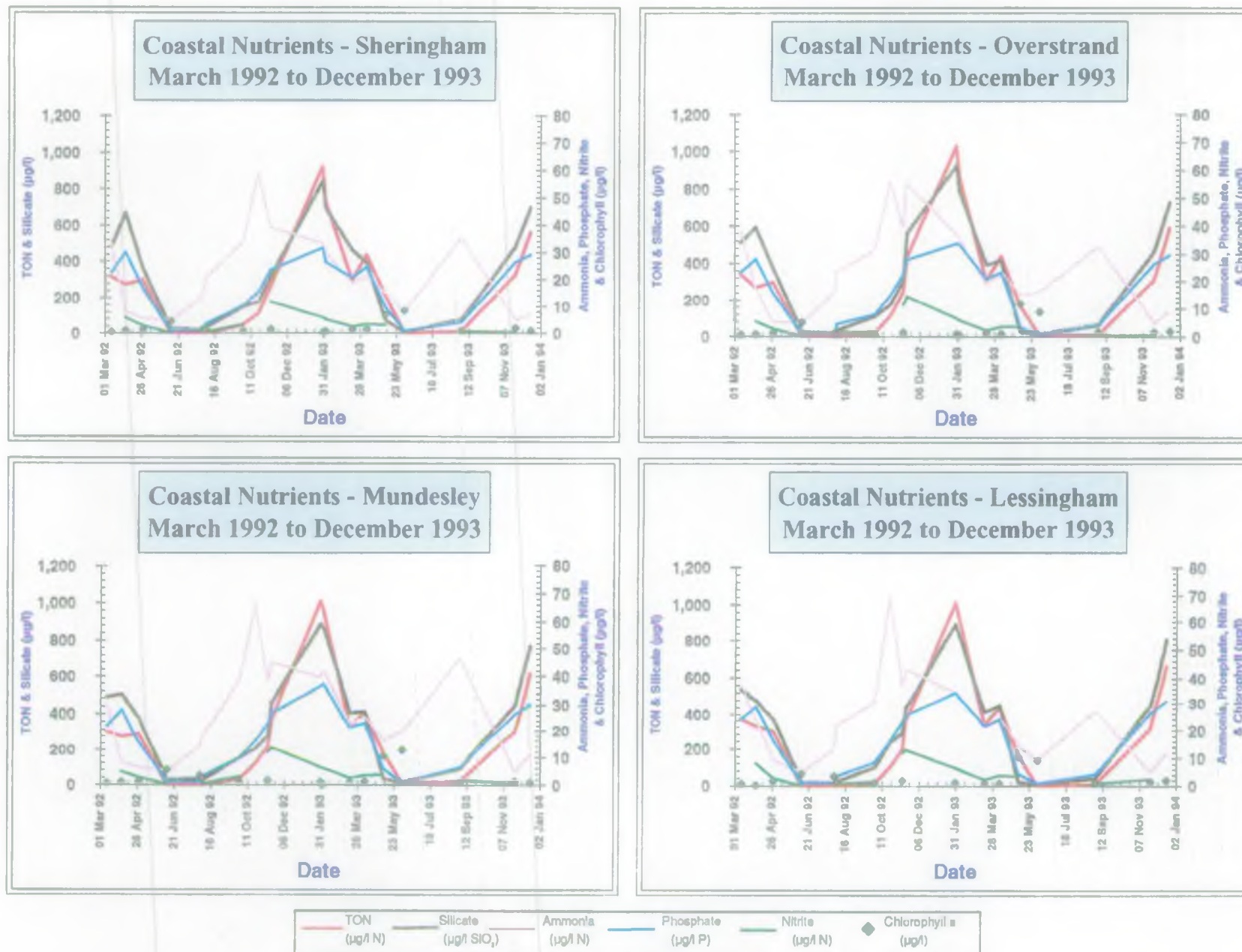


Figure 26

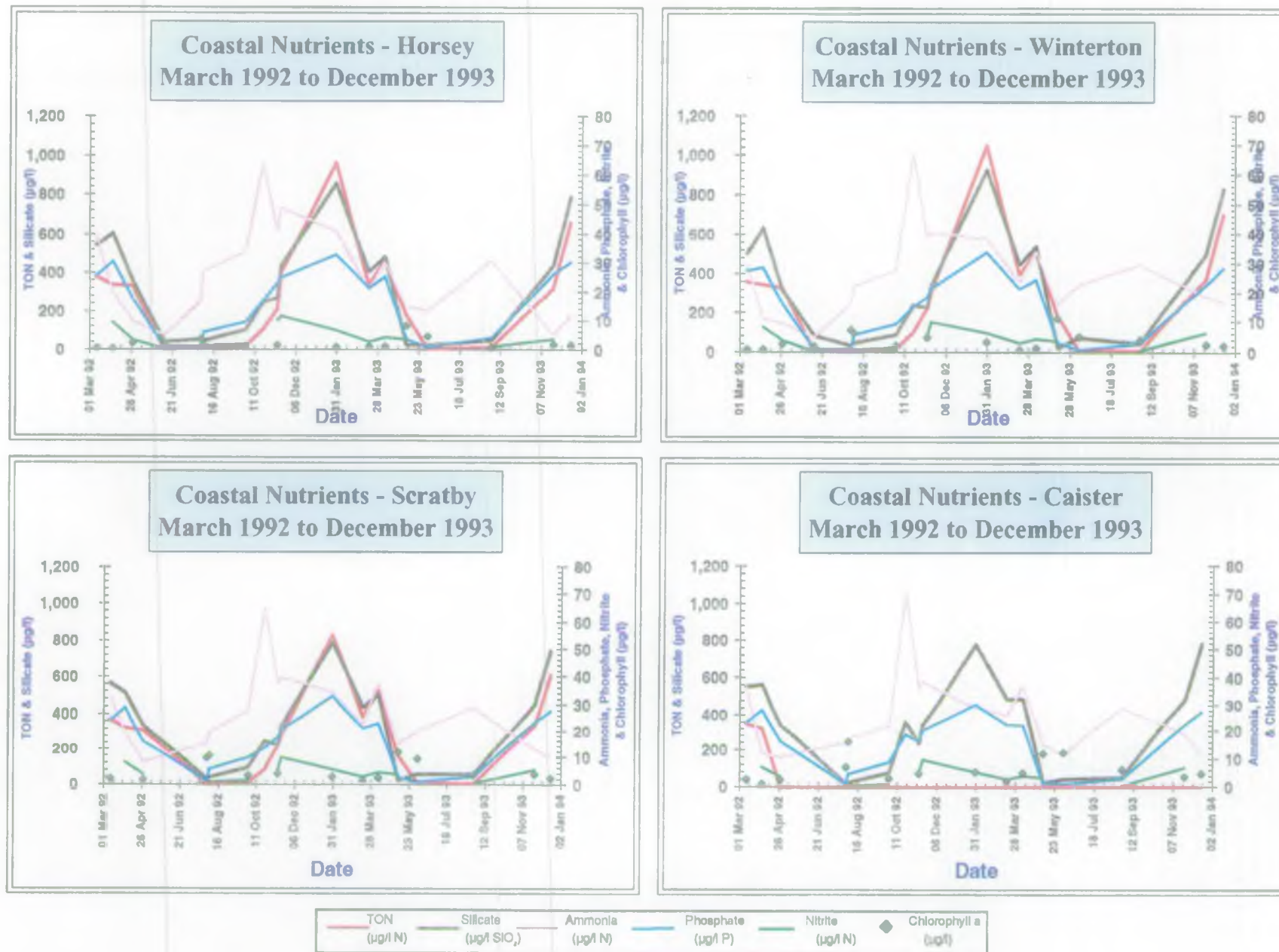


Figure 27

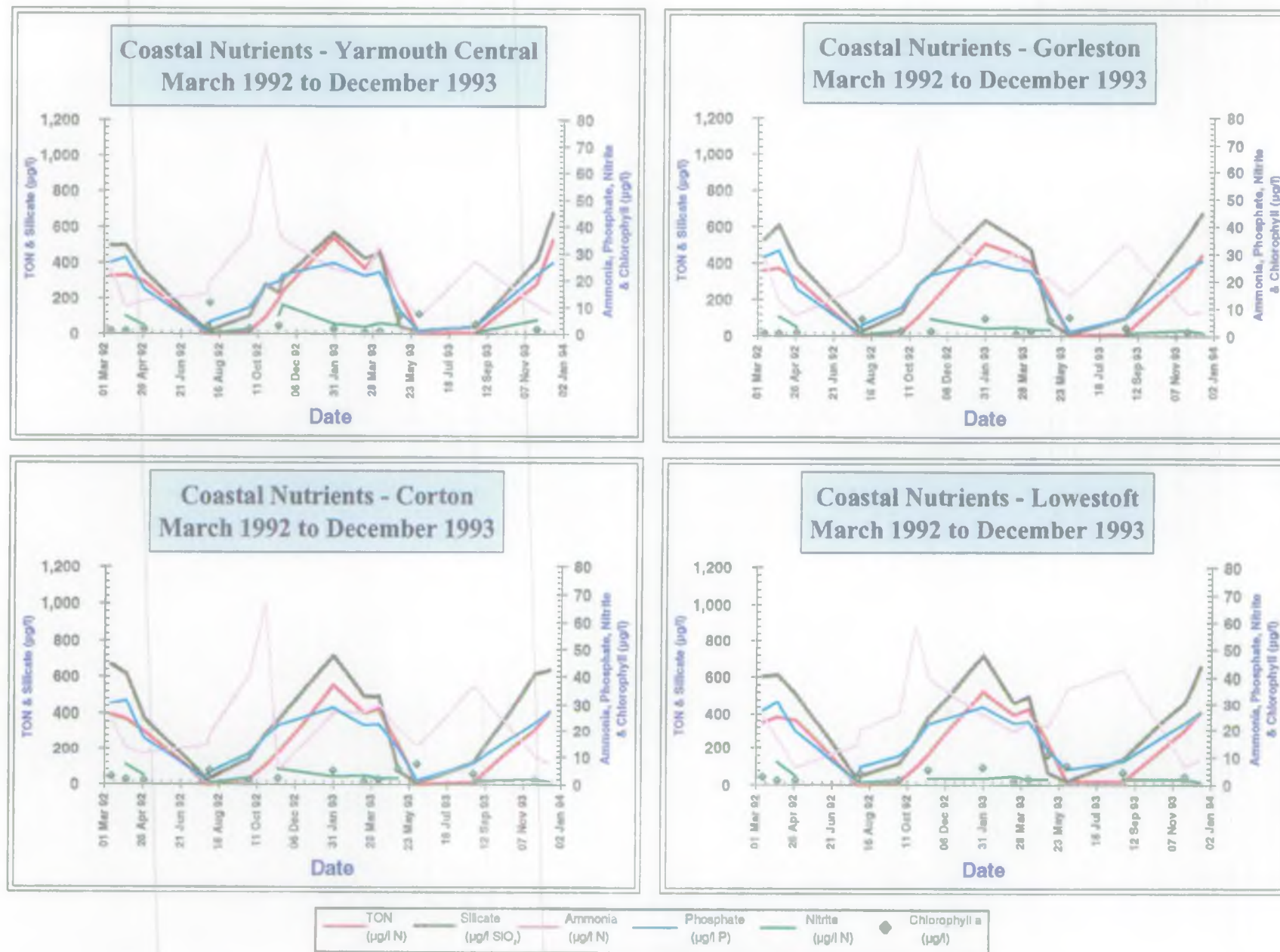


Figure 28

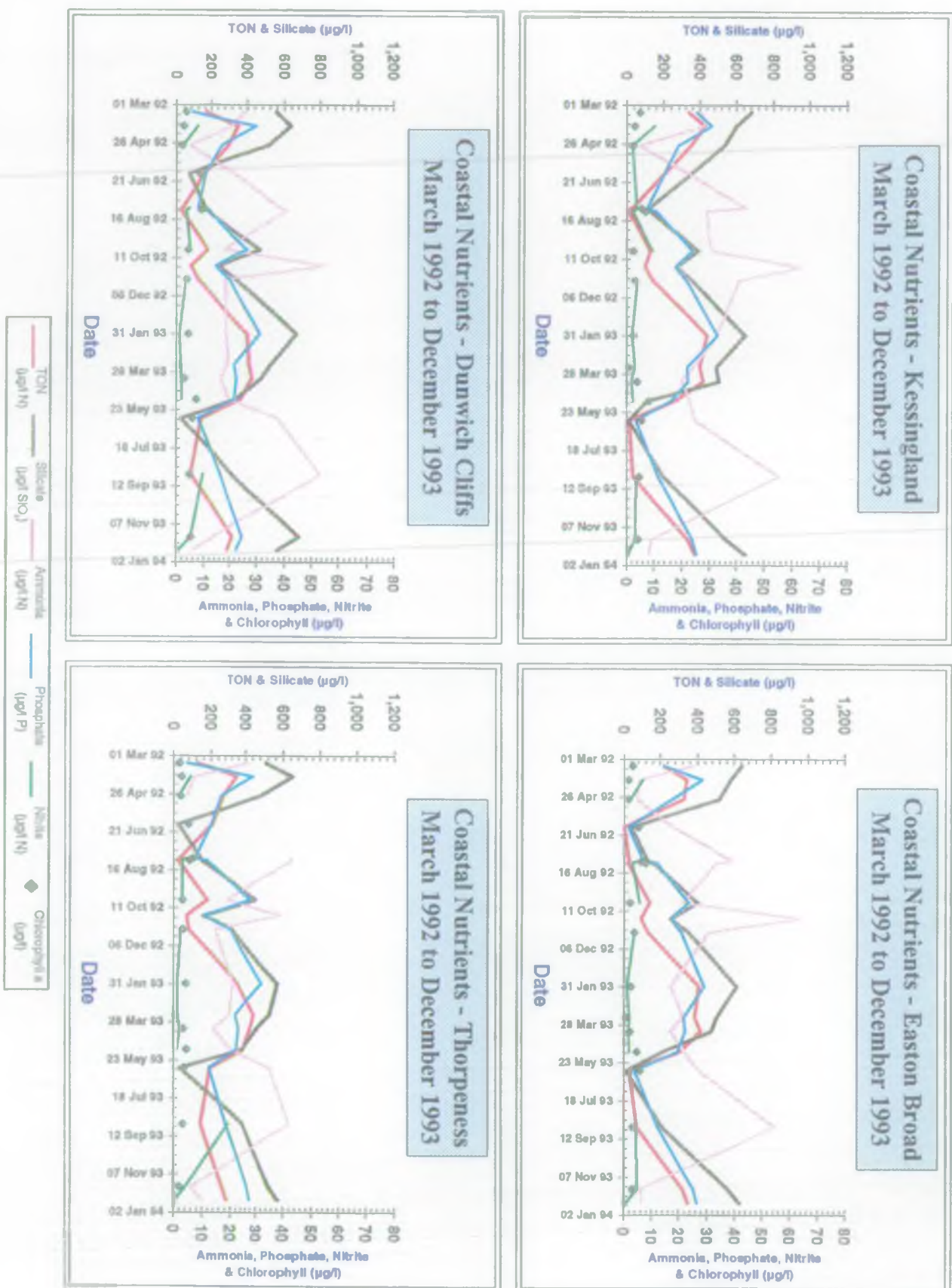


Figure 29

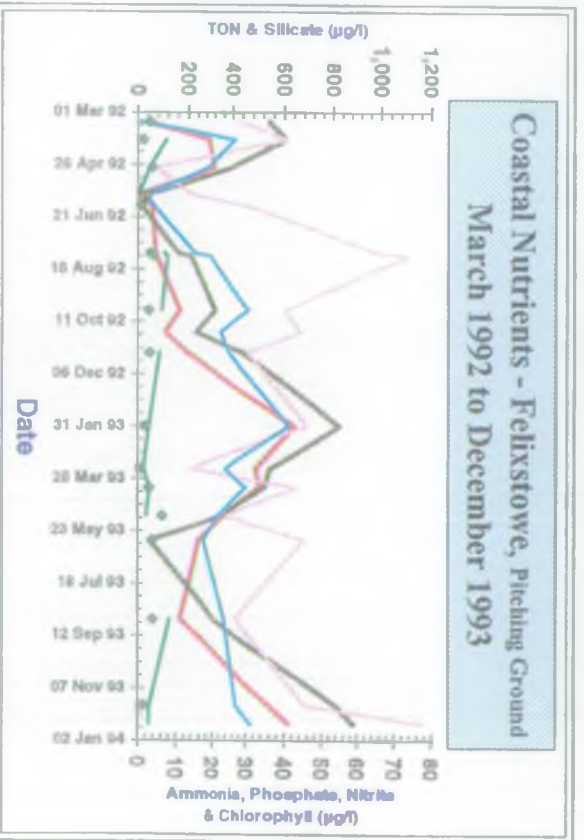
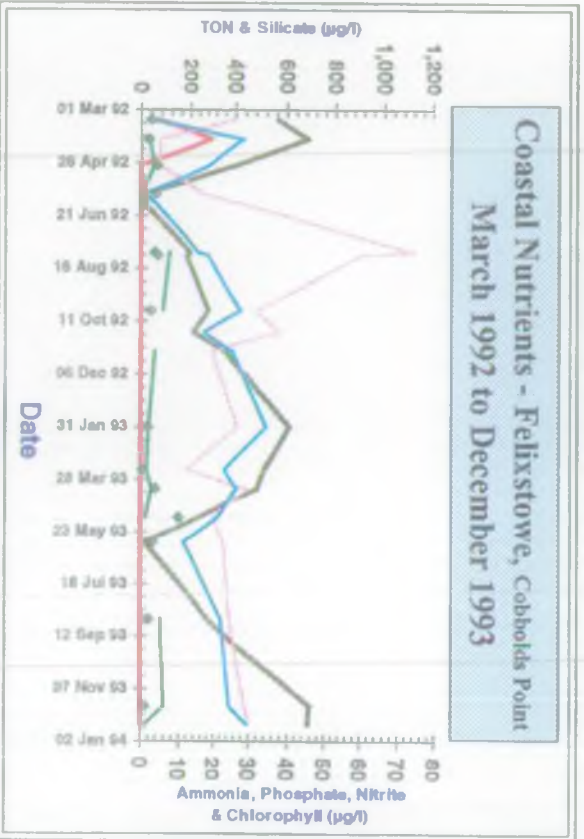
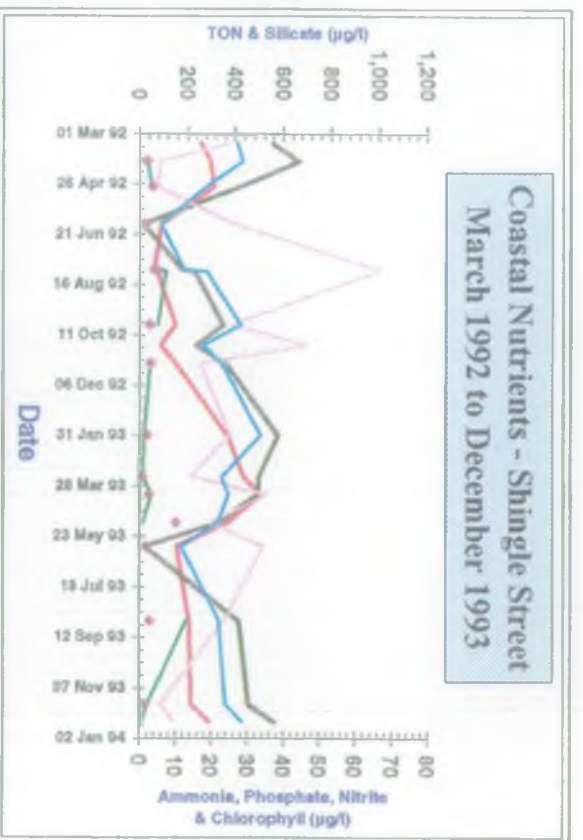
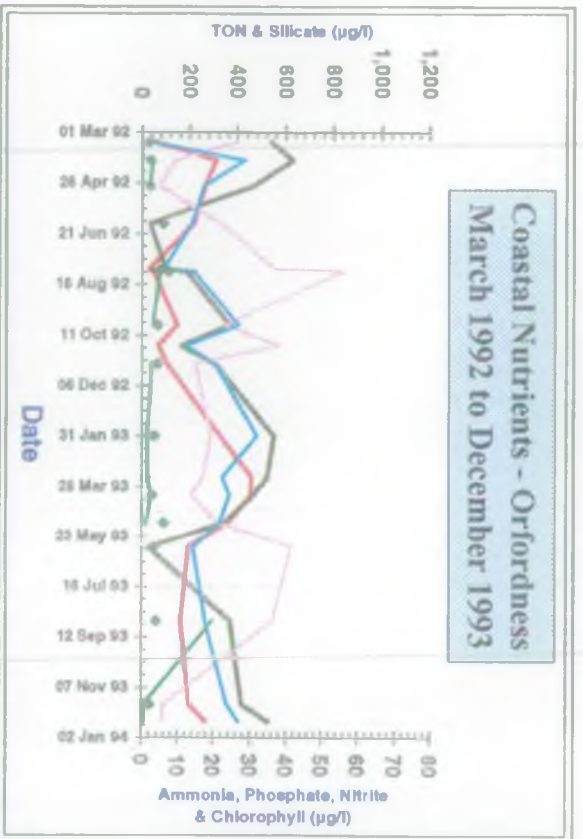


Figure 30

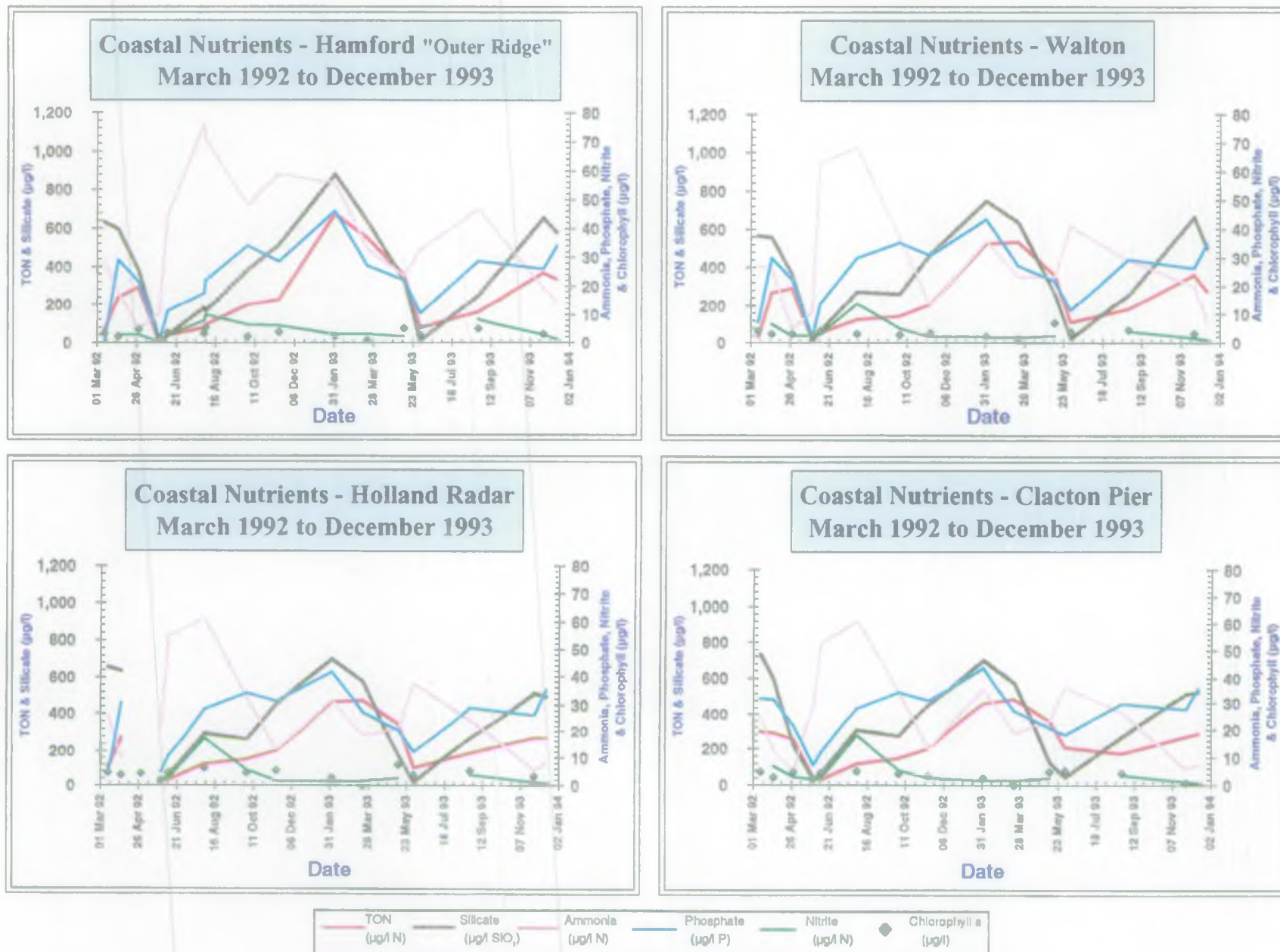


Figure 31

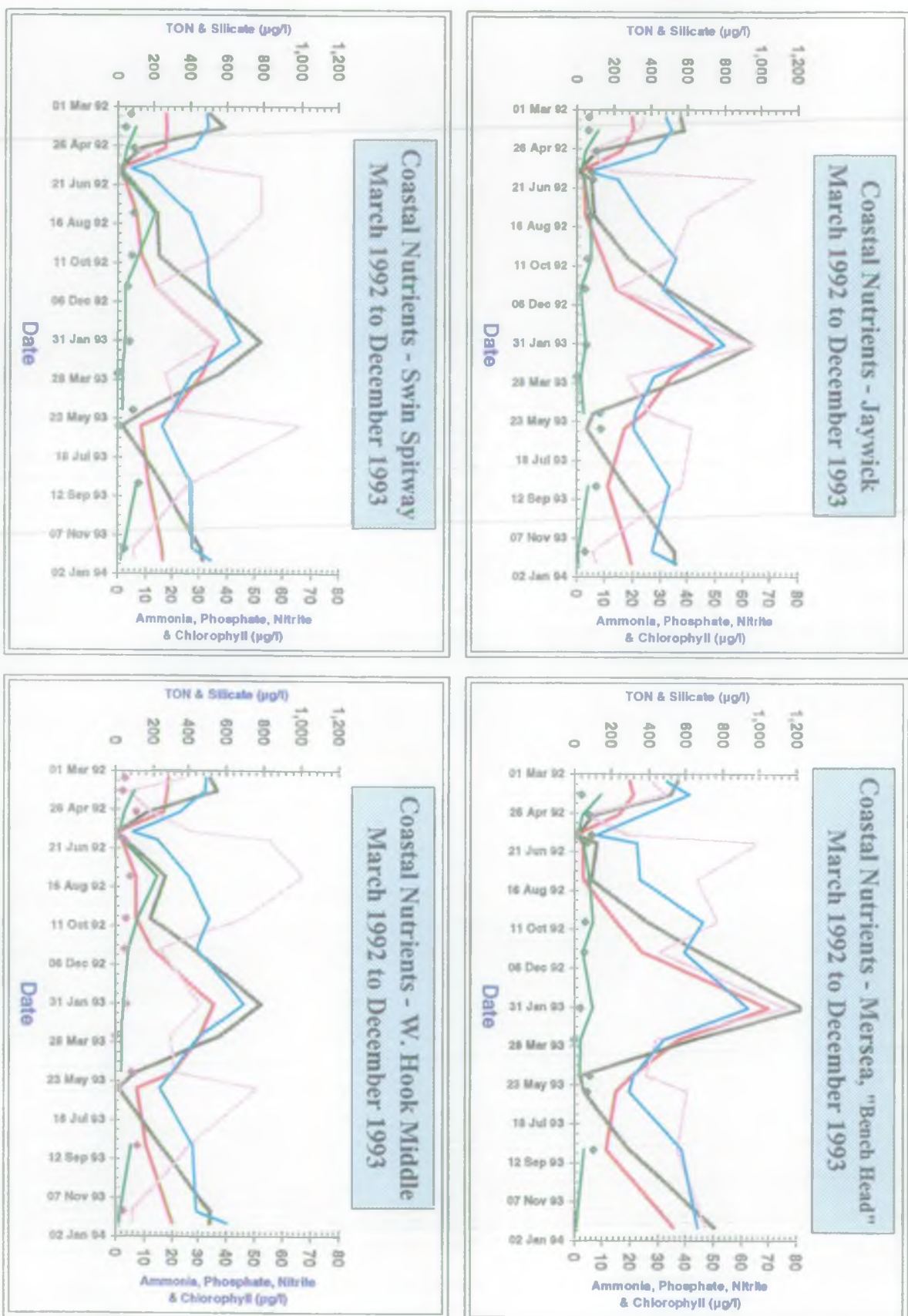


Figure 32

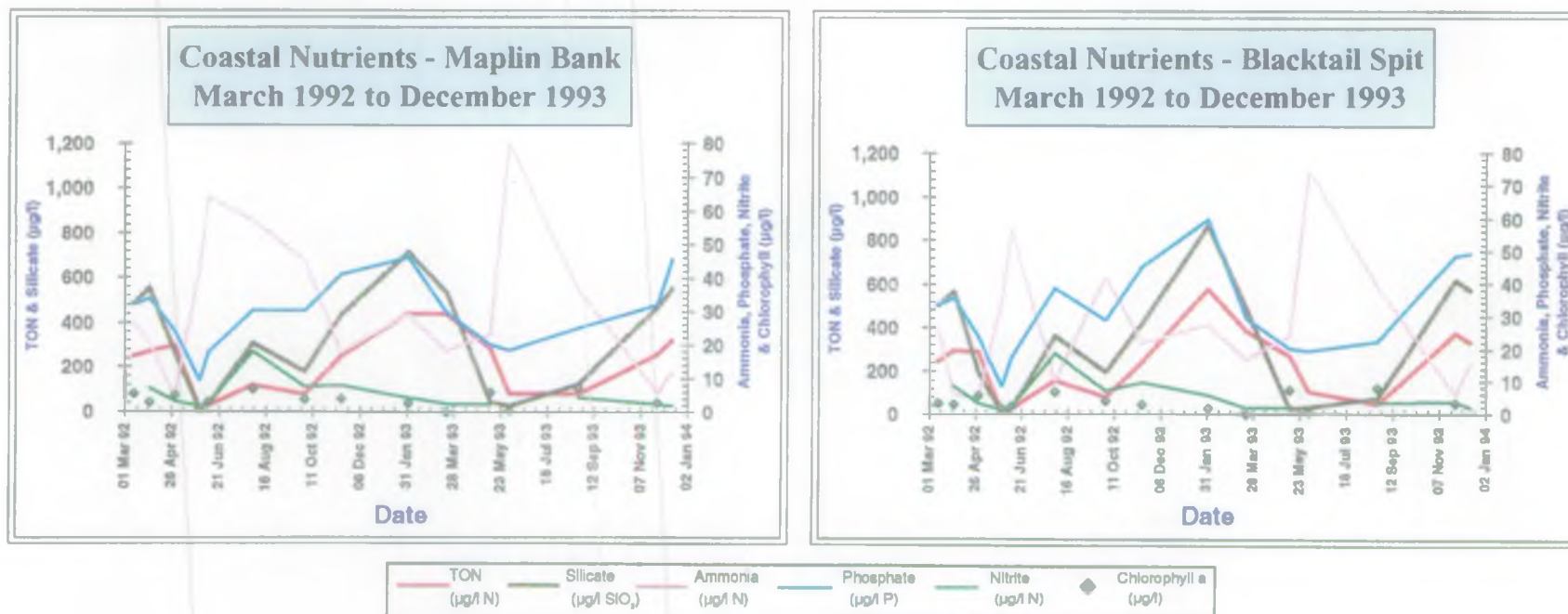


Figure 33

Anglian Site Name	Location	Easting	Northing	Sample Point Name	Sample Point Code
E 05	Thornham	573100	348500	NORTH SEA AT 53-00.2N 00-34.8E NO.5	R04BJTF731485
E 08	Overy, Staithe	585400	349600	NORTH SEA AT 53-00.4N 00-45.8E NO.8	R04BJTF854496
E 10	The Bink, Wells	593500	349300	NORTH SEA AT 53-00.2N 00-53.2E NO.10	R04BJTF935493
E 13	Cley, Lookout	605700	347800	NORTH SEA AT 52-59.3N 01-04.0E NO.13	R04BJTG057478
E 16	Sheringham	617400	345300	NORTH SEA AT 52-58.0N 01-14.5E NO.16	R04BJTG174453
