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REPORT

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Abstract

Riverine inputs of nutrients, selected heavy metals and persistent organic pollutants to Norwegian coastal waters from 10 main and 145 tributary rivers have been monitored during 1998. In addition, the inputs from rivers not monitored as well as direct discharges to marine waters along the coast from Sweden to Russia have been estimated. According to the results, total annual nutrient load to coastal waters from landbased sources, is approximately 3530 tonnes of phosphorus and 105.550 tonnes of nitrogen. About 41 per cent of the phosphorus and 62 per cent of the nitrogen are inputs from the monitored rivers and tributaries. Most inputs of heavy metals are low, especially the riverine inputs of Cd, Pb and Hg. A few values of Cd and Pb are below the detection limits of the specific analysis. For mercury, 58% of the total number of analyses were below the limit, whereas for the "Skagerrak-rivers" only, 79% of the values were above the detection limit. Most values of the different congeners of PCBs are below the detection limit. The pesticide lindane is detected in most analyses in small amounts. Total load of this compound is estimated to about 84 kg. The largest discharges from heavy metals comprise copper and zinc, with the input estimates of 308 and 1265 tonnes, respectively.

Retention in the fjords is not included in the above mentioned values, which in several cases would reduce the actual load to open marine waters considerably.

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1. Forurensningstilførsler	1. Pollution inputs
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The National Environmental Monitoring Programme

OSPAR Commission

Annual report on direct and riverine inputs to Norwegian coastal waters during the year 1998

A Principles, results and discussions
B Data report

Oslo, November 1999

Project manager: Gjertrud Holtan
Co-workers: Dag Berge
Terje Hopen

Preface

The report presents the data from the 1998 monitoring of waterborne pollutants, both riverine and direct discharges, to the Norwegian coastal waters. The study is part of a joint monitoring programme under the "OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic". The Norwegian contribution is administered by the Norwegian Pollution Control Authority (SFT) which has contracted the Norwegian Institute for Water Research (NIVA) to perform the actual investigations.

The 1998-investigation lasted from January throughout December. This report is the Norwegian part of the 1998 study, divided into two parts:

A: Principles - Results and Discussion
B: Data Report.

The Programme Committee has consisted of Dag S. Rosland and John Rune Selvik (SFT) 1998 and 1999, respectively, Dag Berge and Gjertrud Holtan (NIVA). The practical investigation has been coordinated and performed by G. Holtan. Principal collaborator has been D. Berge. The calculations of all data has been performed by Terje Hopen (NIVA). The names of all participants are given in paragraph 5.

We would like to express our gratitude to all participants of the investigation, especially to the local fieldworkers for the collection and transport of the samples. The contact persons at the County Environmental Agencies and at the Municipalities of Oslo and Bærum are acknowledged for continous support and goodwill. The contact persons at the Norwegian Water Resources and Energy Administration (NVE) and The Norwegian Meteorological Institute (DNMI), Per Lofsberg and Stein Kristiansen, are acknowledged for their kind cooperation.

Oslo, 12. November 1999

Gjertrud Holtan

Contents

Report A:

Summary and conclusions

In 1988, the Paris Commission decided to launch a comprehensive annual monitoring programme covering inputs of selected pollutants to Convention Waters, the "Comprehensive Study on Riverine Inputs and Direct Discharges (RID)". The programme was to commense in 1990, and continue the following years (Paris Commission, 1988, OSPAR, 1998).

The purposes of RID is:
- To assess, as accurately as possible, all riverborne and direct inputs of selected pollutants to Convention waters on an annual basis. Inputs from lakes, polders and storm overflows are to be included where information is available.
- To contribute to the implementation of the "Joint Assessment and Monitoring Programme (JAMP)" by providing data on inputs to Convention waters on a subregional and a regional level.

A national objective of RID is to contribute to assessment of the fulfillment of The Ministerial Declarations of the North Sea and the PARCOM Recommendation 88/2 on the 50% reducion target for nutrients.

In 1987 the ministers of the environment from 9 North Sea states agreed to "take effective national steps in order to reduce nutrient inputs into areas where these inputs are likely, directly or indirectly, to cause pollution, and to achieve a substantial reduction (of the order of 50%) in inputs of phosphorus and nitrogen to these areas between 1985 and 1995". At the following Ministerial Conferences, the latest in Esbjerg 1995, the Ministers decided to remain committed to the reduction target.

In Norway the OSPAR 50% reduction target applies to the coastal zone from the Norwegian-Swedish border to Lindesnes (the southernmost point of Norway). Further discharges of selected persistent organic pollutants to the whole North Sea area are to be reduced by 50-70% depending on the micropollutant in question.

In this report the results (1998) are given for riverine inputs of 10 main rivers and 145 tributaries. Thus the active monitoring programme covers drainage from 75 per cent of the main land areas. For discharges entering directly into marine recipients, i.e. sewage and industrial effluents, estimates are based on numbers from effluent control programmes. Diffuse loss of total phosphorus, total nitrogen, phosphates, nitrates and ammonia from these coastal zones are estimated by use of area specific runoff coefficients.

Greatest emphasis with regard to accuracy has been given to the input estimate of the Skagerrak region, as this is considered the most sensitive part of the North Sea. The Skagerrak reception of Norways total loads are 25 per cent of the phosphorus and 38 per cent of the nitrogen discharges. In this region where 94 per cent of the area is river- monitored, about 67 per cent of the P- and 78 per cent of the N-loads, are found in the riverine inputs.

According to the results of the 1998 investigation total annual nutrient loads to coastal waters from landbased sources in Norway are approximately 3.530 tonnes of phosphorus and 105.550 tonnes of nitrogen. Respectively 41 and 62 per cent of the grand total inputs of phosphorus and nitrogen are monitored in the main and tributary rivers. Riverine inputs of metals and persistent organic pollutants are low. A few of the concentrations found for Cd and Pb are lower than the detection limit requested from PARCOM. Therefore, two quantities have been estimated: one assuming that the true concentration is zero and the other assuming that the true concentration is the limit of detection. This provides maximum and minimum concentrations between which lies the true estimate. When evaluating inputs these data provide a basis for upper and lower estimates.

Thus inputs of cadmium are measured/calculated to be between 7.3 and 8.2 tonnes, mercury between 2742 and 2839 kg. The "below detection limit problem" also applies for the inputs of PCBs which are measured to be between 0.38 and 44 kg. The pesticide lindane was found in all analyses, but in small amounts. Assumably, lindane contamination in Norwegian rivers is mostly due to long range air pollution. Total load is estimated to about 84 kg. The largest share of heavy metals comprise copper and zinc, with input estimates of 308 and 1265 tonnes, of which 81 and 89 % respectively, is river-monitored.

The relatively high load of Hg in 1998, is due to the large input from the river Glomma. Almost 90% of the total quantity is discharged with the river water. Twice in 1998 the measured concentrations of Hg were extremely high (915 and 730 ng/l, respectively) when compared to the maximum of 11 ng/l for the period 1990 – 1997. The samples were reanalysed with the same result. We have not found any error in sampling or analysis. A possible source for Hg in the lower part of Glomma should be investigated further.

Statistical trend analyses on annual basis in nutrients and heavy metals are carried out for the following rivers providing long time dataseries: River Glomma (1978-1998), Total-P and Total-N, River Otra (1980-1998) also Total-P and Total-N and River Orkla (1974-1998), Cu and Zn. The analyses show significant reductions in the yearly inputs of nutrients (Otra, P: 74%, N: 35%) and heavy metals (Orkla, Cu: 80%, Zn: 79%). As for Glomma there has also been detected a downword trend for Total-P (24%), but for Total-N an upward trend of 19%. Here the high floods especially in 1987 and 1995 were complicating the trend analyses.

The input-values vary to a great extent with the volume of the discharges. It is therefore difficult to say anything certain about altered pollution levels in the different rivers, even if there may be indications of an improved situation for most rivers/most parameters. To carry out trend analyses, especially for the rivers with long time series, would be an important tool in proving the case.

Retention of nutrients and persistent organic pollutants in the many treshold fjords of Norway is not included in the above given input figures. Estimates of retention of these substances will likely reduce the actual input to open marine waters.

For most Norwegian rivers the input to the sea show large annual variations due to differences in water discharge. In order to use the data as a control of the fulfillment of the Ministerial Declaration of the North Sea, the chemical data from 1998 are in addition "normalized", i.e. 1998 chemical concentrations in river water have been multiplied with normal annual runoff (LTA) in the period 1961-90 (main rivers) and 1931-60 (tributary rivers).

1. INTRODUCTION

At the eight meeting of the Paris Commission (Madrid, June 1986) it was decided to carry out a pilot project to test methods for estimating transport of pollutants from rivers to marine areas. The Norwegian part of the pilot study comprised the two rivers Glomma and Skienselva (Fig. 1). The project was carried out from August 1986 to August 1987, and reported in October 1987 (Lingsten, 1987).

At the Tenth Meeting of the Paris Commission (Lisbon, June 1988) the principles for the comprehensive study on riverine inputs were accepted. It was then decided to commence the study with measurements carried out in 1990, and continue the work in the following years (PARCOM, 10/3/2).

The purpose is to provide the Commission with an assessment of the waterborne inputs to Convention waters. Besides riverine inputs, the information sought also relates to direct discharges.

1. Objectives of the Comprehensive Study

1.1 To assess, as accurately as possible, all riverborne and direct inputs of selected pollutants to Convention waters on an annual basis. Inputs from lakes, polders and storm overflows are to be included where information is available.

1.2 To contribute to the implementation of the JAMP by providing data on inputs to Convention waters on a sub-regional and a regional level.

1.3 To report these data annually to the OSPAR Commission and:
a. to review these data periodically with a view to determining temporal trends; and
b. to review, on the basis of the data for 1990 to 1995 whether the Principles of the Comprehensive Study on Riverine Inputs require revision.

1.4 Each Contracting Party bordering the maritime area and, excluding the EC, should:
a. aim to monitor on a regular basis at least 90% of the inputs of each selected pollutant;
b. provide, for a selection of their main rivers, information on the annual mean/median concentrations of pollutants resulting from the monitoring according to paragraph 1.4a; and
c. as far as is practicable estimate inputs from diffuse sources, direct sources and minor rivers complementing the percentage monitored (cf. paragraph 1.4a) to 100%.

PARCOM Recommendation 88/2 stipulates that Contracting Partiees should "take effective national steps in order to reduce nutrient inputs into areas where these inputs are likely, directly or indirectly, to cause pollution, and to achieve a substantial reduction (of the order of 50%) in inputs of phosphorus and nitrogen to these areas between 1985 and 1995".

At the third International Conference on the Protection of the North Sea States in 1990, Ministers agreed that discharges of selected persistent organic pollutants to the whole North Sea area are to be reduced by 50-70% depending on the micropollutant in question.

2. RIVERSYSTEMS INCLUDED IN THE STUDY

2.1 General aspects

The length of the Norwegian mainland coast line including fjords and bays is 21347 km, and the length of the islands' coast line is 35662 km. (Table 1). Because of the length of the coast line, the great numbers of rivers, and retention processes in the fjords, in- and out-washing areas, monitoring of riverborne pollutants in Norway faces quite a few problems with respect to assessing their impact on coastal waters. Further, to measure 90 % of the load from the Norwegian rivers, a great number of rivers would have to be included, which would be extremely expensive. It was therefore decided that 8 of the major load bearing rivers should be monitored in accordance with the objectives of the comprehensive study. Further it was decided that 2 "unpolluted" rivers should be monitored at a reduced, but appropriate frequency. In these 10 rivers a number of investigations have been carried out during many years, and they have all been included in the National Monitoring Programme of Watercourses (SFT, 1980 - 1998).

These investigations have mainly concentrated on nutrients. Hence data on the load of the nutrients are satisfactory, while the data on heavy metals and persistent organic pollutants are rather insufficient. In addition to the ten rivers it was decided to estimate the load of 145 other rivers (tributaries) based on other 1998-monitoring programmes, and existing knowledge of the river systems concerned, supplemented with random samples taken in 1998.