E 18	Overstrand	625000	343400	NORTH SEA AT 52-55.9N 01-21.3E NO.18	R04BJTG250434
E 20	Mundesley	632100	339700	NORTH SEA AT 52-54.0N 01-27.5E NO.20	R04BJTG321397
E 23	Lessingham	642300	331000	NORTH SEA AT 52-48.8N 01-35.7E NO.23	R04BJTG423310
E 25	Horsey	648300	326400	NORTH SEA AT 52-46.4N 01-41.2E NO.25	R04BJTG483264
E 27	Winterton	652700	319400	NORTH SEA AT 52-42.6N 01-45.0E NO.27	R04BJTG527194
E 28	Scratby	654300	315000	NORTH SEA AT 52-40.3N 01-46.4E NO.28	R04BJTG543150
E 29	Caister	655300	311600	NORTH SEA AT 52-38.4N 01-47.3E NO.29	R04BJTG553116
E 30	Yarmouth Central	656000	307300	NORTH SEA AT 52-36.0N 01-47.0E NO.30	R04BJTG560073
E 31	Gorleston	656000	303600	NORTH SEA AT 52-34.0N 01-47.0E NO.31	R04BJTG560036
E 32	Corton	657000	299500	NORTH SEA AT 52-31.8N 01-47.4E NO.32	R04BJTM570995
E 33	Lowestoft	657800	295400	NORTH SEA AT 52-29.6N 01-48.2E NO.33	R04BJTM578954
E 34	Pakefield	657400	291200	NORTH SEA AT 52-27.4N 01-47.2E NO.34	R04BJTM574912
E 35	Kessingland	656200	287300	NORTH SEA AT 52-25.2N 01-46.2E NO.35	R04BJTM562873