The total drainage area of these monitored rivers is 229152 km², while the total area of mainland Norway is 323878 km² (Table 1). Totally 306747 km² of the drainage area is included in the investigation, of which 75 per cent is river monitored (Tables 4 and 5). It was of special importance to estimate the major loads to Skagerrak. In this region the monitored rivers and tributaries cover 94 per cent of the total area, whereof the main rivers alone 80 per cent.

The coastline is divided into subareas/-regions, comprising the drainage basins of the ten main rivers with tributaries, as shown in Fig. 1. Each subarea relates to one of the four discharge-/sub-regions (Fig. 1 and I.I-I.IV (Appendix I, Report B)) which are divided as follows (see also Table 4):

Barents Sea : From the Russian border (about $70^0$30"N, $70^0$30"E), to about $70^0$30"N, 21^0E

Norwegian Sea: Southwards of $70^0$30"N, to about 62^0 N

North Sea : Southwards of 62^0 N, to the Swedish border

- Skagerrak : From Lindesnes (the southernmost point of Norway), about $57^0$44"N to Sweden about $58^0$58"N, 11^0E.

Some key information about Norway and the adjacent oceans is given in Table 1.

Table 1. Norway: Population, areas and length of coastline.

Population	4.4 million
Area:	
- Mainland Norway	323878 km²
- The whole country incl. Svalbard and Jan Mayen	386958 km²
Coastline:	
- Length of the continental coastline	21347 km
- Not including fjords and bays	2650 km
- Length of the islands' coastline	35662 km

2.2 Riversystems monitored

The rivers chosen for the comprehensive study are the same as in 1990-1997 and presented in Table 2 and Fig. 1. The rivers marked 1 to 5, represent the major load bearing rivers in Norway. As mentioned in chapter 2.1, it was of special importance to estimate the major loads to Skagerrak (Fig. I.I, Appendix I, Report B) which is an important part of the North Sea, and considered to be most susceptible to pollutions. The five rivers (No 1 to 5) drain into the Skagerrak area. River Suldalslågen (No 7) and river Alta (No 10) are "unpolluted" riversystems where actual measurements have been carried out at a reduced frequency.

Orreelva (No 6) is draining the most intensive agriculture area in Norway especially concerning domestic animals (milk and meat production). Discharges from manure stores and silos together with area runoff from heavily manured fields are causing great problems (eutrophication, including toxic algal blooms) both in Orreelva and in the other water bodies in this area.

Orkla (No 8) is also draining agriculture area, but farming in this part of the country is rather extensive compared to the Orre area. More important in this area is the abandoned mines even if situated in the upper part of the watercourse. Several other rivers in this area also receive waste-water from abandoned mines (heavy metals).

Vefsna (No 9) is a watercourse where the runoff in periods is carrying quite a lot of suspended solids and as such is comparable with other rivers in this part of the country.

Fig. 1.
Norway. Main rivers and tributaries with drainage basins, the whole country divided into four discharge regions.

Source: Norwegian water recources and energy administration.
Design: NIVA.

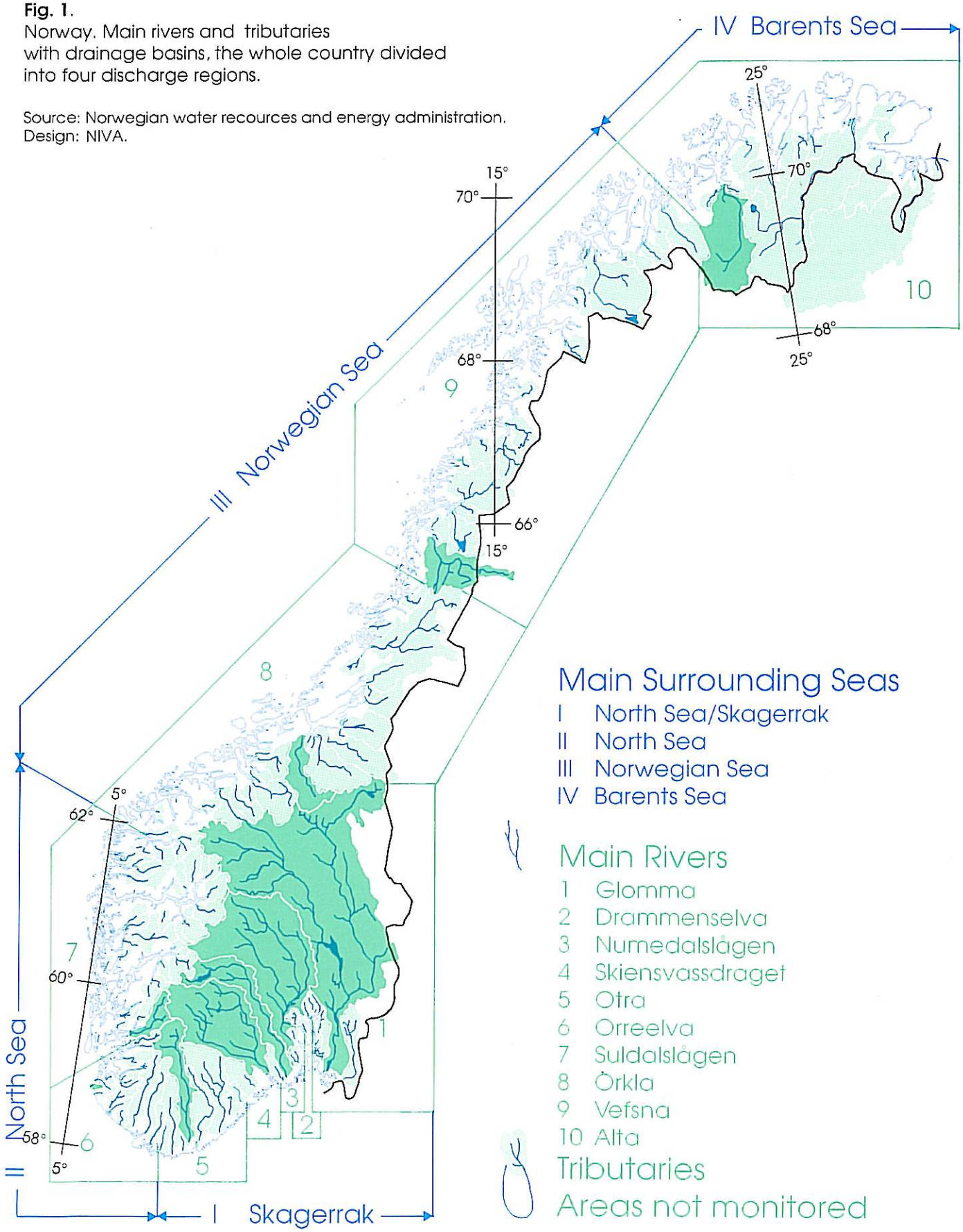


Table 2. The main rivers with catchment areas and long term average flow (LTA) 1961-90.

No	River	Catchment area, km^2 (at outlet)	LTA 1000 m^3/day (at outlet)
1	Glomma	41.918	61350
2	Drammenselva	17.034	28850
3	Numedalslågen	5.577	10200
4	Skienselva	10.772	23535
5	Otra	3.738	12870
6	Orreelva	105	335
8	Orkla	3.053	5710
9	Vefsna	4.122	15655
7	Suldalslågen	1.457	7420
10	Alta	7.373	7495
Total		95.149	

The ten water courses are all representing typical river systems in different parts of the country. As such they are very useful when estimating loads of comparable rivers, i.e corrections and adjustments in the estimates of loads of tributaries, which are based on fewer data than the main rivers.

All these watercourses except Orreelva are regulated for hydroelectric power production.

2.3 Other riversystems included (tributaries)

In additon to the ten main rivers, it was determined to assess inputs from the same 145 river systems as in 1990 - 1997 (Fig. 1) using "best estimates" of concentrations and flows. In total all Norwegian rivers with catchment areas larger than 500 km^2, and several of the minor rivers (streams) also are included in the 1998 study. Some information about these rivers are shown in Tables 8.1-8.2 (Appendix VIII, Report B).

3. METHODOLOGY

3.1 Methodology for assessment of riverine inputs

In carrying out the Survey, the methodology described in the Commissions Document "Principles of the Comprehensive Study on Riverine Inputs" (1988 and 1993) and in the 1990-Report from Norway (Holtan et al., 1991*), was followed. *In this document hereafter refered to as "The 1990-Report".

As for "Site selection" we refer to the abovementioned documents, but have chosen to repeat most of the text concerning "Sampling strategy and frequency", only with necessary adjustments.

The original programme of 1990-1992 was reduced in 1993.

In all main rivers, except Suldalslågen and Alta, 12 samples have been taken at regular monthly intervals during the sampling period from January to December 1998, as described in PARCOM 10/3/2.

For the "unpolluted" rivers Suldalslågen (No 7) and Alta (No 10), where, on the basis of existing knowledge, the concentration levels are very low, the requirement of 12 data sets per annum was found too stringent. These rivers were therefore sampled 4 times per annum. This sampling strategy should be sufficient enough to obtain a reliable estimate of the pollution load for these two rivers.

In 7 of the main rivers the parameters lindane and PCBs have been monitored twice in 1998, in the other 3, only once.

For the other rivers (tributaries), the concentrations are partly based on samples taken at the "standard" frequency (12, i.e. monthly, or more data sets per annum), which is the case for most rivers in the Skagerrak region. As for the rivers draining to the rest of the North Sea, all except one in the Orre area and two in the Suldalslågen area were sampled et least once in 1998. Two other rivers in this area (Lærdals- and Hornindalselva) were sampled and analysed for nutrients, particular suspended matter and conductivity. The concentrations are based on measurements of these samples and compared with samples from the last decade. With regard to the three rivers not sampled in 1998, most data are from samples gathered/analysed in 1997.

For the rivers draining to the Norwegian Sea, 15 of the 24 rivers in the Orkla area and all rivers in the Vefsna area were sampled and analysed at least once. Concerning rivers draining to the Barents Sea samples from all rivers except one (Mattusjåkka) were gathered and analysed in 1998. These samples were analysed for all "OSPAR" parameters, except, PCBs and lindane.With regard to the rivers not sampled (13 altogether) and the parameters not analysed in 1998, most data are from samples gathered/analysed in 1997.

PCBs and lindane were only sampled/analysed in 2 of the Oslo rivers in 1998. As for Hg, this parameter was analysed at least once in all rivers mentioned above. For rivers not sampled/analysed for lindane and PCBs, the concentrations of these parameters are estimated on the basis of knowledge about the activity in the different drainage areas, the findings from the main rivers and samples/-analyses from these areas in 1990-1997 (paragraph 3.2.1).

The sample frequency for the main rivers is shown in Table 3.

Table 3. Sampling sites and frequency of the main rivers.

River/Location	J	F	M	A	M	J	J	A	S	O	N	D
Glomma at Sarpsfoss	x	x	x	x	x	x	x	x	x	x	x	x
Drammenselva upstream outlet	x	x	x	x	x	x	x	x	x	x	x	x
Numedalslågen at Bommestad	x	x	x	x	x	x	x	x	x	x	x	x
Skienselva at Klosterfoss	x	x	x	x	x	x	x	x	x	x	x	x
Otra upstream outlet	x	x	x	x	x	x	x	x	x	x	x	x
Orre upstream outlet	x	x	x	x	x	x	x	x	x	x	x	x
Orkla at Vormstad	x	x	x	x	x	x	x	x	x	x	x	x
Vefsna upstream Mosjøen	x	x	x	x	x	x	x	x	x	x	x	x
Suldalslågen upstream outlet		x				x		x		x		
Alta upstream Alta			x			x		x		x		

In 1998 the water samples were taken by local persons as in 1990 - 1997. The persons were carefully instructed in advance. The samples were sent to the laboratory at NIVA immediately after sampling, usually arriving at NIVA within 24 to 36 hours later.

3.2 Parameters monitored and analytical methods

3.2.1 Chemical parameters - detection limits and analytical methods

In 1998 the following parameters were monitored in accordance with the mandate: 5 nutrients (total phosphorus, orthophosphates, total nitrogen, ammonia and nitrates), 6 metals (copper, zinc, cadmium, lead, nickel and mercury), 1 pesticide (lindane) and a general parameter (suspended particulate matter, S.P.M.). PCBs were to be monitored on a voluntary basis for the 7 congeners (IUPAC numbers 28, 52, 101, 118, 138, 153 and 180).

As detailed information on methodology and obtainable limits of detection for all measured parameters were given in the 1990-Report, only new or improved methods will be described in this report.

As informed in the 1990-Report, the detection limits of the parameters Cd and Pb at the NIVA laboratory were above those requested from PARCOM. All Cd-, Pb- and also Cu- and Zn-samples from 1992 therefore have been analysed at the Norwegian Institute for Air Research (NILU) where metal determinations are performed on an ICP-MS-instrument (NILU, 1990). On this instrument the recommended detection limits from Parcom (Cd: 10 ng/l, Pb: 0.1 µg/l) are obtainable.

According to the document "Principles of the Comprehensive Study of Riverine Inputs and Direct Discharges" (Paris Commission, 1988), it is necessary to choose an analytical method which gives at least 70 % of positive findings (i.e. above the detection limit).

In 1998, there were six of the main rivers with more than 70 % positive Cd-findings in the samples (92-100%). For two of the other main rivers, the positive Cd- findings were 67 %, but were only 33 % in one and none at all in one river. As for Pb, all findings were positive in the main rivers (100 %). For the tributaries draining to the Skagerrak area, 92% of the Cd-samples were above the detection limit, and in the area draining to the rest of the North Sea, 58%. For the Pb-samples, all but two findings were above the detection limit. In the Norwegian Sea area, 21 % of the Cd-findings were positive, and in the Barents Sea area 31 %. More than 70% of the Pb-findings, however, were above the detection limit in both areas.

From 1993, the limit of detection has been lowered from 2 to 1 ng/l (mercury) and from 0.05 to 0.03 ng/l (PCBs). This is a result of refinement and optimalisation of the methods. Even then, most Hg-findings in the 1998-samples from the main rivers were below the detection limit (17 to 92 % positive findings). Only in 2 rivers more than 70 % of the values were above the limit (Glomma, 92 % and Numedalslågen, 75 %). In the findings from the "Skagerrak" rivers, 17 out of 24 river samples were higher than the detection limit (70 %). As for the other main and tributary rivers, there were problems to obtain representative values for mercury, as they were below the detection limit during most of the investigation period. This was also the case for PCBs. For these parameters, most of the measured concentrations were extremely low, and certainly below the "PARCOM-detection limits" (Appendix VII - VIII, Report B).

We have not been able to explain why many of the findings regarding the Hg-values measured in 1997 and 1998 were lower than recent years findings/lower than the detection limit. This is either due to the use of a new instrument for analysing mercury ("FIMS-400") which is supposed to be more sensitive than the previously used instrument, or due to special weather conditions. The matter will be further studied.

However, we assume that these difficulties do not affect the main results and conclusions of the 1998-study. In those cases were the results recorded were lower than the limits of detection, two load quantities have been estimated, one assuming that the true concentration is zero and the other assuming that the true concentration is the limit of detection. This provides maximum and minimum concentrations within which the true estimate will fall. When used to evaluate inputs these data provide upper and lower boundaries for the estimate.

Occasionally on a voluntary basis, the metals arsenic, total chromium and vanadium have been determined in some of the samples from the main and tributary rivers and are stipulated for others (Report B). These parameters also were determined on ICP-MS at NILU.

3.2.2 Method used to estimate flow rate

For the period 1931-60 the annual specific runoff from the total area of Norway is estimated at 42.9 l/s km^2. Expressed in volumetric units this amounts to 438 km^3 water, which distributed over the whole country equals a mean runoff of 1350 mm. Mean annual runoff in Norway and from the sub-regions to the main surrounding seas for the period 1931-60 are shown in Table 4. For the main rivers mean annual runoff for the last LTA-period (1961-90) have been estimated. These values are preliminary and will be adjusted when edited and published by NVE, probably next year. For the main rivers mean annual runoff (1931-60 and 1961-90) together with annual runoff for the years 1985, 1990-1998 are shown in Fig. 2, mean annual and annual precipitation for the same stations and periods in Fig. 3. As for precipitation, normals for Norway based on the LTA-period 1961-90 were published in 1993 (DNMI, 1993).

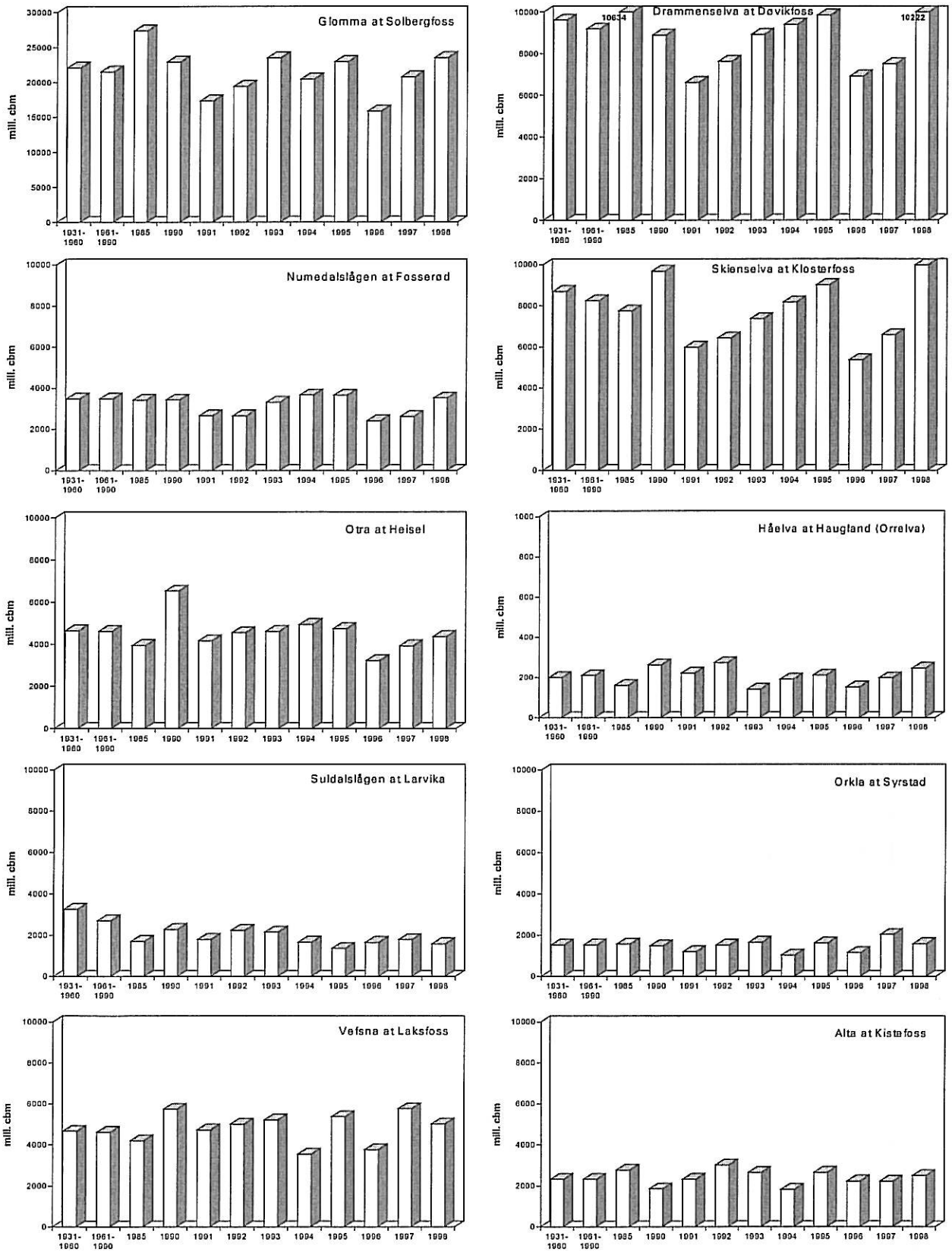
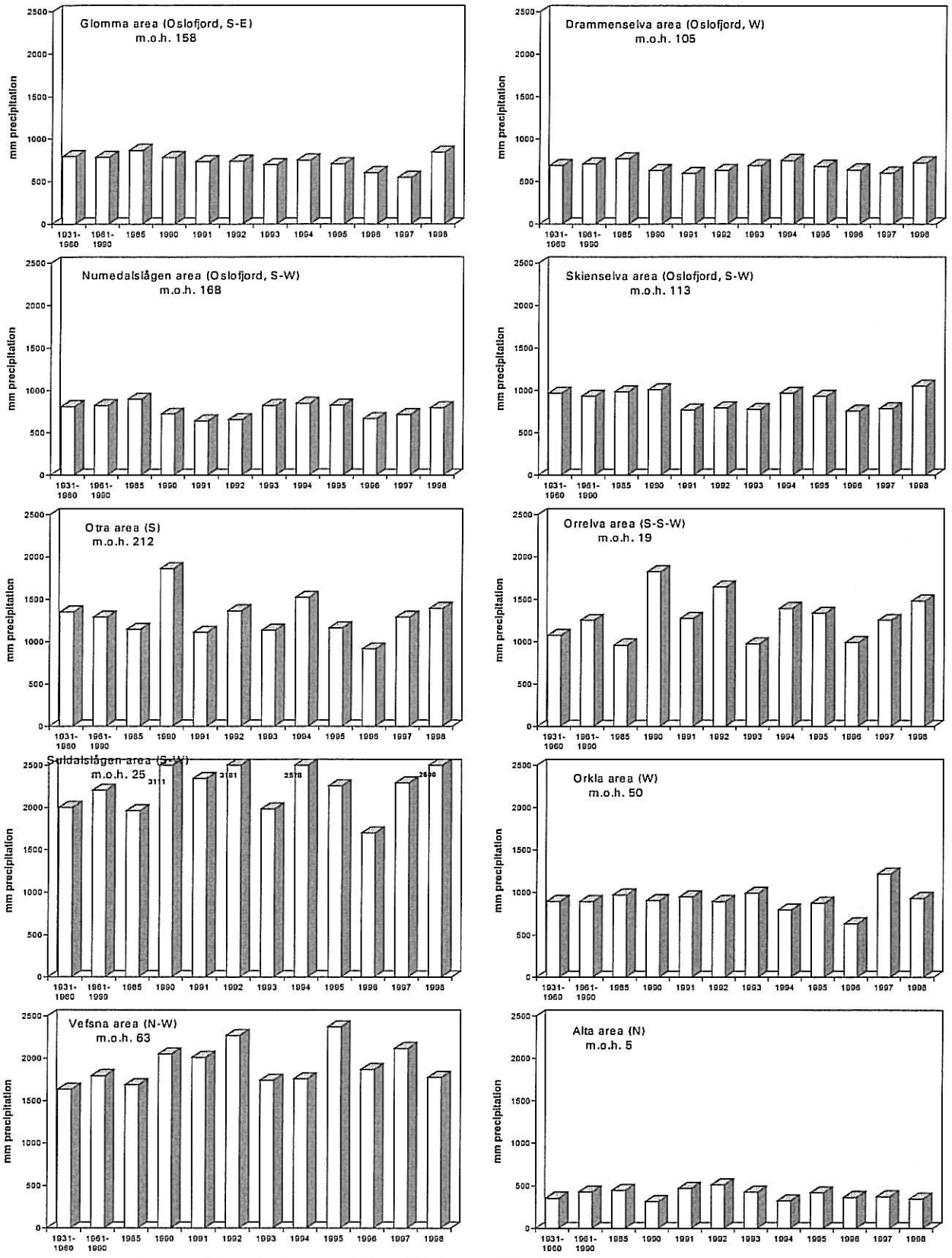


Fig. 2 Main Rivers. Mean Annual Runoff (1931-60 and 1961-90) and Annual Runoff for the Years 1985, 1990-1998 (mill. cbm.).
Source: Norwegian Water Resources and Energy Administration



S = South E = East W = West N = North

Fig. 3 Main Rivers. Mean Annual Precipitation (1931-60 and 1961-90) at Stations near Outlet and Annual Precipitation in the Years 1985, 1990 - 1997 (mm/year).
Source: The Norwegian Meteorological Institute

Table 4. Mean annual runoff (1931-60) from the subregions to the main surrounding seas. (Fig. 1 and Appendix I, Report B).