**Table 1 : East Anglian Coast
Sea Vigil Sample Sites**

Anglian Site Name	Location	Easting	Northing	Sample Point Name	Sample Point Code
E 37	Easton Broad	654200	278700	NORTH SEA AT 52-20.8N 01-44.0E NO.37	R04BJTM452787
E 39	Dunwich Cliffs	651400	271400	NORTH SEA AT 52-16.8N 01-41.2E NO.39	R04BJTM514714
E 42	Thorpeness	649000	257600	NORTH SEA AT 52-09.6N 01-38.8E NO.42	R04BJTM490576
E 43	Orfordness	647900	251200	NORTH SEA AT 52-06.2N 01-37.8E NO.43	R04BJTM479512
E 48	Shingle Street	639600	242600	NORTH SEA AT 52-01.5N 01-30.0E NO.48	R04BJTM396426
E 52	Felixstowe, Cobbolds Point	633800	234700	NORTH SEA AT 51-57.3N 01-24.7E NO.52	R04BJTM338347
E 54	Felixstowe, Pitching Ground	630400	231200	NORTH SEA AT 51-55.4N 01-21.8E NO.54	R04BJTM304312
E 56	Hamford "Outer Ridge"	630100	226700	NORTH SEA AT 51-53.0N 01-20.0E NO.56	R01BJTM301267
E 59	Walton	627500	220000	NORTH SEA AT 51-49.4N 01-17.7E NO.59	R01BJTM275200
E 61	Holland Radar	624000	215400	NORTH SEA AT 51-47.1N 01-14.8E NO.16	R01BJTM240154
E 63	Clacton Pier	619500	212300	NORTH SEA AT 51-46.0N 01-11.2E NO.63	R01BJTM195123
E 65	Jaywick	616000	210600	NORTH SEA AT 51-45.0N 01-07.2E NO.65	R01BJTM160106
E 69	Mersea, "Bench Head"	607200	210700	NORTH SEA AT 51-45.0N 00-59.4E NO.69	R01BJTM072107
E 71b	Swin Spitway	617200	204900	NORTH SEA AT 51-42.0N 01-08.6E NO.71B	R01BJTM172049
E 73b	W. Hook Middle	616700	199700	NORTH SEA AT 51-39.2N 01-08. E NO.73B	R01BJTR167997
E 74b	Maplin Bank	613300	192600	NORTH SEA AT 51-35.5N 01-04.8E NO.74B	R01BJTR133926
E 77b	Blacktail Spit	604200	184800	NORTH SEA AT 51-31.5N 00-56.6E NO.77B	R01BJTR042848

Table 1 : East Anglian Coast
Sea Vigil Sample Sites

Survey Date	Survey Area	No. of Samples
10-March-92	Wash to Lowestoft	16
11-March-92	Lowestoft to Thames	18
30-March-92	Thames to Shotley	11
31-March-92	Shotley to Lowestoft	7
01-April-92	Lowestoft to Wash	16
28-April-92	Wash to Lowestoft	16
29-April-92	Lowestoft to Thames	18
28-May-92	Shotley to Thames	12
28-May-92	HELICOPTER SURVEY	20
08-June-92	Shotley to Thames	10
09-June-92	Shotley to Lowestoft	8
10-June-92	Lowestoft to Wash	16
29-July-92	Wash to Lowestoft	16
30-July-92	Lowestoft to Shotley	9
31-July-92	Shotley to Thames	9
01-August-92	Shotley to Lowestoft	9
02-August-92	Lowestoft to Wash	16
28-September-92	Wash to Lowestoft	16
29-September-92	Lowestoft to Shotley	9
30-September-92	Shotley to Thames	9
22-October-92	Shotley to Wash	20
10-November-92	NACoMS I - Wash to Gt Yarmouth	14
11-November-92	NACoMS I - Gt Yarmouth to Shotley	10
13-November-92	NACoMS I - Shotley to Dover	22
16-November-92	Gt Yarmouth to King's Lynn	11

Survey Date	Survey Area	No. of Samples
29-January-93	NACoMS II - Humber to Gt Yarmouth	14
30-January-93	NACoMS II - Gt Yarmouth to Shotley	11
01-February-93	NACoMS II - Thames to Shotley	11
03-February-93	Cromer to Wash	9
15-March-93	N Norfolk Coast	5
16-March-93	N Norfolk Coast to Gt Yarmouth	8
17-March-93	Gt Yarmouth to Shotley	11
19-March-93	Shotley to Thames	10
06-April-93	Shotley to Gt Yarmouth	10
07-April-93	Gt Yarmouth to Wash	13
06-May-93	NACoMS III - Wash to Gt Yarmouth	14
07-May-93	NACoMS III - Gt Yarmouth to Shotley	10
10-May-93	NACoMS III - Shotley to Thames	12
02-June-93	Shotley to Thames	11
03-June-93	Shotley to Gt Yarmouth	10
04-June-93	Gt Yarmouth to Kings Lynn	13
24-August-93	NACoMS IV - Shotley to Thames	12
25-August-93	NACoMS IV - Shotley to Gt Yarmouth	10
26-August-93	NACoMS IV - Gt Yarmouth to Wash	4
31-August-93	NACoMS IV - Gt Yarmouth to Wash	21
21-September-93	HELICOPTER SURVEY	9
22-September-93	HELICOPTER SURVEY	23
26-October-93	HELICOPTER SURVEY	17
23-November-93	Hull to Gt Yarmouth	40
24-November-93	Gt Yarmouth to Shotley	4
25-November-93	Gt Yarmouth to Shotley	14
26-November-93	Shotley to Thames	21
14-December-93	Shotley to Thames	11
15-December-93	Shotley to Gt Yarmouth	10
17-December-93	Gt Yarmouth to Wash	26

Survey Date	Survey Area	Data Table	Data Plots
10-March-92	Wash to Lowestoft	Table 4	Figure 2
11-March-92	Lowestoft to Thames		
30-March-92	Thames to Shotley	Table 5	Figure 3
31-March-92	Shotley to Lowestoft		
01-April-92	Lowestoft to Wash		
28-April-92	Wash to Lowestoft	Table 6	Figure 4
29-April-92	Lowestoft to Thames		
28-May-92	Shotley to Thames	Table 7a	Figure 5
28-May-92	HELICOPTER SURVEY	Table 7b	
08-June-92	Shotley to Thames	Table 8	Figure 6
09-June-92	Shotley to Lowestoft		
10-June-92	Lowestoft to Wash		
29-July-92	Wash to Lowestoft	Table 9	Figure 7
30-July-92	Lowestoft to Shotley		
31-July-92	Shotley to Thames		
01-August-92	Shotley to Lowestoft	Table 10	Figure 8
02-August-92	Lowestoft to Wash		
28-September-92	Wash to Lowestoft	Table 11	Figure 9
29-September-92	Lowestoft to Shotley		
30-September-92	Shotley to Thames		
22-October-92	Shotley to Wash	Table 12	Figure 10
10-November-92	NACoMS I - Wash to Gt Yarmouth	Table 13	Figure 11
11-November-92	NACoMS I - Gt Yarmouth to Shotley		
13-November-92	NACoMS I - Shotley to Dover		
16-November-92	Gt Yarmouth to King's Lynn	Table 14	Figure 12

Table 3 : East Anglian Coast Surveys
Summary of Data Tables and Figures

Survey Date	Survey Area	Data Table	Data Plots
29-January-93 30-January-93 01-February-93	NACoMS II - Humber to Gt Yarmouth NACoMS II - Gt Yarmouth to Shotley NACoMS II - Thames to Shotley	Table 15	Figure 13
03-February-93	Cromer to Wash	Table 16	Figure 14
15-March-93 16-March-93 17-March-93 19-March-93	N Norfolk Coast N Norfolk Coast to Gt Yarmouth Gt Yarmouth to Shotley Shotley to Thames	Table 17	Figure 15
06-April-93 07-April-93	Shotley to Gt Yarmouth Gt Yarmouth to Wash	Table 18	Figure 16
06-May-93 07-May-93 10-May-93	NACoMS III - Wash to Gt Yarmouth NACoMS III - Gt Yarmouth to Shotley NACoMS III - Shotley to Thames	Table 19	Figure 17
02-June-93 03-June-93 04-June-93	Shotley to Thames Shotley to Gt Yarmouth Gt Yarmouth to Kings Lynn	Table 20	Figure 18
24-August-93 25-August-93 26-August-93 31-August-93	NACoMS IV - Shotley to Thames NACoMS IV - Shotley to Gt Yarmouth NACoMS IV - Gt Yarmouth to Wash NACoMS IV - Gt Yarmouth to Wash	Table 21	Figure 19
21-September-93 22-September-93	HELICOPTER SURVEY HELICOPTER SURVEY	Table 22	Figure 20
26-October-93	HELICOPTER SURVEY	Table 23	Figure 21
23-November-93 24-November-93 25-November-93 26-November-93	Hull to Gt Yarmouth Gt Yarmouth to Shotley Gt Yarmouth to Shotley Shotley to Thames	Table 24	Figure 22
14-December-93 15-December-93 17-December-93	Shotley to Thames Shotley to Gt Yarmouth Gt Yarmouth to Wash	Table 25	Figure 23
All Surveys, All Sites	Map of Coast - Cluster Analysis Summary		Figure 24

**Table 3 : East Anglian Coast Surveys
Summary of Data Tables and Figures**

Survey Date	Survey Area	Data Table	Data Plots
1992 - 1993	Thornham Overy The Bink, Wells Cley, Lookout	included in Tables above	Figure 25
	Sheringham Overstrand Mundesley Lessingham		Figure 26
	Horsey Winterton Scratby Caister		Figure 27
	Yarmouth Central Gorleston Corton Lowestoft		Figure 28
	Kessingland Easton Broad Dunwich Cliffs Thorpeness		Figure 29
	Orfordness Shingle Street Felixstowe, Cobbolds Point Felixstowe, Pitching Ground		Figure 30
	Hamford "Outer Ridge" Walton Holland Radar Clacton Pier		Figure 31
	Jaywick Mersea, "Bench Head" Swin Spitway West Hook Middle		Figure 32
	Maplin Bank Blacktail Spit		Figure 33

**Table 3 : East Anglian Coast Surveys
Summary of Data Tables and Figures**

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
10-Mar-92 09:15	E 05	Thornham		8.0		7.9			448	645	68	31		1.9
10-Mar-92 10:00	E 08	Overy, Staithe		8.0		8.0			454	656	59	29		1.8
10-Mar-92 10:20	E 10	The Bink, Wells		7.5		7.9			445	564	31	27		1.6
10-Mar-92 11:10	E 13	Cley, Lookout		7.5		8.0			329	488	33	23		0.8
10-Mar-92 11:55	E 16	Sheringham		7.5		8.0			318	481	33	23		0.7
10-Mar-92 12:30	E 18	Overstrand		7.5		8.0			342	512	38	24		0.9
10-Mar-92 13:00	E 20	Mundesley		7.5		8.0			307	484	31	23		0.7
10-Mar-92 13:55	E 23	Lessingham		7.5		8.0			371	537	38	25		0.9
10-Mar-92 14:30	E 25	Horsey		7.5		8.0			378	543	39	26		0.7
10-Mar-92 15:10	E 27	Winterton		7.5		8.0			361	501	30	28		1.0
10-Mar-92 15:40	E 28	Scratby		7.5		8.0			372	561	33	25		2.1
10-Mar-92 16:00	E 29	Caister		7.5		8.0			349	549	37	24		2.7
10-Mar-92 16:30	E 30	Yarmouth Central		7.5		8.0			324	495	25	27		1.4
10-Mar-92 16:55	E 31	Gorleston		7.5		8.0			362	531	29	29		1.1
10-Mar-92 17:15	E 32	Corton		7.0		8.0			398	665	25	30		2.9
10-Mar-92 17:35	E 33	Lowestoft		7.0		8.0			354	603	26	28		2.9
11-Mar-92 07:00	E 35	Kessingland		6.5		8.0			337	681	27	26		5.1
11-Mar-92 07:40	E 37	Easton Broad		7.0		8.0			221	643	25	15		3.4
11-Mar-92 08:20	E 39	Dunwich Cliffs		7.0		8.0			171	555	26	6		3.6
11-Mar-92 09:15	E 42	Thorpeness		7.0		8.0			127	508	28	5		2.1
11-Mar-92 09:40	E 43	Orfordness							60	540	27	3		2.4

Table 4 : Anglian East Coast Survey Data
10-11th March 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
11-Mar-92 10:30	E 48	Shingle Street		7.0		8.1			259	554	26	28		
11-Mar-92 11:10	E 52	Felixstowe, Cobbolds Point		7.0		8.2			70	562	27	3		2.9
11-Mar-92 11:25	E 54	Felixstowe, Pitching Ground		7.5		8.1			38	542	29	<1.15		3.2
11-Mar-92 11:45	E 56	Hamford "Outer Ridge"		7.0		8.1			69	632	29	<1.15		3.4
11-Mar-92 12:15	E 59	Walton		7.0		8.0			30	566	28	7		4.4
11-Mar-92 12:40	E 61	Holland Radar							108	657	26	5		4.8
11-Mar-92 13:00	E 63	Clacton Pier		7.5		8.0			297	727	26	33		5.0
11-Mar-92 13:20	E 65	Jaywick		7.5		8.1			296	560	24	32		4.6
11-Mar-92 17:40	E 69	Mersea, "Bench Head"		7.5		8.2			298	557	28	33		
11-Mar-92 13:45	E 71b	Swin Spitway		7.0		8.1			274	506	24	33		4.7
11-Mar-92 14:10	E 73b	W. Hook Middle		7.5		8.0			287	515	26	33		3.4
11-Mar-92 14:40	E 74b	Maplin Bank		7.5		8.1			250	486	26	32		5.4
11-Mar-92 15:25	E 77b	Blacktail Spit		7.5		8.1			247	501	26	34		3.5

Table 4 : Anglian East Coast Survey Data
10-11th March 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
01-Apr-92 16:28	E 05	Thornham	32.7	7.4					311	541	9	31	6.2	1.2
01-Apr-92 15:40	E 08	Overy, Staithe	32.8	7.2					327	550	6	29	5.5	2.2
01-Apr-92 15:08	E 10	The Bink, Wells	32.0	7.2					310	543	<5.4	31	6.3	1.4
01-Apr-92 14:20	E 13	Cley, Lookout	32.9	7.1					294	669	20	28	6.4	1.0
01-Apr-92 13:35	E 16	Sheringham	32.5	6.9					277	669	8	30	6.1	1.3
01-Apr-92 13:06	E 18	Overstrand	32.7	7.1					272	592	18	29	5.6	1.0
01-Apr-92 12:34	E 20	Mundesley	32.8	7.1					280	502	9	28	4.8	1.2
01-Apr-92 11:48	E 23	Lessingham	32.8	8.5					328	476	25	30	8.3	0.4
01-Apr-92 11:12	E 25	Horsey	32.8	7.5					338	604	20	31	9.7	0.6
01-Apr-92 10:40	E 27	Winterton	32.6	7.5					345	629	12	29	8.5	1.0
01-Apr-92 10:20	E 28	Scratby	32.5	7.4					326	511	20	29	8.2	
01-Apr-92 10:00	E 29	Caister	31.7	6.9					322	562	12	29	7.2	1.1
01-Apr-92 09:40	E 30	Yarmouth Central	31.8	6.8					332	499	11	29	6.8	1.3
01-Apr-92 09:15	E 31	Gorleston	31.3	6.8					375	607	13	31	7.2	1.0
01-Apr-92 08:54	E 32	Corton	31.2	6.9					377	616	14	31	7.1	1.8
01-Apr-92 08:30	E 33	Lowestoft	31.2	6.9					386	610	17	31	8.3	1.7
31-Mar-92 16:15	E 35	Kessingland	31.9	8.0					429	599	28	31	10.3	3.3
31-Mar-92 15:41	E 37	Easton Broad	31.7	7.5					344	582	6	29	7.1	1.9
31-Mar-92 15:15	E 39	Dunwich Cliffs	31.6	7.5					356	635	22	30	8.0	2.7
31-Mar-92 14:20	E 42	Thorpeness	31.8	7.5					353	646	8	30	6.1	2.8
31-Mar-92 13:58	E 43	Orfordness	31.8	7.5					312	629	10	29	3.3	2.8