Subregions	Main Seas	Drainage area, km^2	Runoff, mill. M^3
The Swedish border - Lindesnes	Skagerrak	98699	57934.47
Lindesnes - Stad	North Sea	138902	164875.88
Stad - the border of Finnmark	Norwegian Sea	94704	231928.67
Finnmark - the border of Sovjet	Barents Sea	73141	41462.90
Total		306747*	438267.45

At a given location the runoff will change from one year to another and throughout the year. In natural river basins the seasonal variations will depend mostly on the distance from the coast, the altitude and the latitude, and on variations in precipitation. The mean discharge is determined both by the precipitation and the catchment area. Along the coast of Southern and Western Norway the summer low flows are usually dominant together with high runoff in autumn and winter. Thus although Western Norway has much more precipitation than Eastern Norway, its smaller catchment areas lead to much less absolute discharge in western rivers. In the central part of Southern Norway and in the Northern part of the country low water flows are typical both in summer and winter, whereas periods of higher runoff will appear during the snow melting period (spring and early summer). In late summer and in autumn the flow depends on the precipitation and may therefore vary considerably.

In all main rivers continous observations of the rate of flow are collected. For most rivers these stations are located upstream the sampling stations (NVE, 1998). The additional water supplied is estimated using measured rainfall data from the local catchment areas (DNMI, 1998).

With regard to the river Orkla the runoff station was changed from Vormstad to Syrstad in 1993 as we were recommended by NVE to do so. According to NVE this station is more reliable than Vormstad.

For all main rivers, seasonal changes in runoff in the period 1961- 90, together with mean runoff in 1998, are shown in Fig. 4. In Fig. 5 monthly precipitation for the same period together with mean precipitation in 1998, are shown.

For the other rivers (tributaries) the runoff data partly are from continous observations as the case is for most rivers in the Skagerrak area, and also for many of the rivers draining to the remaining North Sea. For the rest of the rivers mean runoff data (1931-60) and measured rainfall data (1998) are used for flow estimates.

* The difference between the total area and the area given in Table 1 is due to rivers that drain into the neighbouring countries (Sweden, Russia and Finland).

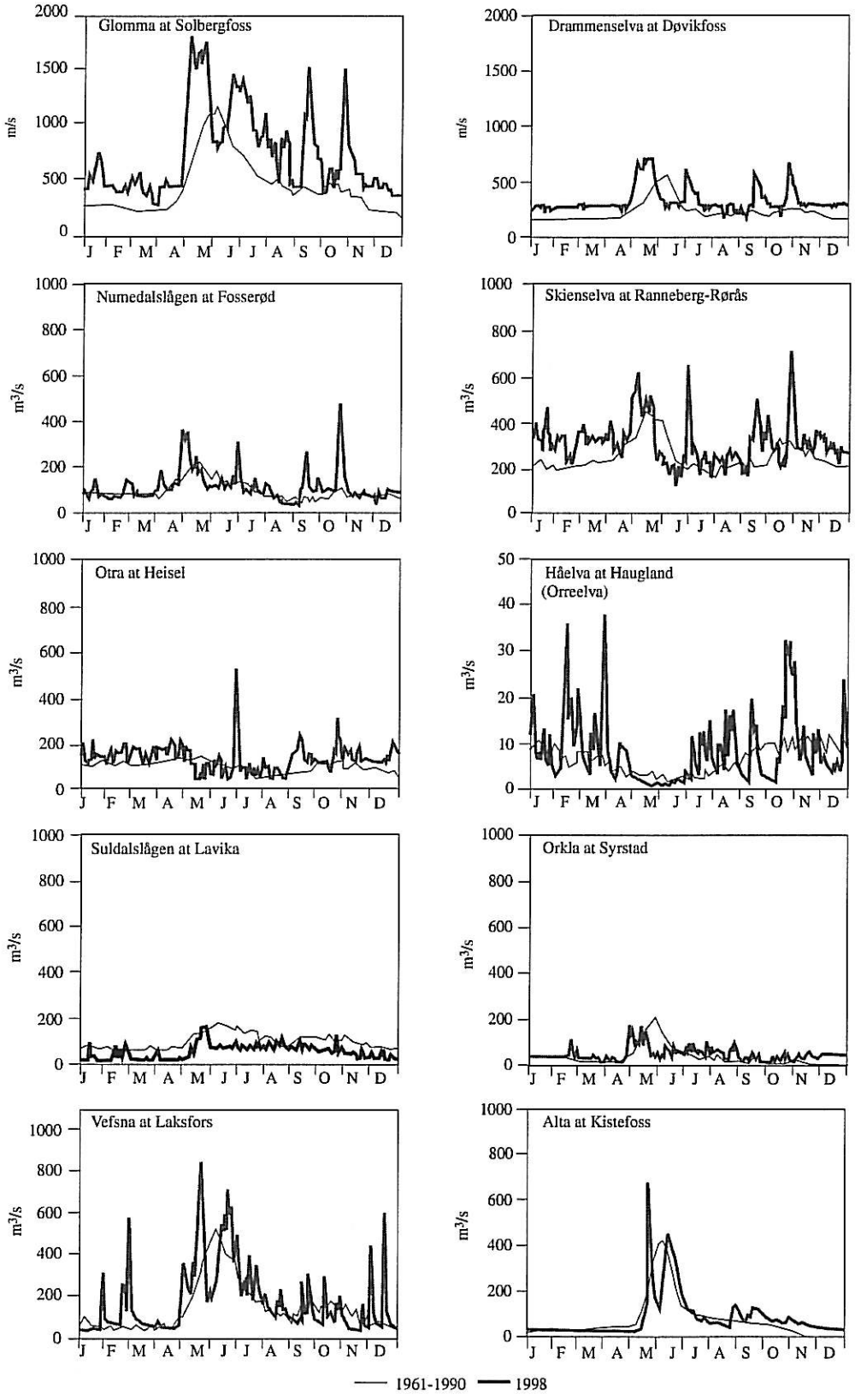
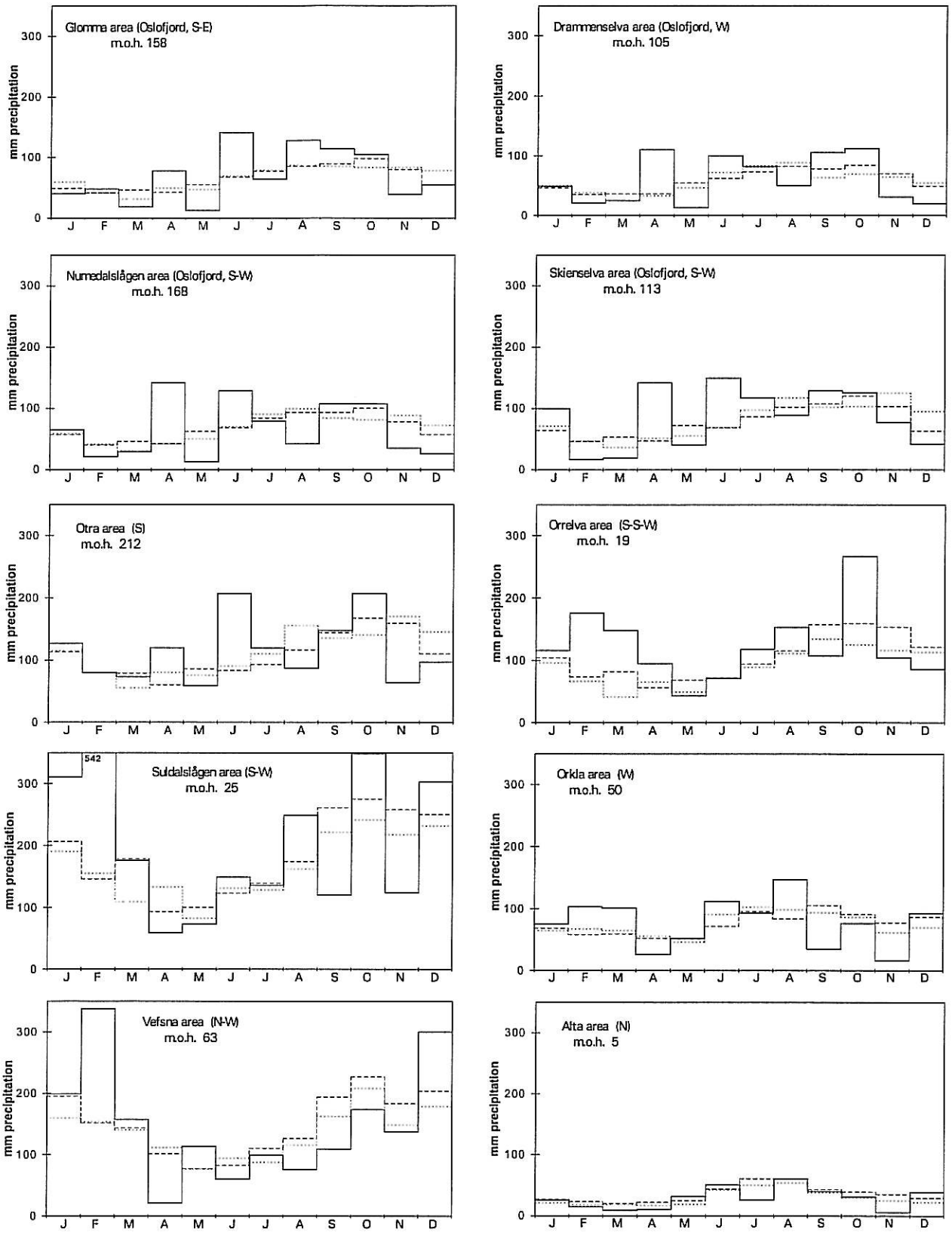


Fig. 4 Seasonal Changes in Daily Runoff (m^3/s).
Source: Norwegian Water Resources and Energy Administration



S = South E = East W = West N = North

Fig. 5 Monthly Changes in Precipitation (mm/month).
(m.o.h. = meters above sea level)
Source: The Norwegian Meteorological Institute

3.2.3 Calculation of annual load

The first of the 2 formulas given in the Paris Commission document and the 1990-Report (Holtan et al., 1991) was used for calculating loads for all main rivers and most of the larger rivers.

This equation is a formula suited for estimating annual load when sampling dates are evenly spaced in time. Essentially it expresses the annual load (L) as the product of a flow weighted estimate of annual mean concentration and annual flow (Qa). Then the annual load estimate can be strongly biased if the sampling frequency increases during periods of high flow. Incidents with high flow will have a great influence on the estimate, and high concentrations during such periods will eventually lead to an overestimated annual load. A better method for estimating annual load when the sampling frequency increases with flow would be to use the above mentioned formula to make estimates of monthly loads and sum these to an estimate of annual load. 1995- and 1996-data from Glomma and Drammenselva areas were treated in this way.

The second formula was used where continous records were not available.

For the other rivers, which have been monitored only once, the best available estimates of flow (catchment area multiplied by specific runoff adjusted for deviations from normal precipitation) and flow- weighted concentrations have been used to estimate contaminant loads.

Drainage basins to the different areas and regions (km^2 and per cent) are shown in Table 5.

Table 5. **Drainage areas of monitored main and tributary rivers and down stream areas (km^2 and per cent monitored/estimated in each subarea and subregion).** (Fig. 1, Figs. I.I-I.V, Report B)

Sub-regions	Sub-areas	Drainage area of monitored rivers km^2		Down Stream areas km^2	Total km^2	Monitored %
		Main	Tributary			
Skagerrak	No 1: Glomma	41218	2389	2416	46023	94,8
	" 1: Inner Oslofiord		959	342	1301	73.7
	No 2: Drammenselva	17028	226	320	17614	98.2
	No 3: Numedalslågen	5513	1043	631	7187	91.2
	No 4: Skienselva	10348	1200	1283	12831	90.0
	No 5: Otra	3730	9109	904	13743	93.4
Total		77837	14966	5896	98699	94.0
The remaining North Sea	No 6: Orre	105	7233	2513	9851	74.5
	No 7: Suldalslågen	1466	16205	12681	30352	58.2
Total		1571	23438	15194	40203	62.2
The Norwegian Sea	No 8: Orkla	2680	28118	17036	47834	64.4
	No 9: Vefsna	4113	23907	18850	46870	59.8
Total		6793	52025	35886	94704	62.1
The Barents Sea	No 10:Alta	7367	45155	20619	73141	71.8
Total		93568	135584	77595	306747	74.7

3.3 Methodology for assessment of direct discharges to marine waters

As the methodology for assessing direct discharges to marine waters is outlined in the 1990-Report (Holtan et al., 1991), and the same procedure is applied for 1998, we refer to the above mentioned document for further information on this matter.

3.3.1 Waste water treatment plants/sewage effluents

The Central Bureau of Statistics (SSB) and SFT have jointly initiated annual registration of data from all waste water treatment plants in the country with a capacity of more than 50 inhabitant equivalents (I.E:). The data are updated each year by the County Environmental Agencies. The computer program SSB-AVLØP has been installed at all county governors' environmental agencies, which are responsible for collecting effluent data from the municipalities. The county environmental agencies then send the data to SSB on disc. Since 1994 onwards, the reporting system SSB-AVLØP has been extended also to include data on scattered settlements. Discharge figures from SSB-AVLØP are reported to NIVA. NIVA uses these figures in the model "TEOTIL" to calculate the total discharges of phosphorus and nitrogen to Norwegian coastal waters. The figures take into account retention in watercourses.

In 1997, 2.260 municipal waste water treatment plants with a treatment capacity of at least 50 I.E. were registered in Norway. Their total treatment capacity was 5.4 million I.E. The 17 largest plants each had a capacity of 50.000 I.E. or more, and they treated almost half of all municipal waste water. Only 2 of these large plants are based on mechanical purification. In Eastern and Southern Norway a large proportion of the municipal waste water is purified in "high grade" plants. Such plants account for 94 per cent of total treatment capacity in this area. These areas as well as Sør Trøndelag, are also the areas with the highest hydraulic capacity per inhabitant. For example, the plants serving Oslo/-Akershus have a capacity of more than 1.5 I.E. per inhabitant. Along the coast from Rogaland county and northwards, most waste water is only mechanically treated, and highgrade treatment plants account for only 24 per cent of total hydraulic capacity. Fjords are the recipients of the discharges from about 65 per cent of the total capacity of the plants (SSB, 1999).

Preferably, the annual loads from sewage effluents have been estimated as the product of annual flow and flow-weighted concentrations, which previously in particular has been the case for the sewage plants situated in the Skagerrak area i.e. the area involved in the North Sea Agreement, but from 1994 has come into force for most plants.

For the rest of the municipal wastewater, the loads were estimated by multiplying the number of people with the coefficients listed.

For crude (untreated) sewage discharges, the document "Principles of the Comprehensive Study of Riverine Inputs and Direct Discharges" (Paris Commission, 1988), recommends the following derived per capita loads to be used:

	PARCOM:			NORWAY:		
BOD	0.063	kg	O/person/day	0.046	kg	O/person/day
COD				0.094	kg	O/person/day
TOC				0.023	kg	/person/day
SPM	0.063	kg	/person/day	0.042	kg	/person/day
Total N	0.009	kg	N/person/day	0.012	kg	N/person/day
Total P	0.0027	kg	P/person/day	0.0016	kg	P/person/day

The Norwegian coefficients are based on recent studies of Norwegian sewerage districts. These data are also used to calculate pollutional loads from the different treatment plants, reduced by the removal efficiency of the treatment plants. Municipal sewage also includes a portion of industrial effluents. The fraction of the total person equivalents (p.e.) is proportioned between sewage and industrial wastewater according to the number of persons and the size of industrial effluents connected to each treatment plant.

For metals in sewage discharges the calculated loads are based on measured concentrations and flows in larger treatment plants in the Oslo part of the Glomma area. Metal inputs from the rest of the country are estimated from local knowledge (*) as follows:

Substance	Cu	Zn	Cd	Pb	Cr-T	Ni	Hg
mg/person-equivalent/day (p.e.)	30	35	0.2	1.0	2.9	5.0	0.10

The coefficients used in 1998 are the same as those used for calculations in 1992 - 1997. The coefficients are based on the results of an investigation on this topic launched by SFT (1993), i.e. monitoring at different types of treatment plants especially in the Oslo part of the Glomma area. Measured/estimated loads from sewage are shown in Appendix II, Report B.

* Sources: Knutzen and Øren (1983), Myhrstad (1985), OVA (1999), SFT (1993), VEAS (1999),

3.3.2 Industrial effluents

Sampling frequency for industrial wastewater varies from weekly mixed samples to samples taken at random, but at least twice a year. Measured and estimated loads from industrial activities in the different areas are shown in Appendix III, Report B. According to SFT about 90 per cent of the industrial discharges (i.e. of the substances in question) are included in the total, and probably more for Total-P and Total-N.

3.3.3 Other inputs

(nutrients in area runoff from "Down Stream areas" of main and tributary rivers and rivers not monitored)

The pollution load model calculates the load from each pollution source by using area and activity specific load coefficients multiplied by areas (in square kilometres) of different categories and activity numbers, eg. population (Holtan and Åstebøl, 1990). The coefficients used are prepared according to precipitation, climate, vegetation and soil in the different areas.

To estimate load from agricultural land area runoff, coefficients in the range of 50-200 kg Total-P and 2000-6500 kg Total-N km²/year are used depending on point sources, location of the agricultural land in relation to major tributaries, and agricultural production intensity. Load from upland (remote unpolluted) areas were estimated by using export coefficients in the range of 4-6 kg Total-P and 200-600 kg Total-N km²/year. The highest values were used in areas most affected by long range pollution (acid rain) along the Southern and Western coast. The coefficients are based on mean annual runoff for the period 1931-60.

Total direct nutrient discharges (Down stream areas) are shown in Table I (Appendix I, Report B), in the different subareas (1-10) in Appendix VI, Report B. Direct discharge areas (km²) are shown in Table 5.

4. RESULTS AND DISCUSSION

4.1 Pollutants

Norwegian watercourses, coastal fjords and sea areas are recipients for various substances discharged from many different sources. The discharges may have widely different impacts of varying severity.

In this investigation riverine and direct inputs of nutrients (P- and N-compounds), heavy metals, lindane and PCBs are measured or estimated. In addition to these contaminants the water is polluted by dissolved organic matter, especially from the pulp and paper industry and from municipal sewage, which also has been taken into account in this investigation.

The Norwegian Pollution Control Authority has given first priority to eliminate the effluents of 13 of the substances classified as micropollutants, which are in use in Norway, as quickly as possible. Most of the pollution is caused by industrial effluents, but other sources are municipal sewage, landfill leachate, and pesticide residues from agriculture.

Pollution by heavy metals is either due to discharges from industry, discharges from existing and abandoned mines, leaching from landfills or atmospheric fallout. The municipal sewage is the source of several heavy metals. Long range transboundary air pollution is another source of pollution both with respect to heavy metals and persistent organic pollutants.

Polychlorinated biphenyls (PCBs) are present in different industrial effluents and also released from discarded electrical equipment containing PCBs (e.g. transformer oil), when such equipment is unsatisfactorily stored or destroyed by incineration. No enterprises in Norway discharge PCBs regularly at present.

Municipal sewage and agriculture comprise the major sources of phosphorus and nitrogen pollution.

4.2 1998-results and discussion

The results given for riverine inputs (main rivers and tributaries) and discharges entering directly into marine recipients, are mainly based on direct measurements (paragraph 3.3).

Measured concentrations of the chemical parameters of the ten main rivers (1998), mean values, standard deviation and range are listed in Appendix VII, Report B. In the case of Cd, Pb, Hg and the different congeners of PCBs, where most of the rivers had concentrations below the respective detection limits, the concentrations are statistically treated as "limit-values". Total annual loads of the main rivers 1998 are shown in Appendix IV, Report B. Annual loads of nutrients and S.P.M. are also presented in Fig. 6. Total annual loads of the tributaries are shown in Appendix V, Report B. For the whole country, total annual loads (Direct discharges and Riverine inputs) are shown in Table I (Appendix I, Report B) and for the four subregions in Tables 1.1-1.4 (Appendix I, Report B), nutrients and S.P.M. also in Fig. 7.

As in 1990 -1997 the greatest emphasis with regard to accuracy has been given to the input estimate of the Skagerrak region, as this is considered the most sensitive part of the North Sea. In 1998, 25% of the P-load from the sources in Norway and 38% of the N-load were discharged into Skagerrak.

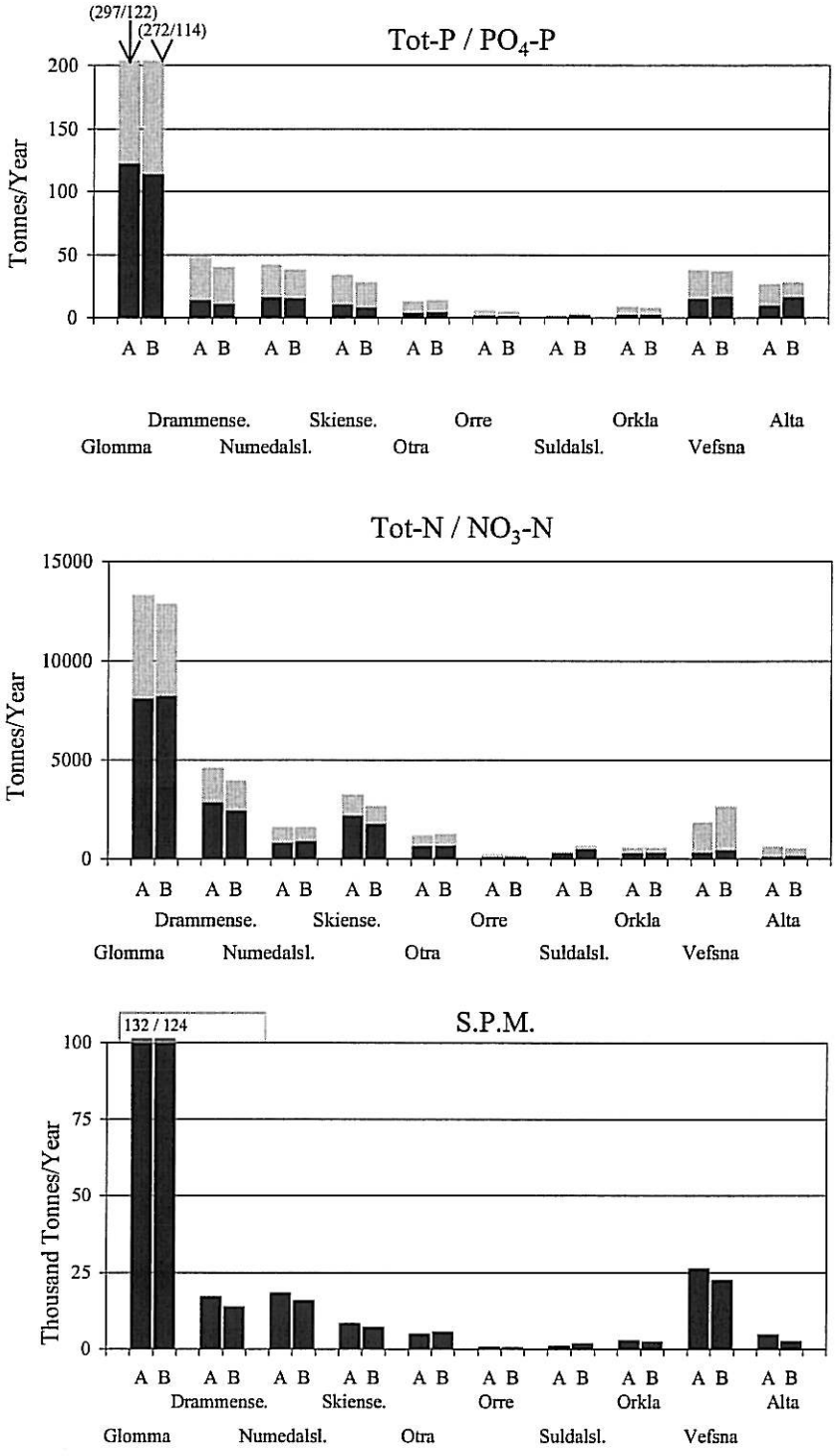


Fig. 6 Main rivers. Nutrients and S.P.M. Total loads 1998 (A) and Total normalized loads (B) in the different rivers.