Table 5 : Anglian East Coast Survey Data
30th March-1st April 1992

Date & Time	Anglian Site Name	Location	Salinity (%)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
31-Mar-92 13:14	E 48	Shingle Street	32.0	8.0					300	665	6	29	2.5	2.4
31-Mar-92 12:37	E 52	Felixstowe, Cobbolds Point	32.1	8.0					296	682	<5.4	29	2.4	2.2
30-Mar-92 17:33	E 54	Felixstowe, Pitching Ground	31.8	8.0					295	605	41	27	7.6	1.7
30-Mar-92 17:12	E 56	Hamford "Outer Ridge"	32.2	8.0					240	595	18	29	3.0	2.3
30-Mar-92 16:25	E 59	Walton	32.2	8.0					269	559	27	30	6.7	3.2
30-Mar-92 15:55	E 61	Holland Radar							276	636	11	31	6.2	3.9
30-Mar-92 15:32	E 63	Clacton Pier							289	590	13	33	7.1	3.0
30-Mar-92 15:10	E 65	Jaywick	32.4	8.0					303	579	23	35	7.9	4.3
30-Mar-92 14:30	E 69	Mersea, "Bench Head"	32.2	8.0					319	519	33	42	10.0	2.8
30-Mar-92 13:36	E 71b	Swin Spitway	32.3	8.0					279	583		33	6.5	2.9
30-Mar-92 13:15	E 73b	W. Hook Middle	32.3	8.0					281	549	5	33	6.7	2.7
30-Mar-92 12:45	E 74b	Maplin Bank	32.4	8.0					272	553	21	34	7.1	2.8
30-Mar-92 11:45	E 77b	Blacktail Spit	32.0	8.0					295	567	7	36	9.0	3.1

Table 5 : Anglian East Coast Survey Data
30th March-1st April 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
28-Apr-92 14:13	E 05	Thornham	31.2						645	479	68	35	9.9	1.6
28-Apr-92 15:03	E 08	Overy, Staithe	31.2						699	477	86	37	10.9	2.8
28-Apr-92 15:32	E 10	The Bink, Wells	31.2				99		487	313	31	21	7.2	5.4
28-Apr-92 16:17	E 13	Cley, Lookout	31.2				98		329	366	8	17	3.4	2.1
28-Apr-92 17:00	E 16	Sheringham	32.0				100		300	361	6	17	3.1	1.7
28-Apr-92 17:26	E 18	Overstrand	32.1				100		301	374	<5.4	16	3.1	1.5
28-Apr-92 17:55	E 20	Mundesley	32.9				100		294	376	7	17	2.9	1.4
28-Apr-92 18:40	E 23	Lessingham	33.0				99		298	370	10	17	2.9	1.9
28-Apr-92 19:08	E 25	Horsey	33.0				99		334	356	10	18	3.6	2.5
28-Apr-92 19:35	E 27	Winterton	32.9				98		331	316	10	17	3.9	2.8
28-Apr-92 19:51	E 28	Scratby	32.7				98		313	337	8	17	3.8	1.9
28-Apr-92 20:04	E 29	Caister	32.8				98		314	337	11	16	3.8	2.5
28-Apr-92 20:23	E 30	Yarmouth Central	32.6				98		298	350	13	17	3.4	2.0
28-Apr-92 20:38	E 31	Gorleston	32.6				99		316	405	8	17	3.4	1.4
28-Apr-92 20:50	E 32	Corton	33.0				99		307	377	12	18	3.3	1.4
29-Apr-92 21:06	E 33	Lowestoft	32.2				99		366	511	7	20	3.2	1.8
29-Apr-92 05:07	E 35	Kessingland	32.0				101		351	537	<5.4	19	2.3	2.6
29-Apr-92 05:34	E 37	Easton Broad	32.3				100		327	518	<5.4	18	2.5	1.7
29-Apr-92 06:02	E 39	Dunwich Cliffs	32.5				100		303	510	<5.4	18	2.3	2.2
29-Apr-92 06:47	E 42	Thorpeness	32.5				100		268	480	<5.4	17	1.8	2.5
29-Apr-92 07:08	E 43	Orfordness	33.0				100		268	465	<5.4	18	2.3	2.5

Table 6 : Anglian East Coast Survey Data
28-29th April 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
29-Apr-92 07:50	E 48	Shingle Street	33.1				99		316	419	<5.4	19	3.6	3.8
29-Apr-92 08:24	E 52	Felixstowe, Cobbolds Point	32.9				99		326	398	<5.4	19	3.6	4.3
29-Apr-92 08:41	E 54	Felixstowe, Pitching Ground	33.0				99		315	395	<5.4	20	3.2	3.9
29-Apr-92 08:58	E 56	Hamford "Outer Ridge"	33.5				99		293	378	<5.4	21	3.0	4.7
29-Apr-92 09:28	E 59	Walton	33.2				99		291	362	<5.4	23	2.6	3.3
29-Apr-92 09:48	E 61	Holland Radar	33.0				99							4.6
29-Apr-92 10:05	E 63	Clacton Pier	32.9				99		254	218	<5.4	22	3.2	4.7
29-Apr-92 12:14	E 65	Jaywick	33.2				106		234	107	<5.4	28	3.4	7.2
29-Apr-92 12:56	E 69	Mersea, "Bench Head"	33.3				103		240	107	<5.4	25	3.3	5.6
29-Apr-92 13:25	E 71b	Swin Spitway	33.2				103		271	122	<5.4	28	3.4	5.8
29-Apr-92 13:46	E 73b	W. Hook Middle	33.4				102		258	171	12	24	3.2	7.4
29-Apr-92 14:14	E 74b	Maplin Bank	33.1				99		299	264	<5.4	24	3.3	5.1
29-Apr-92 14:54	E 77b	Blacktail Spit	33.2				98		291	197	<5.4	24	3.5	6.0

Table 6 : Anglian East Coast Survey Data
28-29th April 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
28-May-92 15:48	E 52	Felixstowe, Cobbolds Point	32.7	16.0		8.3	103		<2.3	10	17	<1.15	0.4	4.0
28-May-92 16:12	E 54	Felixstowe, Pitching Ground	32.8	15.5		8.2	114		<2.3	34	14	2	0.4	2.6
28-May-92 15:27	E 56	Hamford "Outer Ridge"	32.8	16.0		8.2	104		<2.3	<6.3	11	<1.15	0.5	2.0
28-May-92 14:52	E 59	Walton	32.8	17.0		8.1	103		18	8	11	2	2.7	3.1
28-May-92 14:30	E 61	Holland Radar	32.6	16.0		8.1	101		41	24	22	5	2.3	2.1
28-May-92 14:10	E 63	Clacton Pier	32.7	16.0		8.1	99		40	31	30	7	2.2	2.4
28-May-92 13:50	E 65	Jaywick	32.8	17.0		8.1	100		21	14	13	4	1.8	5.4
28-May-92 13:18	E 69	Mersea, "Bench Head"	32.6	18.0		8.2	102		8	15	20	8	1.5	6.5
28-May-92 12:24	E 71b	Swin Spitway	33.0	15.5		8.1	100		13	11	31	5	1.9	1.4
28-May-92 12:00	E 73b	W. Hook Middle	32.8	16.0		8.1	100		12	8	28	6	1.5	1.3
28-May-92 11:31	E 74b	Maplin Bank	32.8	16.0		8.1	97		17	12	42	9	1.9	1.0
28-May-92 10:42	E 77b	Blacktail Spit	33.1	17.0		8.1	97		15	10	34	9	1.7	1.8

Table 7a : Anglian East Coast Survey Data
28th May 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
28-May-92 09:48	E 05	Thornham							34	17	30	3		12.6
28-May-92 09:58	E 08	Overy, Staithe							16	16	26	3		10.4
28-May-92 10:06	E 10	The Bink, Wells							12	22	27	3		13.7
28-May-92 10:16	E 13	Cley, Lookout							11	8	27	3		21.5
28-May-92 10:27	E 16	Sheringham							19	9	27	2		26.4
28-May-92 10:36	E 18	Overstrand							53	11	26	2		18.9
28-May-92 11:38	E 20	Mundesley							113	8	30	5		12.0
28-May-92 11:47	E 23	Lessingham							64	8	29	2		18.9
28-May-92 11:57	E 25	Horsey							67	<6.3	24	4		13.3
28-May-92 12:04	E 27	Winterton							109	<6.3	29	6		12.2
28-May-92 12:09	E 28	Scratby							86	<6.3	20	5		6.8
28-May-92 12:14	E 29	Caister							122	6	27	7		16.0
28-May-92 12:17	E 30	Yarmouth Central							115	6	28	7		11.4
28-May-92 12:20	E 31	Gorleston							123	9	28	9		11.1
28-May-92 12:25	E 32	Corton							133	8	26	9		11.6
28-May-92 12:30	E 33	Lowestoft							109	9	21	8		10.4
28-May-92 12:37	E 35	Kessingland							134	19	19	12		10.2
28-May-92 13:24	E 37	Easton Broad							281	84	28	22		6.7
28-May-92 13:32	E 39	Dunwich Cliffs							314	149	31	25		7.0
28-May-92 13:42	E 42	Thorpeness							276	181	26	22		6.7

**Table 7b : Anglian East Coast Helicopter Survey Data
28th May 1992**

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
10-Jun-92 14:00	E 05	Thornham	32.0	15.4		8.7	127		<2.3	32	<5.4	<1.15	<0.3	2.7
10-Jun-92 13:03	E 08	Overy, Staithe	32.0	16.0		8.7	102		3	61	<5.4	<1.15	<0.3	1.9
10-Jun-92 12:28	E 10	The Bink, Wells	31.8	15.7		8.6	98		<2.3	60	<5.4	<1.15	<0.3	2.9
10-Jun-92 11:40	E 13	Cley, Lookout	31.9	14.8		8.6	124		<2.3	25	<5.4	<1.15	<0.3	4.4
10-Jun-92 10:51	E 16	Sheringham	32.1	15.0		8.6	122		<2.3	27	<5.4	<1.15	<0.3	4.7
10-Jun-92 10:24	E 18	Overstrand	31.9	14.8		8.6	123		<2.3	26	<5.4	<1.15	<0.3	5.3
10-Jun-92 09:50	E 20	Mundesley	32.2	4.7		8.6	131		<2.3	27	<5.4	<1.15	<0.3	5.5
10-Jun-92 09:06	E 23	Lessingham	31.9	15.0		8.6	123		<2.3	23	<5.4	<1.15	<0.3	4.4
10-Jun-92 08:33	E 25	Horsey	31.8	15.4		8.6	115		<2.3	41	<5.4	<1.15	<0.3	2.6
10-Jun-92 08:05	E 27	Winterton	31.9	15.8		8.6	98		3	79	<5.4	<1.15	<0.3	2.0
10-Jun-92 07:42	E 28	Scratby	31.7	15.3		8.6	105		4	64	<5.4	<1.1	<0.3	2.9
10-Jun-92 07:27	E 29	Caister	31.9	15.5		8.6	103		4	75	<5.4	<1.1	0.4	3.0
10-Jun-92 07:05	E 30	Yarmouth C	31.9	15.0		8.5	112		3	57	27	<1.1	<0.3	3.5
10-Jun-92 06:44	E 31	Gorleston	31.8	14.8		8.5	117		3	48	28	<1.1	<0.3	6.1
10-Jun-92 06:26	E 32	Corton	31.5	15.2		8.5	113		5	61	29	<1.1	<0.3	4.9
10-Jun-92 06:07	E 33	Lowestoft	31.6	15.4		8.5	107		7	97	31	<1.1	0.4	4.3
09-Jun-92 11:22	E 35	Kessingland	31.4	15.6		8.5	114		<2.3	51	24	2		5.3
09-Jun-92 10:54	E 37	Easton Broad	31.4	15.4		8.5	115		<2.3	39	18	2		5.5
09-Jun-92 10:24	E 39	Dunwich Cliffs	30.9	15.4		8.3	107		157	67	23	11		8.7
09-Jun-92 09:35	E 42	Thorpeness	30.6	14.2		8.2	107		209	24		14		5.3
09-Jun-92 09:12	E 43	Orfordness	30.4	14.4		8.1	106		221	32	22	14		6.1
09-Jun-92 08:30	E 48	Shingle Street	30.2	14.9		8.2	104		93	17	26	6		1.8

**Table 8 : Anglian East Coast Survey Data
8-10th June 1992**

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
09-Jun-92 07:55	E 52	Felixstowe, Cobbolds Point	30.6	14.8		8.2	103		68	16	29	4		0.8
09-Jun-92 07:34	E 54	Felixstowe, Pitching Ground	30.7	14.8		8.2	103		58	15	30	4		0.8
08-Jun-92 13:33	E 56	Hamford "Outer Ridge"	31.3	17.5		8.1	99		41	39	44	11	2.8	3.5
08-Jun-92 14:05	E 59	Walton	31.0	16.8		8.1	93		55	63	63	14	3.1	4.3
08-Jun-92 14:25	E 61	Holland Radar	31.1	16.4		8.1	95		32	55	55	12	2.5	4.8
08-Jun-92 14:44	E 63	Clacton Pier	31.2	16.6		8.1	94		33	63	53	12	2.7	4.7
08-Jun-92 15:01	E 65	Jaywick	31.2	16.6		8.1	99		41	80	64	15	3.0	6.1
08-Jun-92 15:33	E 69	Mersea, "Bench Head"	31.1	17.6		8.2	99		48	125	66	23	3.5	5.1
08-Jun-92 16:30	E 71b	Swin Spitway	31.3	16.8		8.2	100		32	49	53	13	2.4	2.6
08-Jun-92 16:51	E 73b	W. Hook Middle	31.6	16.7		8.2	98		35	52	56	15	2.6	3.3
08-Jun-92 17:22	E 74b	Maplin Bank	31.7	16.2		8.2	96		30	33	65	18	2.5	3.1
08-Jun-92 18:07	E 77b	Blacktail Spit	31.4	16.3		8.1	96		29	26	57	18	2.3	2.5

Table 8 : Anglian East Coast Survey Data
8-10th June 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
29-Jul-92 17:07	E 05	Thornham	31.9	18.9		8.4	101		<2.33	22	15	2		2.4
29-Jul-92 18:04	E 08	Overy, Staithe	32.0	18.7		8.4	100		<2.33	15	15	<1.15		2.0
29-Jul-92 18:34	E 10	The Bink, Wells	32.7	18.5		8.4	98		<2.33	21	14	<1.15		1.7
29-Jul-92 19:17	E 13	Cley, Lookout	31.6	18.1		8.4	99		<2.33	24	19	<1.15		1.7
29-Jul-92 19:57	E 16	Sheringham	32.1	18.2		8.4	101		<2.33	15	14	<1.15		1.8
29-Jul-92 20:22	E 18	Overstrand	32.6	18.2		8.4	96		<2.33	15	17	<1.15		1.4
29-Jul-92 20:50	E 20	Mundesley	32.8	18.0		8.4	102		<2.33	32	15	<1.15		3.5
29-Jul-92 21:30	E 23	Lessingham	32.3	18.2		8.4	102		<2.33	16	14	<1.15		3.5
29-Jul-92 21:57	E 25	Horsey	33.0	18.4		8.4	98		11	52	17	<1.15		3.8
29-Jul-92 22:26	E 27	Winterton	32.8	18.6		8.4	98		<2.33	31	16	<1.15		7.5
29-Jul-92 22:40	E 28	Scratby	32.9	18.4		8.3	97		2	27	16	<1.15		9.8
29-Jul-92 22:55	E 29	Caister	32.5	18.6		8.4	101		<2.33	16	16	<1.15		7.1
29-Jul-92 23:15	E 30	Yarmouth Central	32.5	18.3		8.4	104		<2.33	10	15	<1.15		2.9
29-Jul-92 23:28	E 31	Gorleston	32.4	18.0		8.4	100		6	43	18	<1.15		2.5
29-Jul-92 23:42	E 32	Corton	32.4	17.8		8.4	102		<2.33	22	15	<1.15		2.5
29-Jul-92 23:58	E 33	Lowestoft	32.1	18.1		8.4	101		<2.33	25	15	<1.15		2.3
29-Jul-92 07:55	E 35	Kessingland	32.5	18.4		8.3	97		31	121	44	8	3.9	5.6
30-Jul-92 08:24	E 37	Easton Broad	32.4	18.7		8.3	98		30	133	40	8	4.6	6.4
30-Jul-92 08:50	E 39	Dunwich Cliffs	32.7	18.9		8.3	98		36	161	39	8	4.7	10.5
30-Jul-92 09:32	E 42	Thorpeness	32.2	18.9		8.3	96		35	145	43	8	4.1	6.9
30-Jul-92 09:54	E 43	Orfordness	32.3	18.5		8.3	97		30	104	37	6	2.7	5.5

Table 9 : Anglian East Coast Survey Data
29-31st July 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
30-Jul-92 10:33	E 48	Shingle Street	32.1	19.2		8.3	97		63	179	67	13	6.4	4.2
30-Jul-92 11:07	E 52	Felixstowe, Cobbolds Point	33.1	19.3		8.3	95		76	195	75	16	7.8	3.8
30-Jul-92 11:27	E 54	Felixstowe, Pitching Ground	33.2	19.3		8.3	96		73	162	66	15	7.2	3.4
30-Jul-92 11:45	E 56	Hamford "Outer Ridge"	33.8	19.6		8.3	95		81	183	76	18	7.9	3.4
31-Jul-92 10:14	E 59	Walton	32.7	19.7		8.2	92		123	271	69	30	14.2	3.2
31-Jul-92 10:32	E 61	Holland Radar	32.3	19.5		8.2	92		121	297	61	28	18.4	6.5
31-Jul-92 10:48	E 63	Clacton Pier	32.5	19.7		8.2	92		119	302	62	29	18.3	5.1
31-Jul-92 11:05	E 65	Jaywick	32.6	19.6		8.2	92		50	96	41	23	5.2	5.0
31-Jul-92 11:34	E 69	Mersea, "Bench Head"	32.8	20.0		8.2	94		51	96	44	24	5.7	6.1
31-Jul-92 12:29	E 71b	Swin Spitway	32.5	20.0		8.2	94		102	218	53	27	13.9	5.8
31-Jul-92 12:49	E 73b	W. Hook Middle	32.9	20.0		8.2	97		107	264	67	27	14.8	5.3
31-Jul-92 13:18	E 74b	Maplin Bank	32.4	19.7		8.3	100		121	308	58	31	18.1	6.9
31-Jul-92 14:00	E 77b	Blacktail Spit	33.1	19.8		8.3	102		163	359	10	39	19.0	7.1

**Table 9 : Anglian East Coast Survey Data
29-31st July 1992**

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
02-Aug-92 19:36	E 05	Thornham	32.3	19.3		8.4	107		<2.33	43	17	6	0.4	2.2
02-Aug-92 18:49	E 08	Overy, Staithe	32.3	19.0		8.3	105		<2.33	46	19	5	0.4	2.2
02-Aug-92 18:19	E 10	The Bink, Wells	32.4	18.5		8.3	101		<2.33	22	18	4	0.5	2.3
02-Aug-92 17:34	E 13	Cley, Lookout	32.1	18.3		8.4	103		<2.33	22	19	3	0.3	2.6
02-Aug-92 16:52	E 16	Sheringham	32.0	18.4		8.3	101		<2.33	31	21	4	0.6	1.7
02-Aug-92 16:17	E 18	Overstrand	31.9	18.7		8.3	98		<2.33	34	24	5	1.3	1.3
02-Aug-92 15:48	E 20	Mundesley	31.7	18.6		8.3	106		<2.33	24	19	3	0.6	2.6
02-Aug-92 15:04	E 23	Lessingham	31.8	18.8		8.3	105		<2.33	24	22	4	0.9	1.7
02-Aug-92 14:32	E 25	Horsey	32.8	19.4		8.3	99		6	47	27	6	1.4	1.6
02-Aug-92 14:03	E 27	Winterton	32.6	19.2		8.3	103		<2.33	45	23	6	0.9	6.5
02-Aug-92 13:46	E 28	Scratby	32.5	19.1		8.3	103		<2.33	38	20	6	0.8	10.6
02-Aug-92 13:30	E 29	Caister	32.4	19.1		8.3	104		<2.33	23	18	5	0.4	16.3
02-Aug-92 13:10	E 30	Yarmouth Central	32.2	18.7		8.3	106		<2.33	20	20	5	0.4	11.7
02-Aug-92 12:48	E 31	Gorleston	32.1	18.3		8.3	106		<2.33	27	19	4	0.6	6.3
02-Aug-92 12:30	E 32	Corton	32.1	18.3		8.3	105		<2.33	32	20	4	0.5	5.1
02-Aug-92 12:09	E 33	Lowestoft	31.6	19.0		8.3	103		4	49	21	6	0.9	4.3
02-Aug-92 19:56	E 35	Kessingland	31.4	19.3		8.3	105		16	132	29	11	2.5	7.1
01-Aug-92 19:26	E 37	Easton Broad	32.0	19.5		8.3	107		24	169	34	12	3.3	8.2
01-Aug-92 18:58	E 39	Dunwich Cliffs	31.2	19.9		8.3	107		28	169	41	12	3.5	9.1
01-Aug-92 18:00	E 42	Thorpeness	31.8	19.5		8.3	105		26	151	43	12	3.0	5.8
01-Aug-92 17:36	E 43	Orfordness	32.0	19.7		8.3	102		48	186	56	15	5.3	7.6

Table 10 : Anglian East Coast Survey Data
1-2nd August 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
01-Aug-92 16:57	E 48	Shingle Street	32.7	19.9		8.2	101		74	232	66	19	7.7	5.2
01-Aug-92 16:25	E 52	Felixstowe, Cobbolds Point	32.8	19.8		8.2	101		69	180	60	19	7.4	4.5
01-Aug-92 16:08	E 54	Felixstowe, Pitching Ground	32.0	20.2		8.2	101		75	210	74	20	8.0	4.5
01-Aug-92 15:52	E 56	Hamford "Outer Ridge"	32.6	20.8		8.2	103		94	166	71	22	10.0	5.5

**Table 10 : Anglian East Coast Survey Data
1-2nd August 1992**

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
28-Sep-92 18:24	E 05	Thornham	29.5	15.1	6.8	8.2	103	8.6	9	64	25	8	1.2	3.1
28-Sep-92 19:20	E 08	Overy, Staithe	29.1	15.2	9.0	8.2	98	8.2	8	67	22	8	0.9	2.0
28-Sep-92 19:50	E 10	The Bink, Wells	29.7	15.1	13.2	8.2	104	8.7	5	50	23	6	0.7	2.2
28-Sep-92 20:30	E 13	Cley, Lookout	29.8	15.0	15.0	8.2	101	8.5	10	72	27	6	1.2	1.4
28-Sep-92 21:10	E 16	Sheringham	30.0	14.8	17.5	8.1	99	8.4	48	152	34	11	3.6	1.1
28-Sep-92 21:33	E 18	Overstrand	29.2	14.8	13.5	8.2	99	8.4	22	108	32	8	2.1	1.0
28-Sep-92 22:00	E 20	Mundesley	30.0	14.8	14.7	8.2	97	8.2	36	150	39	10	3.2	1.1
28-Sep-92 22:36	E 23	Lessingham	29.0	14.9	16.5	8.2	97	8.2	16	99	31	9	1.9	1.3
28-Sep-92 23:05	E 25	Horsey	29.9	15.0	25.0	8.2	96	8.0	18	104	34	10	2.1	1.4
28-Sep-92 23:30	E 27	Winterton	29.9	15.1	17.5	8.2	98	8.1	14	84	28	9	1.6	2.2
28-Sep-92 23:45	E 28	Scratby	29.8	15.2	17.3	8.2	95	7.9	15	93	28	10	1.6	3.2
28-Sep-92 23:57	E 29	Caister	30.4	15.2	9.2	8.2	98	8.1	11	74	22	9	1.3	3.0
29-Sep-92 00:15	E 30	Yarmouth Central	30.3	15.1	17.7	8.2	99	8.2	17	102	37	10	1.8	1.9
29-Sep-92 00:30	E 31	Gorleston	30.5	15.1	16.7	8.2	97	8.0	26	126	32	10	2.1	1.9
29-Sep-92 00:42	E 32	Corton	30.6	15.1	13.6	8.2	96	8.0	31	139	41	11	2.3	1.4
29-Sep-92 00:55	E 33	Lowestoft	30.5	15.2	15.4	8.2	97	8.0	21	117	27	11	1.8	1.9
29-Sep-92 09:45	E 35	Kessingland	29.6	15.7	11.0	8.1	93	7.6	135	389	31	24	9.6	2.7
29-Sep-92 10:12	E 37	Easton Broad	30.5	15.7	16.0	8.1	94	7.7	143	399	22	24	5.9	2.3
29-Sep-92 10:37	E 39	Dunwich Cliffs	31.0	15.9	11.0	8.1	95	7.7	176	466	19	27	5.1	4.3
29-Sep-92 11:23	E 42	Thorpeness	30.9	16.0	12.6	8.1	98	8.0	182	453	19	28	3.3	3.2
29-Sep-92 11:48	E 43	Orfordness	30.8	16.0	17.0	8.1	98	8.0	148	368	23	27	3.3	4.5

Table 11 : Anglian East Coast Survey Data
28-30th September 1992

Date & Time	Anglian Site Name	Location	Salinity (%)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
29-Sep-92 12:24	E 48	Shingle Street	31.4	16.3	10.7	8.1	98	7.9	151	352	26	28	5.2	3.1
29-Sep-92 12:58	E 52	Felixstowe, Cobbolds Point	31.2	16.2	10.3	8.1	99	8.0	128	278	32	28	5.9	2.7
29-Sep-92 13:18	E 54	Felixstowe, Pitching Ground	31.2	16.2	11.7	8.1	98	7.9	168	316	40	31	6.4	3.1
30-Sep-92 13:33	E 56	Hamford "Outer Ridge"	31.2	16.3	7.2	8.1	98	7.9	200	383	48	34	6.6	2.4
30-Sep-92 11:55	E 59	Walton	30.6	16.3	8.0	8.0	97	7.9	142	260	37	36	5.2	3.0
30-Sep-92 12:15	E 61	Holland Radar	30.5	16.1	8.6	8.1	95	7.8	148	266	33	34	5.7	4.6
30-Sep-92 12:30	E 63	Clacton Pier	30.6	16.2	9.0	8.1	96	7.8	148	268	35	35	5.5	4.3
30-Sep-92 12:48	E 65	Jaywick	30.6	16.2	7.0	8.1	97	7.9	146	275	35	36	5.5	3.9
30-Sep-92 13:15	E 69	Mersea, "Bench Head"	30.2	16.2	6.0	8.1	96	7.8	230	392	52	47	7.1	4.1
30-Sep-92 14:14	E 71b	Swin Spitway	31.0	16.3	11.3	8.1	100	8.1	128	230	36	33	7.4	5.2
30-Sep-92 14:35	E 73b	W. Hook Middle	31.0	16.4	16.2	8.1	101	8.2	111	180	46	34	7.9	3.7
30-Sep-92 15:07	E 74b	Maplin Bank	31.2	16.4	11.5	8.1	101	8.2	82	179	45	30	7.5	3.8
30-Sep-92 15:56	E 77b	Blacktail Spit	31.0	16.5	13.0	8.1	102	8.2	84	198	42	29	7.5	4.3

Table 11 : Anglian East Coast Survey Data
28-30th September 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
22-Oct-92 17:48	E 16	Sheringham	29.0	10.6	16.0	8.3	99	9.1	116	180	59	16		
22-Oct-92 17:00	E 18	Overstrand	29.5	10.6	13.6	8.3	99	9.1	113	175	56	15		
22-Oct-92 16:15	E 20	Mundesley	29.4	10.8	15.0	8.3	99	9.0	115	201	67	17		
22-Oct-92 15:09	E 23	Lessingham	29.5	10.8	17.0	8.3	99	9.0	103	238	70	16		
22-Oct-92 14:30	E 25	Horsey	29.9	11.2	19.0	8.3	99	8.9	108	248	64	17		
22-Oct-92 13:57	E 27	Winterton	29.8	10.9	16.0	8.3	98	9.0	99	235	68	15		
22-Oct-92 13:41	E 28	Scratby	29.3	10.3	15.5	8.3	97	9.0	83	242	65	14		
22-Oct-92 13:29	E 29	Caister	29.0	10.3	7.0	8.3	95	8.8	122	354	71	19		
22-Oct-92 13:11	E 30	Yarmouth Central	29.2	10.5	16.0	8.3	95	8.7	96	278	71	18		
22-Oct-92 12:58	E 31	Gorleston	29.1	10.8	12.5	8.3	95	8.9	102	277	69	18		
22-Oct-92 12:46	E 32	Corton	29.3	10.6	12.6	8.3	99	9.1	103	281	67	18		
22-Oct-92 12:32	E 33	Lowestoft	28.8	11.1	8.2	8.3	97	9.0	94	236	59	15		
22-Oct-92 11:55	E 35	Kessingland	28.5	11.5	6.0	8.3	97	8.9	105	267	64	18		
22-Oct-92 11:30	E 37	Easton Broad	28.9	11.1	14.8	8.3	99	9.2	97	257	64	17		
22-Oct-92 11:00	E 39	Dunwich Cliffs	28.8	11.1	9.2	8.3	100	9.2	81	244	55	15		
22-Oct-92 10:16	E 42	Thorpeness	28.1	12.2	13.0	8.3	100	9.0	73	158	39	11		
22-Oct-92 09:55	E 43	Orfordness	28.6	12.0	14.0	8.3	104	9.4	72	164	38	12		
22-Oct-92 09:10	E 48	Shingle Street	28.1	11.1	10.4	8.3	96	8.8	90	236	47	18		
22-Oct-92 08:32	E 52	Felixstowe, Cobbolds Point	27.2	11.0	10.0	8.3	96	8.9	90	208	38	18		
22-Oct-92 08:12	E 54	Felixstowe, Pitching Ground	26.0	10.9	12.2	8.3	94	8.6	111	230	44	23		

Table 12 : Anglian East Coast Survey Data
22nd October 1992

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
10-Nov-92 15:07	E 05	Thornham	30.0	8.9	6.3	8.5	100	9.4	714	804	83	38	18.1	1.8
10-Nov-92 15:57	E 08	Overy, Staithe	29.8	8.8	9.0	8.5	101	9.6	727	827	84	36	16.7	4.1
10-Nov-92 16:27	E 10	The Bink, Wells	30.0	8.7	13.7	8.5	100	9.6	541	631	67	30	15.2	3.0
10-Nov-92 17:15	E 13	Cley, Lookout	31.0	8.8	15.8	8.5	101	9.6	363	421	55	28	13.4	1.7
10-Nov-92 17:57	E 16	Sheringham	31.4	8.8	19.5	8.5	101	9.5	266	317	40	24	12.1	1.7
10-Nov-92 18:16	E 18	Overstrand	31.4	8.8	16.6	8.5	99	9.4	245	306	40	23	11.5	1.8
10-Nov-92 18:52	E 20	Mundesley	31.8	9.3	16.0	8.5	99	9.2	211	279	38	23	12.1	1.7
10-Nov-92 19:30	E 23	Lessingham	32.0	9.2	20.5	8.5	100	9.3	200	285	37	23	12.3	2.1
10-Nov-92 19:55	E 25	Horsey	31.8	9.0	27.2	8.5	99	9.3	209	270	41	23	10.3	1.7
10-Nov-92 20:25	E 27	Winterton	31.2	8.8	18.5	8.5	100	9.4	222	225	39	19	5.9	5.1
10-Nov-92 20:39	E 28	Scratby	31.0	8.7	20.0	8.5	100	9.5	221	219	38	18	5.4	4.0
10-Nov-92 20:52	E 29	Caister	31.0	8.6	10.6	8.5	100	9.4	226	232	36	17	5.2	4.8
10-Nov-92 21:10	E 30	Yarmouth Central	31.4	9.0	19.3	8.5	99	9.3	197	231	39	20	6.9	3.1
10-Nov-92 18:35	E 32	Corton	31.2	9.2	14.2	8.5	97	9.0	177	365	<5.4	23	5.6	2.1
10-Nov-92 18:46	E 33	Lowestoft	31.8	9.0	12.4	8.5	97	9.1	167	376	40	22	2.3	5.5
11-Nov-92 18:19	E 31	Gorleston	31.3	9.2	18.5	8.5	99	9.2	181	341	44	22	6.4	1.8
11-Nov-92 19:24	E 35	Kessingland	32.0	9.1	12.6	8.5	98	9.2	147	355	41	22	4.2	3.3
11-Nov-92 19:49	E 37	Easton Broad	32.1	9.3	17.5	8.5	98	9.1	134	353	31	21	4.0	3.9
11-Nov-92 20:22	E 39	Dunwich Cliffs	33.0	9.6	11.4	8.5	97	8.9	123	343	19	21	3.7	3.9
11-Nov-92 21:12	E 42	Thorpeness	33.1	9.8	13.4	8.5	97	8.8	82	314	15	21	2.8	3.4
11-Nov-92 21:33	E 43	Orfordness	33.5	10.0	20.0	8.5	93	8.4	106	307	15	21	2.9	4.6