Whole columns = Total P / N / S.P.M.
Dark hatching = Phosphates / Nitrates

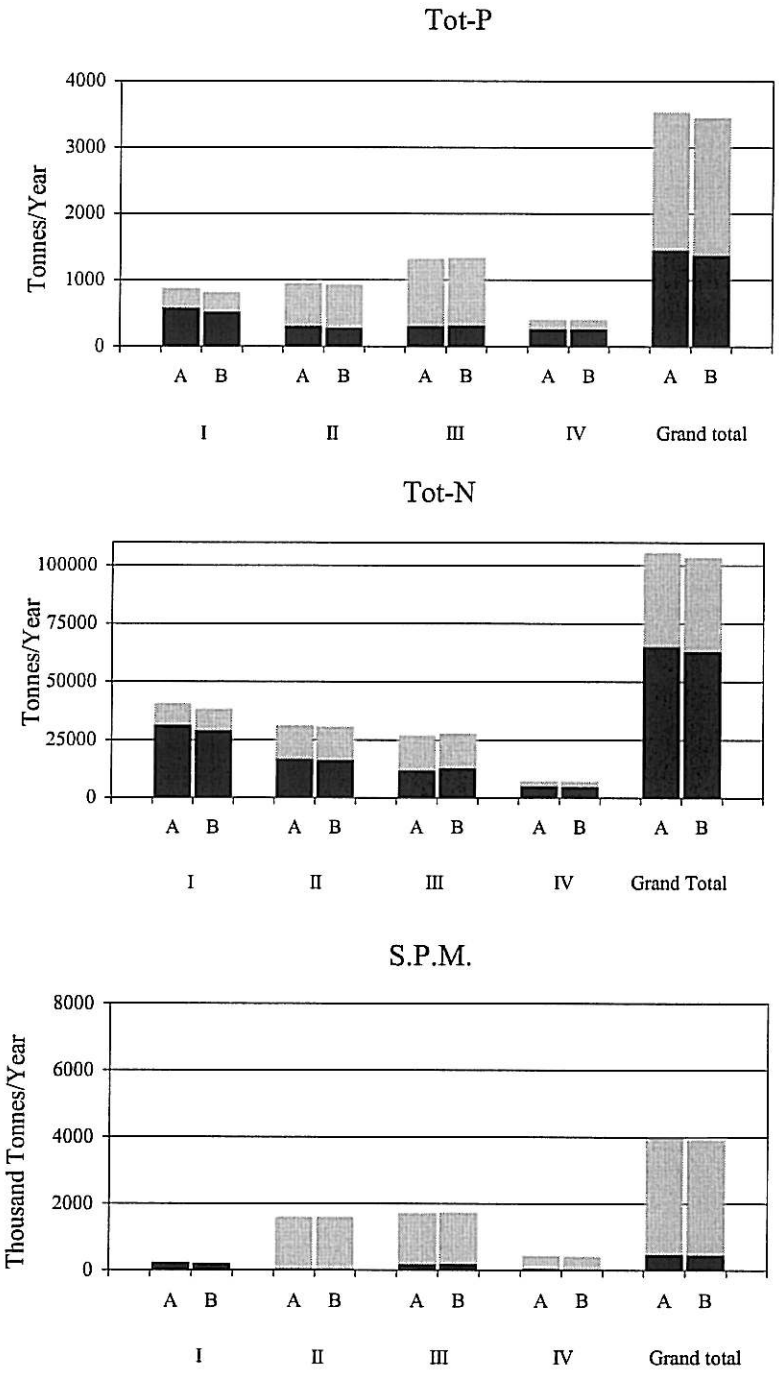


Fig. 7 Nutrients and S.P.M. Total and river discharges 1998 (A) and Total normalized loads (B) from mainland Norway to convention waters and the four subregions: I: Skagerrak, II: The remaining North Sea, III: The Norwegian Sea, IV: The Barents Sea.

Whole columns = Grand total
Light hatching = Direct discharges
Dark hatching = Main and tributary rivers

In this region where 94 per cent of the area is river-monitored, about 67 per cent of the P-load and 78 per cent of the N-load were found in the riverine inputs.

According to the results from the 1998 investigation, total annual nutrient load to coastal waters from landbased Norwegian sources, is approximately 3527 tonnes of phosphorus and 105.547 tonnes of nitrogen (Fig. 7). About 41 per cent of the phosphorus and 62 per cent of the nitrogen yield were inputs from the monitored rivers and tributaries. Copper and zinc comprised the largest inputs of heavy metals, which in 1998 amounted to about 308 and 1265 tonnes, of which 81 and 89 per cent respectively, were river monitored (Fig. 8).

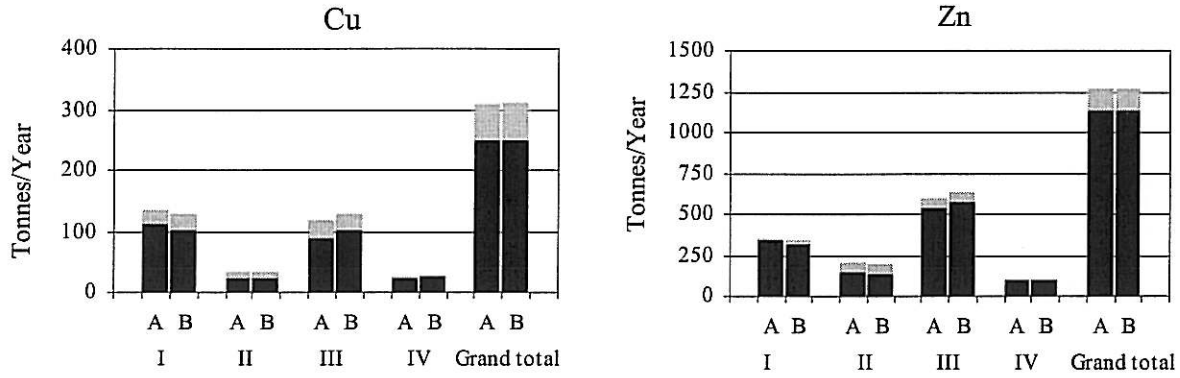


Fig. 8 Cu and Zn. Total- and river-discharges 1998 (A) and Total normalized loads (B) from mainland Norway to convention waters and the four subregions:
I: Skagerrak, II: The remaining, North Sea, III: The Norwegian Sea, IV: The Barents Sea

Whole columns	= Grand total
Light hatching	= Direct discharges
Dark hatching	= Main and tributary rivers

Inputs of other metals and persistent organic pollutants were low. As the detection limits of the parameters Cd and Pb at the NIVA laboratory were above those requested from PARCOM, all analyses from 1992 and onwards of these substances are analysed on an ICP-MS-instrument at NILU (paragraph 3.2). Still, quite a few of the concentrations found for these parameters in 1998 were below the detection limits. Therefore two quantities have been estimated, one assuming that the true concentration was zero and the other assuming that the true concentration was the limit of detection. This provides maximum and minimum concentrations within which the true estimate will fall. When evaluating inputs these data provide upper and lower boundaries of the estimate.

Inputs of cadmium were measured/calculated to be between 7.3 and 8.2 tonnes, lead between 149.1 and 149.2 tonnes and mercury between 2742 and 2839 kg. The same "below detection limit problem" applies for the inputs of mercury, and also for PCBs which were measured to be between 0.38 and 44 kg. In Fig. 9 the lower and upper loads of these substances in the ten main rivers are presented. The pesticide lindane was found in most analyses, but in small amounts. The findings of this substance in Norwegian rivers are likely due to long range air pollution, as we often find lindane in runoff from areas where the compound has never been used (Olav Lodhe, State Plant Protection Agency, pers. comm.). Total load is estimated to about 84 kg.

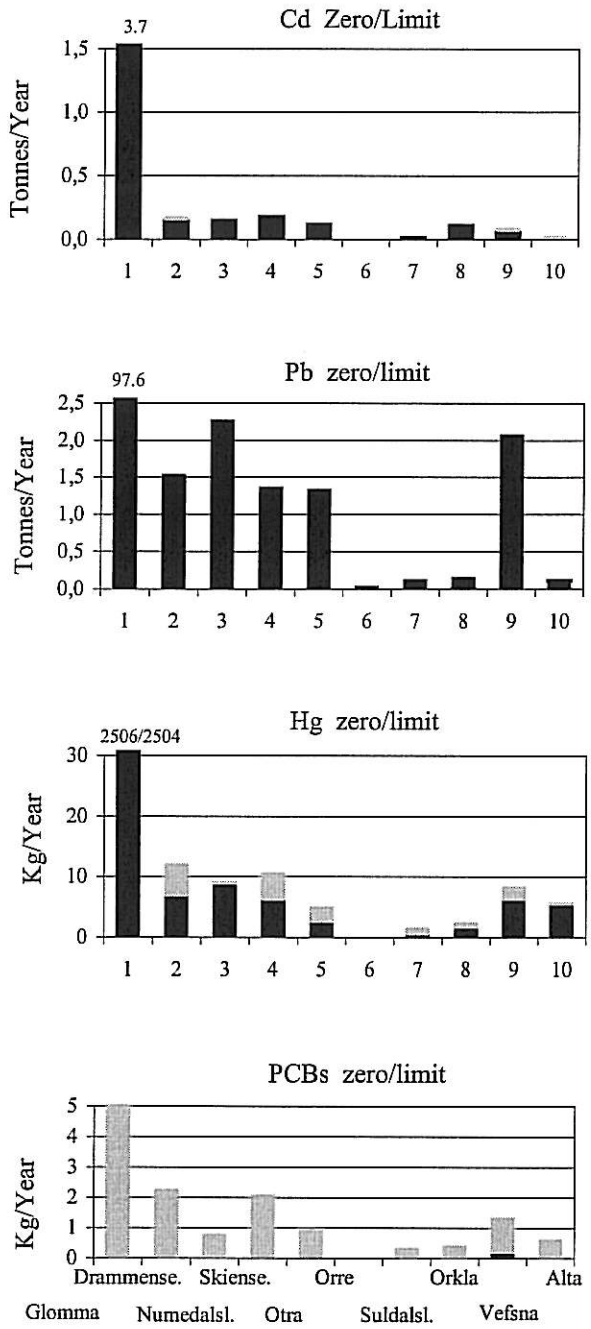


Fig. 9 Main rivers. Cd, Pb, Hg and PCBs. Total loads of the different rivers 1998 (lower and upper boundaries for the estimates).

Whole columns = upper boundary for the estimate
Dark hatching = lower boundary for the estimate

The relatively high load of Hg in 1998, is due to the large input from the river Glomma. Almost 90% of the total quantity is discharged with the river water. Twice in 1998 the measured concentrations of Hg were extremely high (915 and 730 ng/l, respectively) when compared to the maximum of 11 ng/l for the period 1990 – 1997 (Holtan et al., 1999). A finding of the study is that the largest quantities of mercury are usually transported in autumn and spring, i.e. during periods of high flow and when mercury levels in the water also reach their peak (see also SNV 1991). The highest values have often occured at the same time as the peak values of suspended particulate matter. The water level is often high during spring and autumn which might lead to overbank flooding with erosion of soil, for instance from the fibre banks of former pulp and paper industry discharges which may contain mercury. This may be part of the explanation at least for one of the high mercury records. For the second and highest value we have not found any good explanation. The samples were reanalysed with the same result. We have not found any error in sampling or analysis. A possible source for Hg in the lower part of Glomma should be investigated further.

In most areas the riverine inputs of Total-P and S.P.M were slightly lower in 1998 compared to 1997, mainly due to differences in precipitation/runoff-conditions (paragraph 4.3). Up north, in the Alta area, runoff/precipitation were higher and therefore also the P-, N- and S.P.M.-loads.