**Table 13 : Anglian East Coast Survey Data
10-13th November 1992**

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
11-Nov-92 23:20	E 52	Felixstowe, Cobbolds Point	30.5	9.7	10.0	8.5	99	9.1	164	356	20	26	3.8	
11-Nov-92 22:30	E 48a	Shingle Street	31.8	9.5	10.6	8.5	95	8.7	153	361	17	23	3.2	3.2
13-Nov-92 09:00	E 54	Felixstowe, Pitching Ground	32.0	8.1	12.0	8.2	95	9.2	198	439	31	26	5.9	3.3
13-Nov-92 09:18	E 56	Hamford "Outer Ridge"	32.1	7.9	13.5	8.2	95	9.1	229	516	59	29	6.2	4.0
13-Nov-92 09:44	E 59	Walton	31.7	8.2	9.4	8.3	95	9.1	207	470	14	31	2.3	3.7
13-Nov-92 10:03	E 61	Holland Radar	31.9	8.6	10.0	8.3	95	9.0	199	452	14	31	1.8	5.5
13-Nov-92 10:20	E 63	Clacton Pier	32.0	8.8	12.6	8.3	95	9.0	202	450	13	32	2.8	3.3
13-Nov-92 10:36	E 65	Jaywick	31.8	8.6	8.1	8.3	95	9.0	209	486	15	31	1.6	3.3
13-Nov-92 11:08	E 69	Mersea, "Bench Head"	30.4	8.1	8.3	8.3	96	9.3	366	678	30	40	3.2	3.7
13-Nov-92 12:00	E 71b	Swin Spitway	31.3	9.2	12.0	8.3	97	9.1	209	433	14	34	3.0	3.7
13-Nov-92 12:21	E 73b	W. Hook Middle	31.1	8.9	17.8	8.3	98	9.2	191	429	16	30	4.7	3.4
13-Nov-92 12:50	E 74b	Maplin Bank	31.2	8.9	11.0	8.3	98	9.2	249	436	18	41	8.0	4.0
13-Nov-92 13:35	E 77b	Blacktail Spit	31.2	9.0	14.0	8.4	98	9.2	245	418	22	46	10.1	3.2

**Table 13 : Anglian East Coast Survey Data
10-13th November 1992**

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
16-Nov-92 08:47	E 05	Thornham	30.5	7.0	7.6	8.3	100	9.9	578	692	65	35	16.8	
16-Nov-92 07:59	E 08	Overy, Staithe	30.2	7.0	7.0	8.3	99	9.9	553	671	57	31	15.4	
16-Nov-92 07:25	E 10	The Bink, Wells	30.2	7.5	12.0	8.2	98	9.6	589	703	65	33	16.5	
16-Nov-92 05:15	E 18	Overstrand	31.0	7.9	12.0	8.2	93	9.0	436	559	56	28	14.7	
16-Nov-92 04:45	E 20	Mundesley	31.8	8.0	13.5	8.3	95	9.1	373	459	45	27	13.9	
16-Nov-92 04:05	E 23	Lessingham	31.0	7.8	17.1	8.2	92	8.9	361	434	43	26	13.3	
16-Nov-92 03:38	E 25	Horsey	30.9	7.5	17.0	8.2	94	9.2	398	437	49	25	11.8	
16-Nov-92 03:15	E 27	Winterton	31.5	7.7	17.0	8.2	94	9.1	307	341	41	22	10.1	
16-Nov-92 03:00	E 28	Scratby	31.0	7.7	19.5	8.2	95	9.2	285	335	40	21	10.0	
16-Nov-92 02:50	E 29	Caister	31.0	7.8	9.0	8.2	97	9.4	274	339	39	21	9.9	
16-Nov-92 02:33	E 30	Yarmouth Central	32.0	8.2	18.3	8.2	96	9.2	243	305	36	22	11.0	

**Table 14 : Anglian East Coast Survey Data
16th November 1992**

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
29-Jan-93 19:52	E 05	Thornham	32.3	4.8	7.6	8.2			903	829	40	32	6.3	1.4
29-Jan-93 20:38	E 08	Overy, Staithe	32.2	4.8	9.4	8.2			909	853	39	33	6.2	1.1
29-Jan-93 21:08	E 10	The Bink, Wells	32.3	4.9	14.0	8.2			861	823	35	32	6.5	0.7
29-Jan-93 21:50	E 13	Cley, Lookout	32.4	5.2	16.5	8.2		9.9	874	804	33	31	6.1	0.6
29-Jan-93 22:35	E 16	Sheringham	32.3	5.3	18.0	8.2			924	842	34	32	6.1	0.5
29-Jan-93 23:03	E 18	Overstrand	32.0	5.3	15.0	8.2			1,030	927	38	34	6.7	1.3
29-Jan-93 23:35	E 20	Mundesley	32.1	5.3	14.8	8.2			1,010	887	40	37	6.6	1.3
30-Jan-93 00:18	E 23	Lessingham	32.0	5.3	18.0	8.2			1,010	891	35	35	6.7	1.2
30-Jan-93 00:48	E 25	Horsey	32.2	5.2	17.7	8.2			966	856	41	33	6.8	1.0
30-Jan-93 01:18	E 27	Winterton	32.0	5.2	18.8	8.2			1,050	926	39	34	6.6	3.6
30-Jan-93 01:13	E 28	Scratby	32.5	5.3	19.0	8.2			831	788	35	33	5.6	2.8
30-Jan-93 01:48	E 29	Caister	32.5	5.3	9.6	8.2			815	773	30	31	5.3	5.3
30-Jan-93 02:02	E 30	Yarmouth Central	33.2	5.4	19.0	8.2		9.9	543	566	25	27	3.8	1.9
30-Jan-93 11:59	E 31	Gorleston	33.3	5.4	16.5	8.1			512	636	25	28	3.0	6.5
30-Jan-93 12:10	E 32	Corton	33.2	5.4	13.3	8.1			556	714	27	29	3.0	5.1
30-Jan-93 12:23	E 33	Lowestoft	33.2	5.4	10.1	8.1			532	717	27	29	2.4	6.3
30-Jan-93 12:59	E 35	Kessingland	33.8	5.6	7.5	8.1		10.1	438	647	33	33	2.1	2.7
30-Jan-93 13:26	E 37	Easton Broad	33.8	5.6	10.5	8.1			411	613	17	29	1.3	2.7
30-Jan-93 13:53	E 39	Dunwich Cliffs	34.1	5.7	11.4	8.1			404	665	20	31	1.2	4.5
30-Jan-93 14:42	E 42	Thorpeness	34.5	5.9	14.5	8.1			348	568	22	33	1.4	4.5
30-Jan-93 15:07	E 43	Orfordness	34.5	6.0	19.0	8.2			328	550	20	32	1.6	3.8

Table 15 : Anglian East Coast Survey Data
29th January-1st February 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
30-Jan-93 15:58	E 48	Shingle Street	34.5	6.2	11.1	8.2			368	578	26	34	1.7	2.3
30-Jan-93 16:42	E 52	Felixstowe, Cobbolds Point	34.4	6.2	10.6	8.2			397	609	27	35	2.1	1.9
30-Jan-93 17:06	E 54	Felixstowe, Pitching Ground	33.6	5.7	12.6	8.1			642	825	46	42	3.0	1.9
01-Feb-93 12:40	E 56	Hamford "Outer Ridge"	33.5	5.8	12.1	8.1	96	9.5	678	881	56	46	3.3	2.8
01-Feb-93 12:01	E 59	Walton	34.0	6.0	7.5	8.1	98		528	748	36	44	2.2	2.4
01-Feb-93 11:36	E 61	Holland Radar	34.1	6.2	8.5	8.1	98		465	698	32	42	1.6	2.8
01-Feb-93 11:18	E 63	Clacton Pier	34.1	6.1	10.5	8.1	98		459	695	36	44	1.8	2.8
01-Feb-93 10:56	E 65	Jaywick	33.2	5.9	5.6	8.1	97	9.6	735	958	64	53	3.5	3.6
01-Feb-93 10:24	E 69	Mersea, "Bench Head"	32.2	6.1	4.8	8.1	97		1,050	1,240	77	63	6.8	2.4
01-Feb-93 09:31	E 71b	Swin Spitway	33.9	6.1	8.6	8.1	96		549	782	37	45	2.8	4.3
01-Feb-93 09:11	E 73b	W. Hook Middle	33.8	6.1	15.0	8.1	95		537	784	31	47	2.9	3.9
01-Feb-93 08:43	E 74b	Maplin Bank	34.1	6.5	8.6	8.1	94		443	710	29	46	4.3	2.8
01-Feb-93 08:03	E 77b	Blacktail Spit	33.5	6.5	9.2	8.1	95		577	872	28	60	6.2	2.1

Table 15 : Anglian East Coast Survey Data
29th January-1st February 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
03-Feb-93 13:15	E 05	Thornham	31.7	5.1	7.6	8.1			1,150	1,010	48	35	9.2	1.3
03-Feb-93 12:25	E 08	Overy, Staithe	32.4	5.1	8.4	8.1			855	788	43	31	6.2	1.0
03-Feb-93 11:54	E 10	The Bink, Wells	32.5	5.1	12.3	8.1			827	788	22	31	5.7	0.6
03-Feb-93 11:09	E 13	Cley, Lookout	32.8	5.2	14.5	8.1			718	683	27	29	5.3	0.3
03-Feb-93 10:27	E 16	Sheringham	32.8	5.4	15.5	8.1			734	697	30	27	5.4	0.9
03-Feb-93 09:58	E 18	Overstrand	32.5	5.3	12.2	8.1			867	787	35	34	6.1	0.8
03-Feb-93 09:30	E 20	Mundesley	32.2	5.3	14.0	8.1			964	871	42	37	6.3	0.4

**Table 16 : Anglian East Coast Survey Data
3rd February 1993**

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
15-Mar-93 21:10	E 05	Thornham	33.3	6.7	6.4	8.1	101	9.9	451	477	29	25	4.0	0.8
15-Mar-93 21:56	E 08	Overy, Staithe	33.2	6.2	8.7	8.1	100	9.8	426	450	24	23	3.5	1.0
15-Mar-93 22:28	E 10	The Bink, Wells	33.1	5.6	14.0	8.1	100	10.1	404	446	20	23	3.1	0.8
15-Mar-93 23:10	E 13	Cley, Lookout	33.2	5.6	15.2	8.1	100	10.0	309	392	20	22	3.0	0.8
15-Mar-93 23:46	E 16	Sheringham	33.3	5.6	18.0	8.1	100	9.9	298	464	19	21	2.6	1.6
16-Mar-93 00:13	E 18	Overstrand	33.3	5.5	14.1	8.1	100	10.0	309	394	19	21	2.5	1.6
16-Mar-93 00:40	E 20	Mundesley	33.3	5.6	15.1	8.1	99	9.9	329	407	23	22	2.6	1.1
16-Mar-93 01:18	E 23	Lessingham	33.2	5.5	18.7	8.1	99	10.0	331	405	21	22	2.4	1.1
16-Mar-93 01:50	E 25	Horsey	32.9	5.2	28.0	8.1	100	10.1	339	405	21	22	2.9	1.2
16-Mar-93 02:12	E 27	Winterton	33.1	5.4	15.2	8.1	99	10.0	394	446	24	22	3.2	1.0
16-Mar-93 02:25	E 28	Scratby	33.0	5.3	21.0	8.1	99	10.0	385	435	23	22	2.9	1.5
16-Mar-93 02:36	E 29	Caister	33.1	5.4	10.0	8.1	99	10.0	438	486	26	23	2.8	2.2
16-Mar-93 02:52	E 30	Yarmouth Central	33.2	5.3	17.5	8.1	99	10.0	370	425	22	22	2.7	0.7
17-Mar-93 13:12	E 31	Gorleston	33.1	6.6	17.1	8.0	100	10.0	450	532	31	25	3.3	0.9
17-Mar-93 13:25	E 32	Corton	33.1	6.1	13.7	8.0	99	9.9	409	493	28	23	3.3	1.0
17-Mar-93 13:41	E 33	Lowestoft	32.5	5.9	10.0	8.0	100	10.0	395	462	20	23	3.3	1.1
17-Mar-93 14:20	E 35	Kessingland	32.9	6.1	9.6	8.0	99	9.9	398	489	24	22	3.2	1.0
17-Mar-93 14:50	E 37	Easton Broad	32.9	6.1	17.0	8.1	100	9.9	386	502	22	22	2.2	0.9
17-Mar-93 15:22	E 39	Dunwich Cliffs	32.6	6.5	11.2	8.1	101	10.0	416	523	20	22	1.7	0.8
17-Mar-93 16:12	E 42	Thorpeness	32.9	5.8		8.1	101	10.1	446	530	20	22	1.5	0.6
17-Mar-93 16:35	E 43	Orfordness	32.7	5.5	18.0	8.1	99		459	523	17	23	1.6	1.0

Table 17 : Anglian East Coast Survey Data
15-19th March 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
17-Mar-93 17:26	E 48	Shingle Street	32.9	6.3	11.5	8.1	103	10.2	438	496	15	23	1.3	1.0
17-Mar-93 18:05	E 52	Felixstowe, Cobbolds Point	33.0	6.3	11.0	8.1	99	9.8	441	509	12	24	1.6	0.6
17-Mar-93 18:25	E 54	Felixstowe, Pitching Ground	32.7	6.3	10.5	8.1	97	9.6	489	545	14	24	1.6	0.6
19-Mar-93 06:20	E 56	Hamford "Outer Ridge"	32.2	6.8	14.0	8.0	98	9.6	554	639	34	27	3.4	1.0
19-Mar-93 06:46	E 59	Walton	32.2	6.4	10.0	8.0	98	9.5	535	637	24	28	2.2	1.7
19-Mar-93 07:06	E 61	Holland Radar	32.5	6.3	10.1	8.0	98	9.7	472	574	19	27	1.8	0.0
19-Mar-93 07:21	E 63	Clacton Pier	32.6	6.3	13.3	8.0	97	9.7	482	576	19	27	1.9	0.0
19-Mar-93 07:38	E 65	Jaywick	32.5	6.4	7.7	8.0	98	9.7	515	609	18	28	1.6	0.0
19-Mar-93 08:06	E 69	Mersea, "Bench Head"	32.5	7.1	10.0	8.0	97	9.4	560	630	29	32	2.3	0.0
19-Mar-93 08:50	E 71b	Swin Spitway	32.9	6.5	13.0	8.1	97	9.6	468	560	18	28	1.9	0.0
19-Mar-93 09:09	E 73b	W. Hook Middle	32.7	6.6	17.1	8.1	97	9.5	466	561	20	31	2.1	0.0
19-Mar-93 09:37	E 74b	Maplin Bank	32.7	6.6	11.0	8.1	98	9.6	440	534	18	30	2.6	0.0
19-Mar-93 10:26	E 77b	Blacktail Spit	33.0	7.0	14.1	8.1	97	9.5	385	486	17	30	2.1	0.0

Table 17 : Anglian East Coast Survey Data
15-19th March 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
07-Apr-93 17:52	E 05	Thornham	32.4	7.5	8.5	8.3	99	9.6	647	382	49	29	6.4	3.3
07-Apr-93 17:08	E 08	Overy, Staithe	33.0	7.6	8.6	8.3	101	9.7	511	280	28	21	4.3	6.8
07-Apr-93 16:38	E 10	The Bink, Wells	33.2	7.4	12.1	8.3	100	9.7	470	325	25	21	3.7	2.8
07-Apr-93 15:57	E 13	Cley, Lookout	33.5	7.0	13.5	8.2	100	9.7	405	345	17	22	3.2	2.2
07-Apr-93 15:17	E 16	Sheringham	33.4	7.0	13.5	8.2	100	9.7	440	394	21	25	3.6	1.6
07-Apr-93 14:50	E 18	Overstrand	33.2	7.0	11.4	8.2	100	9.7	442	414	24	24	3.7	1.2
07-Apr-93 14:25	E 20	Mundesley	33.3	6.8	13.0	8.2	100	9.8	414	412	26	24	3.5	1.4
07-Apr-93 13:48	E 23	Lessingham	33.3	6.8	17.8	8.2	100	9.8	434	446	25	24	4.0	1.1
07-Apr-93 13:24	E 25	Horsey	33.2	7.1	20.1	8.2	99	9.6	462	481	30	25	4.4	1.1
07-Apr-93 13:00	E 27	Winterton	33.1	7.2	17.0	8.2	99	9.6	509	536	34	25	4.4	1.5
07-Apr-93 12:47	E 28	Scratby	33.0	7.2	18.1	8.2	99	9.5	526	501	38	23	4.6	2.6
07-Apr-93 12:36	E 29	Caister	33.0	7.3	8.7	8.2	98	9.5	514	485	38	22	3.9	5.1
07-Apr-93 12:20	E 30	Yarmouth Central	33.0	7.0	17.6	8.2	99	9.7	472	452	33	23	4.1	1.1
06-Apr-93 19:03	E 31	Gorleston	32.0	7.0	15.8	8.2	99	9.7	408	474	23	24	2.5	1.8
06-Apr-93 18:38	E 32	Corton	32.3	7.0	15.8	8.2	100	9.7	429	495	30	23	2.4	1.8
06-Apr-93 18:12	E 33	Lowestoft	32.4	7.0	18.1	8.2	100	9.8	429	500	23	23	2.1	2.2
06-Apr-93 17:24	E 35	Kessingland	32.3	7.3	7.1	8.2	100	9.7	418	503	20	22	1.8	4.0
06-Apr-93 16:54	E 37	Easton Broad	32.5	7.1	15.5	8.2	100	9.8	419	471	17	22	1.9	2.3
06-Apr-93 16:24	E 39	Dunwich Cliffs	32.6	7.2	9.1	8.2	100	9.7	429	475	17	23	2.0	3.2
06-Apr-93 15:36	E 42	Thorpeness	32.6	7.3	11.7	8.2	100	9.7	423	458	14	24	2.4	3.6
06-Apr-93 15:17	E 43	Orfordness	32.8	7.4	15.3	8.2	100	9.7	456	464	14	25	2.7	3.1

Table 18 : Anglian East Coast Survey Data
6-7th April 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
06-Apr-93 14:37	E 48	Shingle Street	33.0	7.6	10.6	8.1	99	9.5	509	493	36	25	3.6	2.8
06-Apr-93 14:03	E 52	Felixstowe, Cobbolds Point	32.0	7.9	10.5	8.1	102	9.7	511	481	30	27	2.9	3.9
06-Apr-93 17:40	E 54	Felixstowe, Pitching Ground	30.3	7.9	10.0	8.2	100	9.7	507	521	44	30	3.3	3.1

**Table 18 : Anglian East Coast Survey Data
6-7th April 1993**

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
06-May-93 06:22	E 05	Thornham	33.4	10.7	9.4	8.3	116	10.4	260	28	18	3	5.6	11.1
06-May-93 07:01	E 08	Overy, Staithe	33.4	10.8	10.5	8.5	123	11.0	120	24	17	2	4.2	16.1
06-May-93 07:26	E 10	The Bink, Wells	33.4	10.4	15.2	8.5	117	10.6	168	25	16	3	3.7	14.2
06-May-93 08:02	E 13	Cley, Lookout	33.3	9.9	16.1	8.4	109	10.0	222	55	15	9	3.4	6.8
06-May-93 08:52	E 16	Sheringham	32.4	9.7	17.1	8.4	110	10.1	215	72	15	10	3.2	7.0
06-May-93 09:16	E 18	Overstrand	32.1	9.9	13.7	8.5	122	11.1	164	27	15	4	3.7	12.1
06-May-93 09:44	E 20	Mundesley	31.5	9.8	14.6	8.4	118	10.9	178	31	17	6	3.9	10.8
06-May-93 10:34	E 23	Lessingham	32.9	9.9	17.5	8.5	121	11.1	169	23	15	4	3.7	10.8
06-May-93 11:05	E 25	Horsey	31.5	10.2	26.0	8.5	120	11.0	183	22	15	4	3.8	8.4
06-May-93 11:34	E 27	Winterton	31.4	10.7	17.7	8.5	117	10.6	185	22	16	3	3.9	11.3
06-May-93 12:02	E 28	Scratby	32.9	10.7	19.5	8.5	117	10.5	161	22	15	3	3.9	11.9
06-May-93 12:19	E 29	Caister	31.9	11.1	8.7	8.6	119	10.6	97	20	15	1	3.4	12.0
06-May-93 12:41	E 30	Yarmouth Central	32.1	10.1	16.9	8.4	112	10.2	221	43	15	9	3.3	6.8
06-May-93 06:50	E 31	Gorleston	32.5	9.9	17.4		103	9.5	220	73	21	13	2.4	5.7
06-May-93 06:56	E 32	Corton	31.8	9.9	14.0	8.3	103	9.5	225	77	21	13	2.1	5.5
06-May-93 07:10	E 33	Lowestoft	31.6	10.0	10.8	8.3	103	9.5	231	67	21	13	2.2	10.9
06-May-93 07:48	E 35	Kessingland	32.2	10.1	10.5	8.3	100	9.1	264	112	23	16	2.7	8.4
07-May-93 08:14	E 37	Easton Broad	32.3	10.1	17.2	8.3	98	9.0	309	212	22	20	2.2	4.8
07-May-93 08:37	E 39	Dunwich Cliffs	32.9	10.5	16.1	8.3	97	8.8	373	340	20	22	2.1	7.5
07-May-93 09:19	E 42	Thorpeness	33.2	10.2	15.0	8.3	98	8.8	382	373	20	23	1.2	4.7
07-May-93 09:38	E 43	Orfordness	33.9	9.8	16.3	8.3	99	9.0	365	346	21	22	1.3	6.4

Table 19 : Anglian East Coast Survey Data
6-10th May 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
07-May-93 10:16	E 48	Shingle Street	33.6	10.3	11.1	8.3	98	8.9	372	331	20	22	1.2	10.4
07-May-93 10:49	E 52	Felixstowe, Cobbolds Point	33.8	10.6	10.5	8.3	99	8.8	357	233	20	22	1.4	10.2
07-May-93 11:50	E 54	Felixstowe, Pitching Ground	33.8	11.1	13.5	8.3	101	8.8	353	342	24	22	2.3	6.6
10-May-93 12:17	E 56	Hamford "Outer Ridge"	33.2	11.2	10.1	8.3	102	8.9	358	332	24	22	2.4	5.4
10-May-93 12:44	E 59	Walton	33.2	11.6	9.3	8.3	102	8.8	362	264	23	22	2.6	7.0
10-May-93 13:03	E 61	Holland Radar	33.6	11.4	10.0	8.3	102	8.9	352	164	21	21	2.7	7.5
10-May-93 13:18	E 63	Clacton Pier	33.5	11.9	12.4	8.3	103	8.8	351	124	23	21	2.7	5.0
10-May-93 13:35	E 65	Jaywick	33.5	12.0	8.7	8.3	101	8.7	363	93	26	21	2.8	8.5
10-May-93 14:12	E 69	Mersea, "Bench Head"	33.9	12.3	8.3	8.3	102	8.8	311	30	26	21	2.1	5.8
10-May-93 15:00	E 71b	Swin Spitway	33.7	11.1	11.8	8.3	104	9.2	324	156	22	21	1.8	5.6
10-May-93 15:20	E 73b	W. Hook Middle	33.7	11.6	17.3	8.3	105	9.2	312	105	21	20	2.2	5.8
10-May-93 15:48	E 74b	Maplin Bank	33.6	11.9	10.3	8.3	104	9.1	285	46	23	20	2.3	5.9
10-May-93 16:30	E 77b	Blacktail Spit	33.7	11.8	17.8	8.4	104	9.1	274	26	24	20	2.3	7.7

Table 19 : Anglian East Coast Survey Data
6-10th May 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
04-Jun-93 16:17	E 05	Thornham	33.0	14.3	6.4	9.0	112	9.2	9	49	20	<1.15		10.4
04-Jun-93 15:17	E 08	Overy, Staithe	33.5	14.4	5.7	8.8	106	8.8	11	65	21	<1.15		12.4
04-Jun-93 14:50	E 10	The Bink, Wells	33.7	13.8	10.1	8.8	103	8.6	3	41	10	<1.15		7.6
04-Jun-93 14:11	E 13	Cley, Lookout	33.9	13.1	12.2	8.5	128	10.9	6	16	13	<1.15		9.4
04-Jun-93 13:32	E 16	Sheringham	34.0	12.9	13.5	8.5	145	12.4	3	9	8	<1.15		8.7
04-Jun-93 13:06	E 18	Overstrand	34.0	13.0	11.0	8.5	145	12.4	8	15	16	<1.15		9.1
04-Jun-93 12:41	E 20	Mundesley	34.0	12.7	12.1	8.5	150	12.9	10	16	20	<1.15		12.9
04-Jun-93 12:02	E 23	Lessingham	34.0	13.0	18.2	8.4	148	12.6	4	10	10	<1.15		9.3
04-Jun-93 11:34	E 25	Horsey	34.0	13.6	20.0	8.5	124	10.5	6	22	14	<1.15		4.8
04-Jun-93 11:07	E 27	Winterton	33.9	14.5	16.6	8.4	99	8.2	8	71	23	<1.15		5.2
04-Jun-93 10:51	E 28	Scratby	34.0	13.7	19.8	8.4	100	8.4	10	58	20	<1.15		9.4
04-Jun-93 10:37	E 29	Caister	33.9	13.7	9.4	8.5	98	8.2	5	40	11	<1.15		12.3
04-Jun-93 10:17	E 30	Yarmouth Central	33.8	13.1	18.5	8.6	110	9.4	<2.33	17	6	<1.15		7.6
03-Jun-93 16:35	E 31	Gorleston	33.6	13.6	15.3	8.3	97	8.1	6	9	15	2		6.8
03-Jun-93 16:22	E 32	Corton	33.6	13.7	12.1	8.2	98	8.3	6	8	14	1		7.4
03-Jun-93 16:05	E 33	Lowestoft	33.7	13.4	10.2	8.2	101	8.5	26	20	36	6		6.8
03-Jun-93 15:25	E 35	Kessingland	33.7	13.4	7.1	8.2	100	8.4	17	13	25	4		5.7
03-Jun-93 14:53	E 37	Easton Broad	33.7	13.6	15.1	8.2	97	8.2	29	11	27	4		5.9
03-Jun-93 14:21	E 39	Dunwich Cliffs	33.8	13.8	10.1	8.2	98	8.2	139	24	37	8		6.0
03-Jun-93 13:31	E 42	Thorpeness	33.9	13.4	14.5	8.1	90	7.6	196	33	35	13		3.8
03-Jun-93 13:07	E 43	Orfordness	34.0	13.5	15.6	8.1	97	8.2	195	31	42	14		3.4

Table 20 : Anglian East Coast Survey Data
2-4th June 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
03-Jun-93 12:22	E 48	Shingle Street	34.0	14.1	10.6	8.1	98	8.1	158	22	34	12		2.0
03-Jun-93 11:46	E 52	Felixstowe, Cobbolds Point	33.9	14.3	11.3	7.8	98	8.2	130	14	23	12		3.3
02-Jun-93 15:02	E 54	Felixstowe, Pitching Ground	34.0	15.2	10.2	8.5	96	7.7	243	45	45	18		4.0
02-Jun-93 15:02	E 56	Hamford "Outer Ridge"	34.3	14.6	9.3	8.5	96	7.9	82	12	33	10		2.9
02-Jun-93 14:16	E 59	Wallon	34.2	14.5	7.6	8.5	96	7.9	108	21	41	12		4.0
02-Jun-93 13:56	E 61	Holland Radar	34.3	14.5	9.2	8.6	97	8.0	98	17	38	12		3.7
02-Jun-93 13:41	E 63	Clacton Pier	34.2	14.7	11.6	8.4	95	7.8	206	42	37	18		5.4
02-Jun-93 13:24	E 65	Jaywick	34.1	14.9	7.0	8.4	95	7.7	258	54	42	20		9.0
02-Jun-93 12:57	E 69	Mersea, "Bench Head"	34.1	15.1	6.6	8.7	95	7.7	228	55	41	20		4.8
02-Jun-93 12:01	E 71b	Swin Spitway	34.4	14.7	11.0	8.3	94	7.7	125	23	67	17		0.6
02-Jun-93 11:40	E 73b	W. Hook Middle	34.4	14.7	13.5	7.9	92	7.4	114	16	51	16		1.0
02-Jun-93 11:07	E 74b	Maplin Bank	34.5	14.3	11.2	8.0	89	7.3	86	27	80	18		0.5
02-Jun-93 10:10	E 77b	Blacktail Spit	34.5	14.2	7.1	7.7	98	8.2	108	31	75	20		0.7

Table 20 : Anglian East Coast Survey Data
2-4th June 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
31-Aug-93 16:28	E 05	Thornham	33.9	16.1	6.5	8.2	104	8.3	6	47	25	4	<0.3	2.8
31-Aug-93 15:38	E 08	Overy, Staithe	33.8	15.9	6.0	8.2	102	8.2	5	38	23	2	<0.3	2.0
31-Aug-93 14:59	E 10	The Bink, Wells	33.7	15.8	10.3	8.2	96	7.8	7	72	26	3	<0.3	2.4
31-Aug-93 14:00	E 13	Cley, Lookout	33.8	15.6	12.6	8.2	96	7.8	9	61	38	4	0.7	<1
31-Aug-93 13:02	E 16	Sheringham	33.8	15.8	13.5	8.1	95	7.7	12	75	36	4	0.9	<1
31-Aug-93 12:32	E 18	Overstrand	33.8	15.9	11.3	8.1	96	7.8	11	63	33	4	0.9	1.9
31-Aug-93 11:37	E 20	Mundesley	33.9	15.6	15.0	8.1	90	7.3	21	90	47	6	1.7	<1
31-Aug-93 10:14	E 23	Lessingham	33.8	15.6	17.5	8.1	94	7.6	12	40	27	4	1.1	<1
31-Aug-93 09:21	E 25	Horsey	33.8	15.8	25.0	8.1	94	7.5	13	45	31	4	1.1	<1
26-Aug-93 08:53	E 27	Winterton	33.7	16.3		8.2	92	7.4	8	42	30	3	0.8	4.2
26-Aug-93 08:27	E 28	Scratby	33.6	16.2	16.0	8.2	90	7.2	7	53	29	3	0.6	3.6
26-Aug-93 08:08	E 29	Caister	33.6	16.3		8.2	90	7.2	7	51	29	3	0.5	6.2
26-Aug-93 07:44	E 30	Yarmouth Central	33.8	16.3	18.0	8.1	92	7.4	8	40	27	3	0.8	3.6
25-Aug-93 12:26	E 31	Gorleston	33.7	16.6	17.0	8.2	94	7.5	13	99	34	7	1.1	3.0
25-Aug-93 12:10	E 32	Corton	33.6	16.6	13.8	8.2	93	7.4	15	117	37	8	1.5	4.0
25-Aug-93 11:48	E 33	Lowestoft	33.7	16.6	9.7	8.2	93	7.4	22	139	43	9	2.1	4.5
25-Aug-93 11:00	E 35	Kessingland	33.7	16.7	7.7	8.2	91	7.3	36	201	56	12	3.8	4.9
25-Aug-93 10:28	E 37	Easton Broad	33.7	16.7	15.7	8.2	92	7.3	70	209	55	13	4.4	3.4
25-Aug-93 09:57	E 39	Dunwich Cliffs	33.8	16.6	19.5	8.2	92	7.2	81	316	54	17	9.8	4.9
25-Aug-93 09:06	E 42	Thorpeness	34.0	17.0	13.0	8.1	91	7.1	146	372	42	19	19.5	3.4
25-Aug-93 08:45	E 43	Orfordness	34.1	17.1	16.0	8.1	91	7.1	162	369	37	18	19.9	4.1