The input-values vary to a great extent with the volume of the discharges (Fig. 10). It is therefore difficult to say anything certain about altered pollution level in the different rivers, even if there may be indications of an improved situation for most rivers/most parameters. Trend analyses would be important and facilitate the matter, especially for the rivers having long time series of data. The period from 1990 to 1998 may be to short to identify a real trend.

Statistical trend analyses (by the recommended tool "trend-y-tector") on annual basis in inputs of nutrients and heavy metals are presented in Fig. 11 for the following rivers with long time dataseries: River Glomma (1978-1998), Total-P and Total-N, river Otra (1980-1998) also Total-P and Total N and river Orkla (1974-1998), Cu and Zn. The analyses show significant reductions in the yearly inputs of nutrients (Otra, P: 74%, N: 35%) and heavy metals (Orkla, Cu: 80%, Zn: 79%). As for Glomma there has also been detected a downword trend for Total-P (24%), but for Total N an upward trend of 19%. Here the high floods, especially in 1987 and 1995, were complicating the trend analyses.

4.3 Mean annual runoff (1931-60, 1961-90) and "mean load"

Mean annual runoff for the last LTA-period (1961-90) has been estimated (Fig. 2). For most main rivers the mean runoff 1961-90 is lower or at the same level as the 1931-60-period. However, the 1961-90 values are preliminary and may be adjusted when edited and published by the Norwegian Water Resources and Energy Administration. As for precipitation, new normals were published in 1993.

Compared to Riverine Inputs to Marine Waters in 1990 - 1997, most calculated mean concentrations were of the same level in 1998. Total flow for most "Skagerrak rivers, and accordingly the calculated loads for most of the substances were slightly higher in 1998 than in 1997. An exception is river Glomma with lower input of Total-P in spite of higher flow. This complies with the downward trend for Total-P which is presented in Fig. 11. As for the other main rivers (except Alta), total flow was lower, with lower calculated loads for most substances as a result.

Annual variations in precipitation/runoff, erosion and human activities in the drainage basins, strongly influence the mass transport in the watercourses. The transport values may vary considerably from one year to another. These variations are complicating the estimation of "normal transport values" i.e. mass transport in a "normal" year. Fig. 10 illustrates variations in annual runoff for the ten main rivers in 1985, 1990-1998, along with annual variations in total discharges of nutrients.

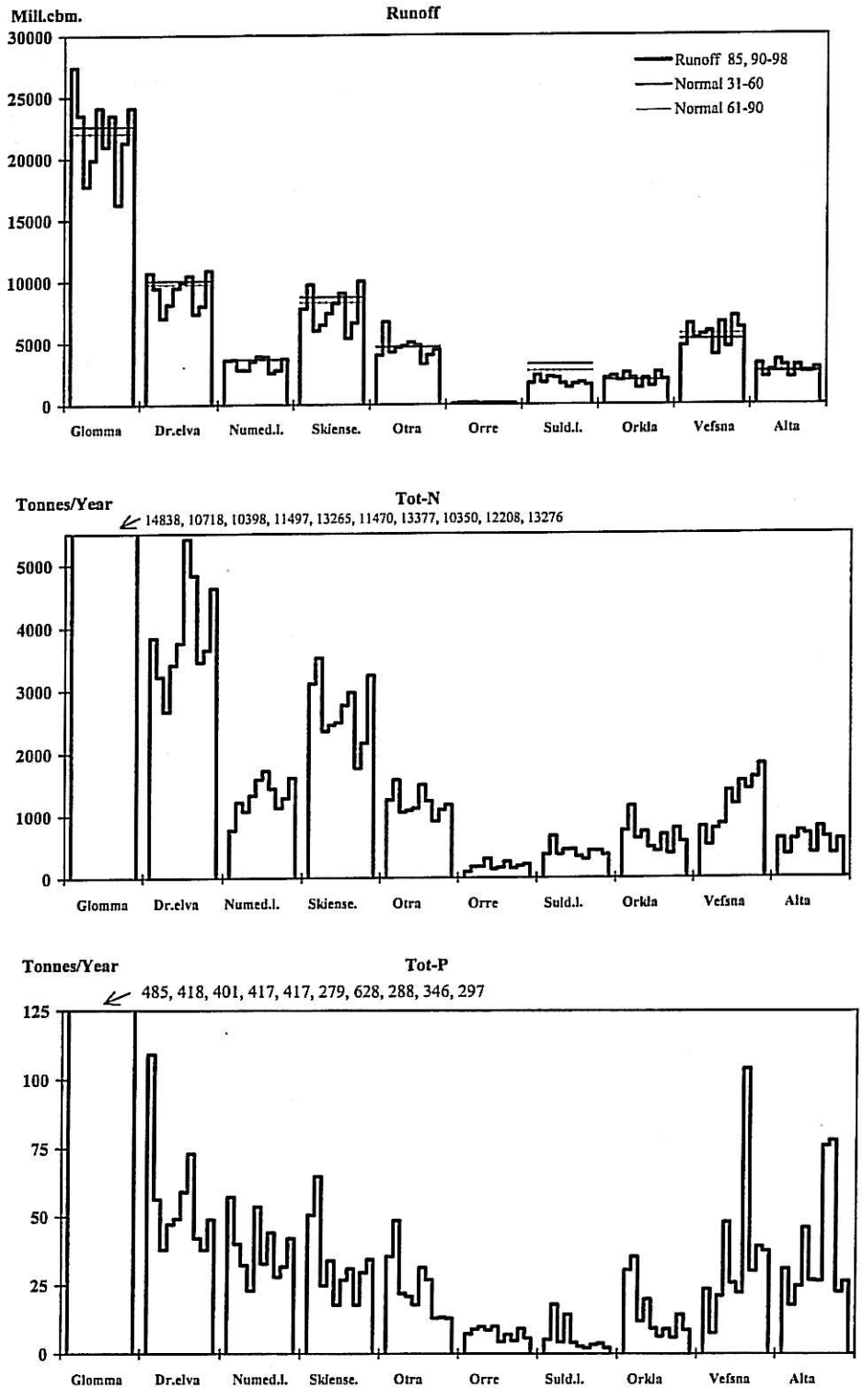
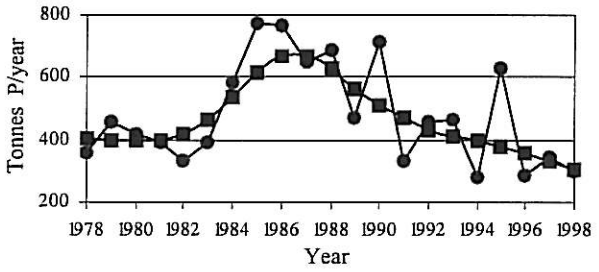
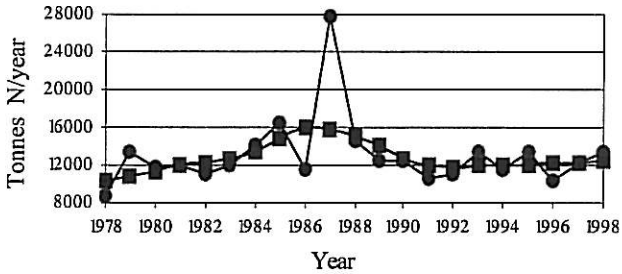


Fig. 10 Main rivers. Annual runoff and nutrient load in 1985, 1990-1998.

Glomma at Sarpsfoss

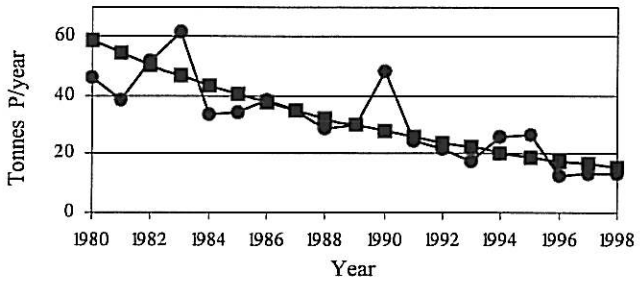


A downward trend of 24% is detected

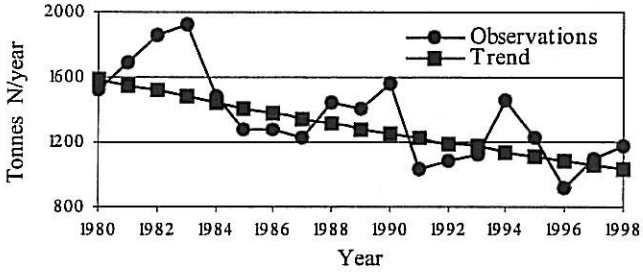


An upward trend of 19% is detected

Otra at Skråstad

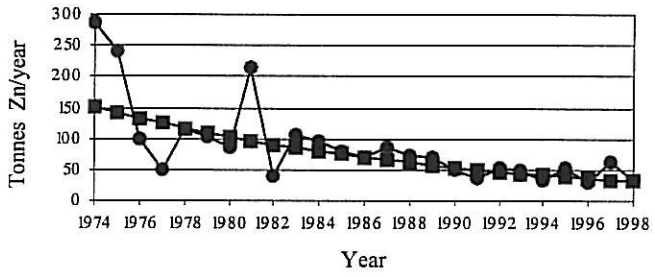


A downward trend of 74% is detected

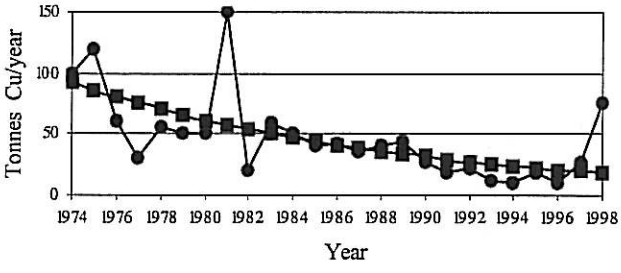


A downward trend of 35% is detected

Orkla at Vormstad



A downward trend of 79% is detected



A downward trend of 80% is detected

Fig. 11 Trends in inputs of Total P and Total N (Glomma, Otra), Cu and Zn (Orkla).

In order to adjust the 1998 transport values to a "normal year", approximations have been made by multiplying weighted mean concentrations by mean runoff (LTA, 1961-90). "Mean-values" (normals) for the ten main rivers and tributaries are given in Appendix X, Report B, where also total discharges to the sub regions are shown. In Fig. 6 - 7 the "normalized" nutrient transport values are compared with 1998-values.

During a normal winter the upland area of Norway together with the eastern part of the country show very little runoff. The frozen soil and snowcover protect vegetation and surface soil from erosion. But with the mild winters (1990-1993 and also 1995), soil especially in plowed field is exposed to more frequent and larger flood erosion also during the winter (eg. Glomma). As 1997 and 1998 were relatively mild winters compared to 1996, we suppose this is the main reason for somewhat higher concentrations/-loads in most rivers.

From experience we have learned that the product of weighted concentrations and mean runoff gives a relatively good estimate of the mass-transport in rivers, especially for the large rivers, and those not considerably exposed to erosion-material. In 1998 annual precipitation were about normal or a little higher (100 – 125 per cent) in most of the country (Fig 3). On an annual basis runoff also varied within a normal range in most of the country (Fig. 2). The river Suldalslågen is recently regulated (partly diverted to another catchment) and has now considerably less annual water discharge than in the normal period (1931-60).

4.4 Nutrient retention in fjords

Both phosphorus and nitrogen retention in watercourses is taken into account in the calculation of the Norwegian contribution to marine pollution, but in a conservative way. However, no corrections are so far made for retention in fjords and other marine areas.

Considering the nutrient input to the open marine waters, one should also take into account retention in fjords, at least in well defined threshold fjords. As a result of high salinity compared to freshwater, marine waters have better conditions for sedimentation than lakes. For example clay settles very poorly in lakes, but more efficient in fjords. The watermasses are usually stratified, with light brackish water on top of heavier, saline waters. Thus the over all stratification in fjords is in most cases stronger than in lakes. This implies that particulate pollutants lost to deep waters by sedimentation have less chance to be brought back to the euphotic zone than in lakes.