Table 21 : Anglian East Coast Survey Data
24-31st August 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
25-Aug-93 08:03	E 48	Shingle Street	34.4	17.0	9.6		92	7.2	209	416	24	22	13.3	3.1
25-Aug-93 07:25	E 52	Felixstowe, Cobbolds Point	34.8	17.0	10.3		91	7.1	167	272	25	23	5.4	2.2
25-Aug-93 12:34	E 54	Felixstowe, Pitching Ground	34.7	17.2	11.6	8.1	96	7.5	170	305	27	24	8.6	4.1
24-Aug-93 12:11	E 56	Hamford "Outer Ridge"	34.8	17.2	11.6	8.1	94	7.3	164	251	47	29	8.4	5.4
24-Aug-93 11:27	E 59	Walton	34.9	17.6	7.7	8.1	96	7.4	179	254	30	30	4.2	4.6
24-Aug-93 11:05	E 61	Holland Radar	35.0	17.6	7.9	8.1	96	7.4	179	262	25	29	3.9	5.4
24-Aug-93 10:38	E 63	Clacton Pier	35.0	17.6	10.5	8.1	101	7.9	173	262	27	30	3.7	4.5
24-Aug-93 10:13	E 65	Jaywick	35.0	17.5	5.6	8.1	94	7.3	169	263	38	34	4.3	7.2
24-Aug-93 09:41	E 69	Mersea, "Bench Head"	34.9	17.7	4.6	8.1	91	7.1	177	299	37	39	3.5	7.3
24-Aug-93 08:38	E 71b	Swin Spitway	34.9	17.4	9.0	8.1	93	7.2	168	243	27	27	6.9	7.6
24-Aug-93 08:19	E 73b	W. Hook Middle	34.9	17.5	14.8	8.1	93	7.2	161	235	27	28	5.6	7.8
24-Aug-93 07:54	E 74b	Maplin Bank	35.0	17.7	9.6	8.2	94	7.3	84	124	37	25	4.6	7.2
24-Aug-93 07:17	E 77b	Blacktail Spit	35.0	17.6	11.1	8.2	93	7.3	47	72	39	23	3.5	8.2

Table 21 : Anglian East Coast Survey Data
24-31st August 1993

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
22-Sep-93 09:40	E 05	Thornham							47	216	41	10		3.3
22-Sep-93 09:50	E 08	Overy, Staithe							20	171	24	3		5.0
22-Sep-93 10:00	E 10	The Bink, Wells							64	228	49	10		2.4
22-Sep-93 10:10	E 13	Cley, Lookout							85	321	62	13		1.4
22-Sep-93 10:20	E 16	Sheringham							92	206	57	14		1.9
22-Sep-93 10:30	E 18	Overstrand							66	304	63	12		0.8
22-Sep-93 10:40	E 20	Mundesley							95	263	62	16		1.7
22-Sep-93 10:50	E 23	Lessingham							66	365	57	11		2.8
22-Sep-93 11:00	E 25	Horsey							43	166	48	8		4.6
22-Sep-93 11:20	E 27	Winterton							66	194	54	10		6.9
22-Sep-93 11:30	E 29	Caister							73	130	48	9		5.9
22-Sep-93 11:40	E 30	Yarmouth Central							83	206	56	12		4.0
22-Sep-93 11:50	E 31	Gorleston							82	380	59	14		4.8
22-Sep-93 12:00	E 32	Corton							92	450	68	16		3.9
22-Sep-93 12:10	E 33	Lowestoft							90	310	68	16		5.9
22-Sep-93 12:20	E 35	Kessingland							99	360	73	18		5.4
22-Sep-93 14:10	E 37	Easton Broad							68	276	61	15		
22-Sep-93 14:00	E 39	Dunwich Cliffs							98	370	73	19		4.6
22-Sep-93 13:50	E 42	Thorpeness							115	339	39	19		4.1
22-Sep-93 13:40	E 43	Orfordness							98	214	28	16		4.6
22-Sep-93 13:30	E 48	Shingle Street							139	207	24	20		6.3
22-Sep-93 13:20	E 52	Felixstowe, Cobbolds Point							139	243	25	19		6.8

Table 22 : Anglian East Coast Helicopter Survey Data
21-22nd September 1993

Date & Time	Anglian Site Name	Location	Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
22-Sep-93 13:10	E 54	Felixstowe, Pitching Ground							153	268	27	21		
21-Sep-93 13:35	E 56	Hamford "Outer Ridge"		16.5		8.4		85.0	184	326	40	27		5.6
21-Sep-93 13:15	E 59	Walton		16.4		8.4		91.0	202	305	25	30		5.1
21-Sep-93 13:00	E 61	Holland Radar		16.0		8.4		86.0	196	300	27	29		6.4
21-Sep-93 00:00	E 63	Clacton Pier		16.4		8.4		95.0	207	310	25	31		8.1
21-Sep-93 12:25	E 65	Jaywick		16.5		8.4		97.0	204	319	27	34		6.7
21-Sep-93 12:00	E 69	Mersea, "Bench Head"		16.5		8.4		92.0	206	396	44	48		6.2
21-Sep-93 00:00	E 71b	Swin Spitway		17.5		8.4		97.0	191	286	25	32		5.3
21-Sep-93 11:05	E 73b	W. Hook Middle		17.0		8.4		92.0	193	250	24	34		6.0
21-Sep-93 10:50	E 74b	Maplin Bank		17.0		8.4		96.3	152	191	25	30		5.4

Table 22 : Anglian East Coast Helicopter Survey Data
21-22nd September 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp (°C)	Water Depth (m)	pH	DO(% satn)	DO(mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
26-Oct-93 10:10	E 05	Thornham		11.0					362	263	62	21		2.4
26-Oct-93 10:19	E 08	Overy, Staithe		11.0					218	238	30	18		3.5
26-Oct-93 10:26	E 10	The Bink, Wells		11.0					233	234	32	16		5.4
26-Oct-93 10:36	E 13	Cley, Lookout		11.0					173	163	33	17		4.2
26-Oct-93 10:47	E 16	Sheringham		11.0					162	224	40	20		3.3
26-Oct-93 10:54	E 18	Overstrand		11.0					156	233	43	21		2.4
26-Oct-93 11:36	E 20	Mundesley		11.0					155	252	39	21		2.4
26-Oct-93 11:43	E 23	Lessingham		11.0					155	298	37	22		2.2
26-Oct-93 11:49	E 25	Horsey		11.0					151	281	34	22		3.1
26-Oct-93 11:56	E 27	Winterton		11.0					143	277	30	21		4.8
26-Oct-93 12:00	E 28	Scratby		11.0					156	269	39	22		2.8
26-Oct-93 12:04	E 29	Caister		11.0					279	2,050	48	21		4.1
26-Oct-93 12:09	E 30	Yarmouth Central		11.0					145	279	32	20		3.3
26-Oct-93 12:12	E 31	Gorleston		11.0					152	311	30	21		2.7
26-Oct-93 12:17	E 32	Corton		11.0					176	347	37	22		3.3
26-Oct-93 12:22	E 33	Lowestoft		11.0					166	329	31	21		3.3
26-Oct-93 12:28	E 35	Kessingland		11.0					183	364	36	21		2.5

Table 23 : Anglian East Coast Helicopter Survey Data
26th October 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
23-Nov-93 11:35	E 05	Thornham	32.2	5.7	6.9		95	9.6	670	852	32	32	7.4	1.4
23-Nov-93 12:20	E 08	Overy, Staithe	33.0	6.4	9.0		95	9.4	478	624	10	28	3.4	2.8
23-Nov-93 12:49	E 10	The Bink, Wells	33.0	6.5	13.5		96	9.4	463	603	8	27	3.6	2.1
23-Nov-93 13:30	E 13	Cley, Lookout	33.3	7.2	15.6		95	9.2	374	529	<5.4	26	1.9	1.5
23-Nov-93 14:09	E 16	Sheringham	33.5	7.4	17.2		95	9.1	330	483	<5.4	27	0.5	2.1
23-Nov-93 14:35	E 18	Overstrand	33.6	7.5	14.2		95	9.1	307	463	<5.4	27	0.8	1.9
23-Nov-93 15:17	E 20	Mundesley	33.6	7.9	14.3		94	9.1	298	450	<5.4	27	0.9	1.5
23-Nov-93 16:22	E 23	Lessingham	33.5	7.3	18.5		97	9.3	311	436	<5.4	27	2.6	1.7
23-Nov-93 16:50	E 25	Horsey	33.5	7.2	25.2		97	9.4	321	438	<5.4	26	3.7	1.9
23-Nov-93 17:17	E 27	Winterton	33.2	6.5	18.1		97	9.5	371	497	19	23	6.5	2.6
23-Nov-93 17:31	E 28	Scratby	33.4	7.0	19.8		96	9.4	331	452	13	24	5.4	3.8
23-Nov-93 00:00	E 29	Caister	33.3	6.6	9.2		97	9.5	345	481	19	22	6.9	3.8
23-Nov-93 17:58	E 30	Yarmouth Central	33.5	7.0	18.1		96	9.4	284	416	11	22	5.4	1.8
24-Nov-93 14:10	E 31	Gorleston	33.1	7.2	16.3		97	9.5	326	549	8	25	2.2	1.7
24-Nov-93 14:24	E 32	Corton	33.4	7.3	13.6		98	9.5	312	614	10	23	2.0	1.8
24-Nov-93 14:11	E 33	Lowestoft	33.5	7.4	8.6		98	9.4	298	461	7	23	2.1	3.0
24-Nov-93 15:21	E 35	Kessingland	33.3	7.2	9.0		97	9.4	333	540	9	24	3.2	4.5
25-Nov-93 11:15	E 37	Easton Broad	33.5	7.0	16.3	8.1	96	9.5	323	562	<6.57	25	4.7	3.2
25-Nov-93 12:35	E 39	Dunwich Cliffs	33.4	6.4	9.8	8.2	96	9.5	320	680	14	25	5.5	5.5
25-Nov-93 14:03	E 42	Thorpeness	33.8	7.1	12.9	8.2	95	9.2	258	523	<6.57	27	4.3	2.2
25-Nov-93 14:42	E 43	Orfordness	34.0	7.4	16.2	8.2	95	9.2	199	418	<6.57	24	0.8	2.3

Table 24 : Anglian East Coast Survey Data
23-26th November 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
25-Nov-93 15:31	E 48	Shingle Street	34.0	6.6	9.5	8.2	96	9.4	218	457	<6.57	24	2.3	1.6
25-Nov-93 16:09	E 52	Felixstowe, Cobbolds Point	33.3	5.9	9.0	8.2	94	9.4	441	690	29	25	6.5	1.1
25-Nov-93 16:29	E 54	Felixstowe, Pitching Ground	33.0	5.3	9.9	8.2	96	9.7	541	810	46	27	3.2	1.6
25-Nov-93 16:47	E 56	Hamford "Outer Ridge"	33.4	6.0	9.8	8.2	96	9.6	371	654	19	26	3.2	3.2
26-Nov-93 07:00	E 59	Walton	33.4	5.7	8.6	8.2	96	9.6	365	661	20	27	1.9	3.4
26-Nov-93 08:49	E 61	Holland Radar	33.9	6.5		8.2	90	8.9	265	508	<6.57	26	1.2	3.5
26-Nov-93 09:04	E 63	Clacton Pier	34.0	6.6	13.3	8.3	95	9.3	266	501	<6.57	28	1.2	1.0
26-Nov-93 09:20	E 65	Jaywick	33.9	6.3	9.9	8.3	95	9.4	278	530	<6.57	27	0.7	3.3
26-Nov-93 09:42	E 71b	Swin Spitway	34.1	7.1	12.0	8.3	95	9.1	245	461	<6.57	28	2.4	2.8
26-Nov-93 10:01	E 73b	W. Hook Middle	34.0	6.3	17.2	8.3	95	9.4	277	517	<6.57	30	1.7	2.8
26-Nov-93 10:29	E 74b	Maplin Bank	34.2	6.7	10.8	8.3	95	9.3	259	469	<6.57	32	2.5	2.9
26-Nov-93 11:14	E 77b	Blacktail Spit	33.8	6.1	6.1	8.3	96	9.4	373	613	<6.57	49	3.9	3.3

Table 24 : Anglian East Coast Survey Data
23-26th November 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
17-Dec-93 17:30	E 05	Thornham	30.7	4.6	6.1		96	9.9	1,230	1,320	45	38		1.2
17-Dec-93 16:45	E 08	Overy, Staithe	31.9	4.6	6.0		96	10.0	849	970	21	33		2.0
17-Dec-93 16:15	E 10	The Bink, Wells	32.1	4.8	10.8		96	9.9	808	954	15	33		4.9
17-Dec-93 15:27	E 13	Cley, Lookout	33.0	5.4	12.5		96	9.7	559	671	<6.57	29		2.0
17-Dec-93 14:38	E 16	Sheringham	32.9	5.4	14.0		96	9.7	560	697	7	29		1.2
17-Dec-93 14:09	E 18	Overstrand	32.8	5.4	12.5		96	9.7	592	725	10	30		2.3
17-Dec-93 13:36	E 20	Mundesley	32.7	5.4	0.0		96	9.7	615	763	11	30		<1
17-Dec-93 12:47	E 23	Lessingham	32.6	5.4	17.5		96	9.6	667	802	12	31		2.1
17-Dec-93 12:10	E 25	Horsey	32.6	5.4	26.7		96	9.6	659	787	12	30		1.8
17-Dec-93 11:35	E 27	Winterton	32.5	5.3	19.1		96	9.7	698	827	17	29		2.3
17-Dec-93 11:15	E 28	Scratby	33.0	5.4	19.1		96	9.6	608	739	10	28		2.3
17-Dec-93 10:55	E 29	Caister	32.4	5.4	10.3		96	9.7	628	777	11	28		4.9
17-Dec-93 10:31	E 30	Yarmouth Central	32.6	5.5	19.2		91	9.1	526	673	7	27		
15-Dec-93 15:04	E 31	Gorleston	33.0	5.9	14.8	7.4	99	9.9	445	671	9	28	1.3	
15-Dec-93 14:54	E 32	Corton	33.4	5.7	14.2	7.5	99	9.8	416	635	8	27	1.1	
17-Dec-93 14:39	E 33	Lowestoft	33.3	5.8	9.0	7.6	99	9.9	404	655	9	27	1.0	
17-Dec-93 14:09	E 35	Kessingland	33.3	5.7	8.8	8.1	99	9.9	373	647	8	25	0.8	
15-Dec-93 13:43	E 37	Easton Broad	33.4	5.9	17.3	8.1	99	9.9	350	627	7	27	0.8	
15-Dec-93 13:15	E 39	Dunwich Cliffs	33.8	6.0	11.7	8.1	98	9.8	290	560	<6.57	23	0.7	
15-Dec-93 12:28	E 42	Thorpeness	33.9	5.9	15.5	8.1	99	9.9	282	571	10	28	0.6	
15-Dec-93 12:04	E 43	Orfordness	34.0	6.0	18.5	8.1	99	9.8	270	527	<6.57	27	0.7	

Table 25 : Anglian East Coast Survey Data
14-17th December 1993

Date & Time	Anglian Site Name	Location	Field Salinity (‰)	Temp. (°C)	Water Depth (m)	pH	DO (% Satn)	DO (mg/l)	TON (µg/l N)	Silicate (µg/l SiO ₂)	Ammonia (µg/l N)	Phosphate (µg/l P)	Nitrite (µg/l N)	Chlorophyll a (µg/l)
15-Dec-93 11:17	E 48	Shingle Street	33.9	5.7	12.5	8.0	100	10.0	294	561	10	29	0.7	
15-Dec-93 10:34	E 52	Felixstowe, Cobbolds Point	33.3	5.3	10.7	8.0	96	9.8	401	684	30	30	1.2	
15-Dec-93 15:26	E 54	Felixstowe, Pitching Ground	32.7	5.3	11.5	8.0	95	9.6	619	884	78	32	3.1	
14-Dec-93 16:12	E 56	Hamford "Outer Ridge"	33.9	5.8	9.7	8.1	96	9.6	337	579	14	34	1.3	
14-Dec-93 14:47	E 59	Walton	34.3	6.1	9.1	8.1	96	9.5	273	500	7	35	1.2	
14-Dec-93 14:31	E 61	Holland Radar	34.3	6.3	9.6	8.1	97	9.5	262	493	8	35	0.9	
14-Dec-93 14:18	E 63	Clacton Pier	34.2	6.1	12.6	8.1	94	9.3	281	515	7	36	0.9	
14-Dec-93 14:02	E 65	Jaywick	34.1	5.9	7.5	8.1	94	9.3	294	532	7	36	0.8	
14-Dec-93 10:06	E 69	Mersea, "Bench Head"	32.9	5.2	6.6	7.9	97	9.9	534	756	47	45	0.6	
14-Dec-93 00:00	E 71b	Swin Spitway	34.4	6.4	9.3	8.1	95	9.3	251	472	<6.57	34	1.3	
14-Dec-93 13:22	E 73b	W. Hook Middle	34.2	6.1	17.4	8.1	95	9.4	301	516	<6.57	41	1.3	
14-Dec-93 12:56	E 74b	Maplin Bank	34.2	6.2	11.1	8.0	95	9.4	320	553	12	46	2.0	
14-Dec-93 12:10	E 77b	Blacktail Spit	33.9	6.1	11.0	8.0	96	9.5	332	568	16	49	2.0	

Table 25 : Anglian East Coast Survey Data
14-17th December 1993