In addition, stronger stratification implies greater chance for oxygen depletion in deep waters, which in fact is seen in many sheltered Norwegian fjords. Theoretically this will improve the conditions for denitrification. However, this greater stability is often reduced by rougher physical conditions in fjords compared to lakes.

Retention in Norwegian fjords is very poorly studied by direct budget measurements. In the Drammensfjord, Magnusson and Næss (1986) found that about 60% of the incoming phosphorus was retained in the fjord, while for nitrogen the retention was only about 15%. In the silled Inner Oslofjord preliminary calculations indicate that nitrogen retention is in the order of 30-50% (Baalsrud, K., and B. Bjerkeng, 1991).

Thus, nutrient retention in treshold fjords seems to be of the similar magnitude as we find in lakes, and it is likely to believe that retention can be estimated from the same type of models that applies for lakes. The general lack of calibration data on retention models in fjords implies that we find it to early, at this stage of knowlege, to include this correction in the Norwegian discharge budget. It should be kept in mind, however, that a significant part of the particulate pollutants, and pollutants with particle affinity, end up in fjord sediments and thus are prevented from reaching the coastal waters.

5. REFERENCES

5.1 Project Personnel

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(3) NUMEDALSLÅGEN:	E. Løve. Næringsmiddeltilsynet. Larvik kommune.
(4) SKIENSVASSDRAGET:	A. Andersen.Rødmyr Miljøsenter DA, Skien.
(5) OTRA:	M. Aadnevik. Ingeniørvesenet. Kr.-sand kommune.
(6) ORREELVA:	G. Undheim. Landbrukskontoret. Time kommune.
(7) SULDALSLÅGEN:	Ø. Vårvik. Suldal Elveeigarlag. Suldalsosen.
(8) ORKLA:	O. Lien. Rennebu.
(9) VEFSNA:	B. Hauan. Teknisk etat. Vefsn kommune. Mosjøen.
(10) ALTA:	P. Nilsen. Finnmarksforskning. Alta.

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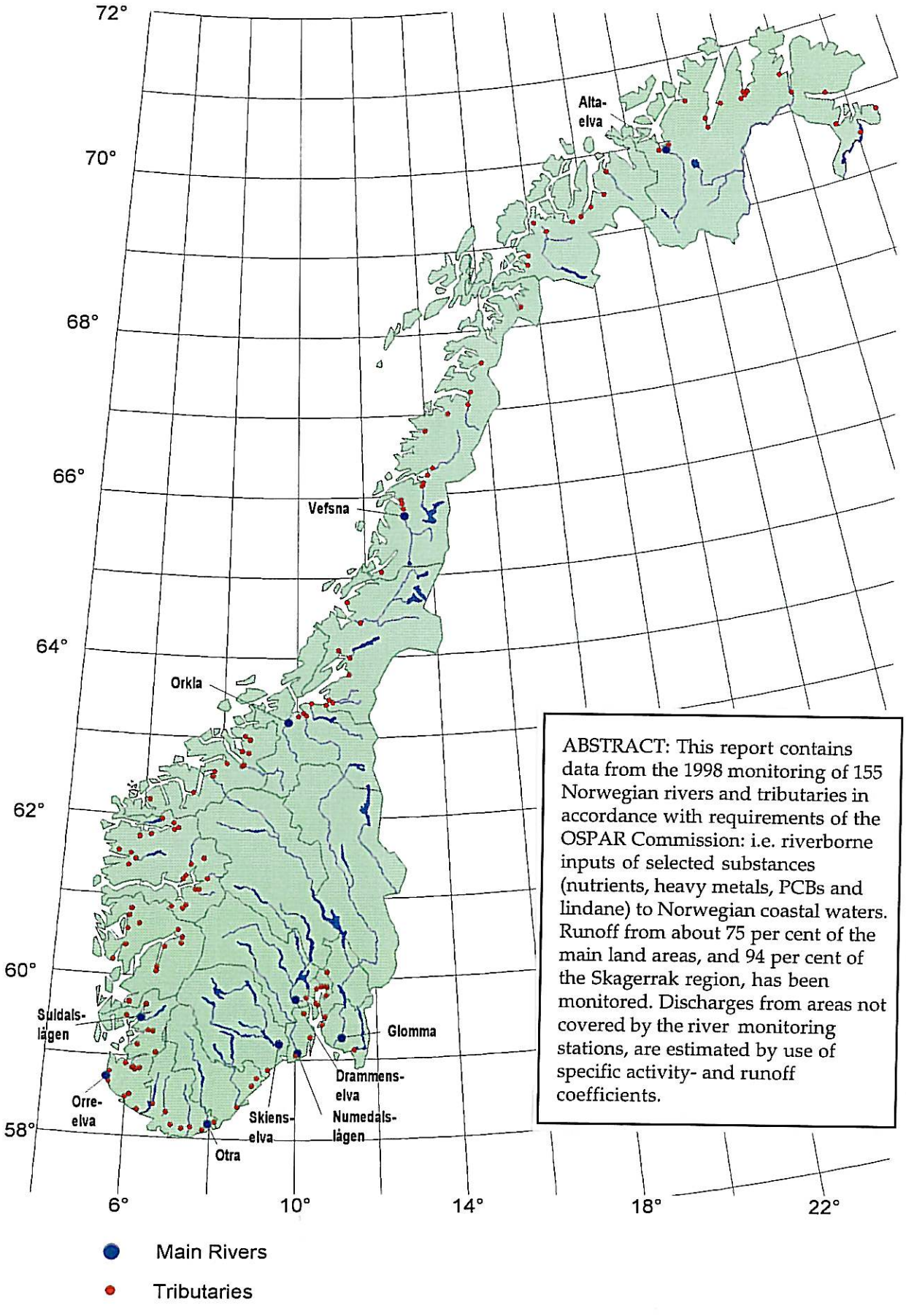


ABSTRACT: This report contains data from the 1998 monitoring of 155 Norwegian rivers and tributaries in accordance with requirements of the OSPAR Commission: i.e. riverborne inputs of selected substances (nutrients, heavy metals, PCBs and lindane) to Norwegian coastal waters. Runoff from about 75 per cent of the main land areas, and 94 per cent of the Skagerrak region, has been monitored. Discharges from areas not covered by the river monitoring stations, are estimated by use of specific activity- and runoff coefficients.

CONTENTS **Page:**

(1) Glomma "tributaries"		: Tista	- Hølenelva
(1) Inner Oslo-fjord		: Årungelva	- Åroselva
(2) Drammenselva	"tributary"	: Lierelva	
(3) Numedalslågen	"tributaries"	: Sandeelva	- Farriselva
(4) Skienselva	"tributary"	: Tokkeelva	
(5) Otra	"tributaries"	: Gjerstade.	- Audna
(6) Orreelva	"tributaries"	: Lygna	- Ulla
(7) Suldalslågen	"tributarties"	: Saudaelva	- Hornindalselva
(8) Orkla	"tributaries"	: Ørstaelva	- Salsvatnelva
(9) Vefsna	"tributaries"	: Åbjøra	- Reisa
(10) Alta	"tributaries	: Mattiselva	- Grense Jacobse.

CONVENTION FOR THE PREVENTION OF MARINE POLLUTION FROM LANDBASED SOURCES
QUESTIONARY ACCORDING TO THE TENTH MEETING OF THE PARIS COMMISSION LISBON 15 - 17 JUNE 1988.

The purpose of this form is to provide the Commission, in accordance with Article 17(B) of the Paris convention, with an assessment of the waterborne inputs to Convention waters.

The form should be completed for each calendar year in retrospect and submitted to the Secretary by June following the year to which the data relate.

The information sought relates to inputs through direct discharges (questions 7 - 13) and riverine inputs (questions 14 - 19).
Some information on discharges other than those mentioned below are also attached (question 20).

Separate forms for the four single areas are filled in.

(1) THE COUNTRY IS NORWAY

(2) LENGTH OF COASTLINE INCLUDING FJORDS AND BAYS IS 21347 KM

(3) NATURE OF THE RECEIVING WATER IS COASTAL

APPENDIX I : TOTAL DISCHARGES 1998 (Paragraph 4 - 6) **Page:**

Table I TOTAL DISCHARGES from MAINLAND NORWAY to convention waters 1998 (Fig. I).

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		1.2	1.6	*	4.5	*	7.3	tonnes
Cadmium			2.4	**	4.6	**	8.2	tonnes
Mercury		115.5	86	*	2541	*	2742	kg
Mercury			162	**	2561	**	2839	kg
Copper		60.4	115		133		308	tonnes
Zinc		135.6	797		332		1265	tonnes
Lead		6.4	36.1	*	106.6	*	149.1	tonnes
Lead			36.2	**	106.7	**	149.2	tonnes
Arsenic		0.6	20.1	*	9.9	*	30.6	tonnes
Arsenic			25.6	**	11.3	**	37.5	tonnes
Cr-T		4.9	412.4	*	5.5	*	422.7	tonnes
Cr-T			469.2	**	33.0	**	507.1	tonnes
Ni		14.4	239.9	*	50.3	*	304.6	tonnes
Ni			246.2	**	51.1	**	311.7	tonnes
V					17.2	*	17.2	tonnes
V					19.4	**	19.4	tonnes
PCBs ***			0.22	*	0.16	*	0	kg
PCBs			29.8	**	13.9	**	44	kg
gamma-HCH			54		30		84	kg
NH4-N	1374	9925	2953	*	1187	*	15440	tonnes
NH4-N			2967	**	1187	**	15453	tonnes
NO3-N	15295	65	19152		15705		50216	tonnes
PO4-P	190	644	284	*	198	*	1316	tonnes
PO4-P			296	**	198	**	1328	tonnes
Total N	24066	16492	37463		27526		105547	tonnes
Total P	778	1300	934		516		3527	tonnes
SiO2			265813		165817		431629	tonnes
S.P.M.		3482987	251012		217044		3951043	tonnes
TOC		22320	242414		245700		510434	tonnes
COD		188709					188709	tonnes
BOD		44459					44459	tonnes

Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

*** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180

Table 1.1 TOTAL DISCHARGES to The Skagerrak Region 1998 (Fig. I.I).

The Skagerrak Region with main rivers (1) Glomma, (2) Drammenselva, (3) Numedalslåger (4) Skienselva, (5) Otra

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		0.11	0.5	*	4.3	*	4.9	tonnes
Cadmium			0.5	**	4.3	**	4.9	tonnes
Mercury		54.50	14	*	2528	*	2596	kg
Mercury			18	**	2543	**	2616	kg
Copper		24.87	9		101		136	tonnes
Zinc		19.75	78		262		360	tonnes
Lead		0.71	6.8	*	104.1	*	111.6	tonnes
Lead			6.8	**	104.1	**	111.6	tonnes
Arsenic		0.20	3.31	*	7.7	*	11.2	tonnes
Arsenic			3.31	**	8.7	**	12.3	tonnes
Cr-T		2.60	6.3	*	5.4	*	14.3	tonnes
Cr-T			12.7	**	26.5	**	41.9	tonnes
Ni		5.22	5.8	*	43.8	*	54.7	tonnes
Ni			6.6	**	44.2	**	56.0	tonnes
V					17.1	*	17.1	tonnes
V					17.1	**	17.1	tonnes
PCBs ***			0.06	*	0.00	*	0.06	kg
PCBs			3.0	**	11.2	**	14.2	kg
gamma-HCH			10.4		28		39	kg
NH4-N	164	3907	386	*	1079	*	5536	tonnes
NH4-N			386	**	1079	**	5536	tonnes
NO3-N	1793	25	4316		14577		20711	tonnes
PO4-P	18	84	43	*	167	*	312	tonnes
PO4-P			43	**	167	**	312	tonnes
Total N	2777	6280	7426		23918		40401	tonnes
Total P	73	217	142		435		867	tonnes
SiO2			34685		136436		171121	tonnes
S.P.M.		10016	40095		181271		231381	tonnes
TOC		7398	60554		206205		274157	tonnes
COD		114896					114896	tonnes
BOD		15033					15033	tonnes

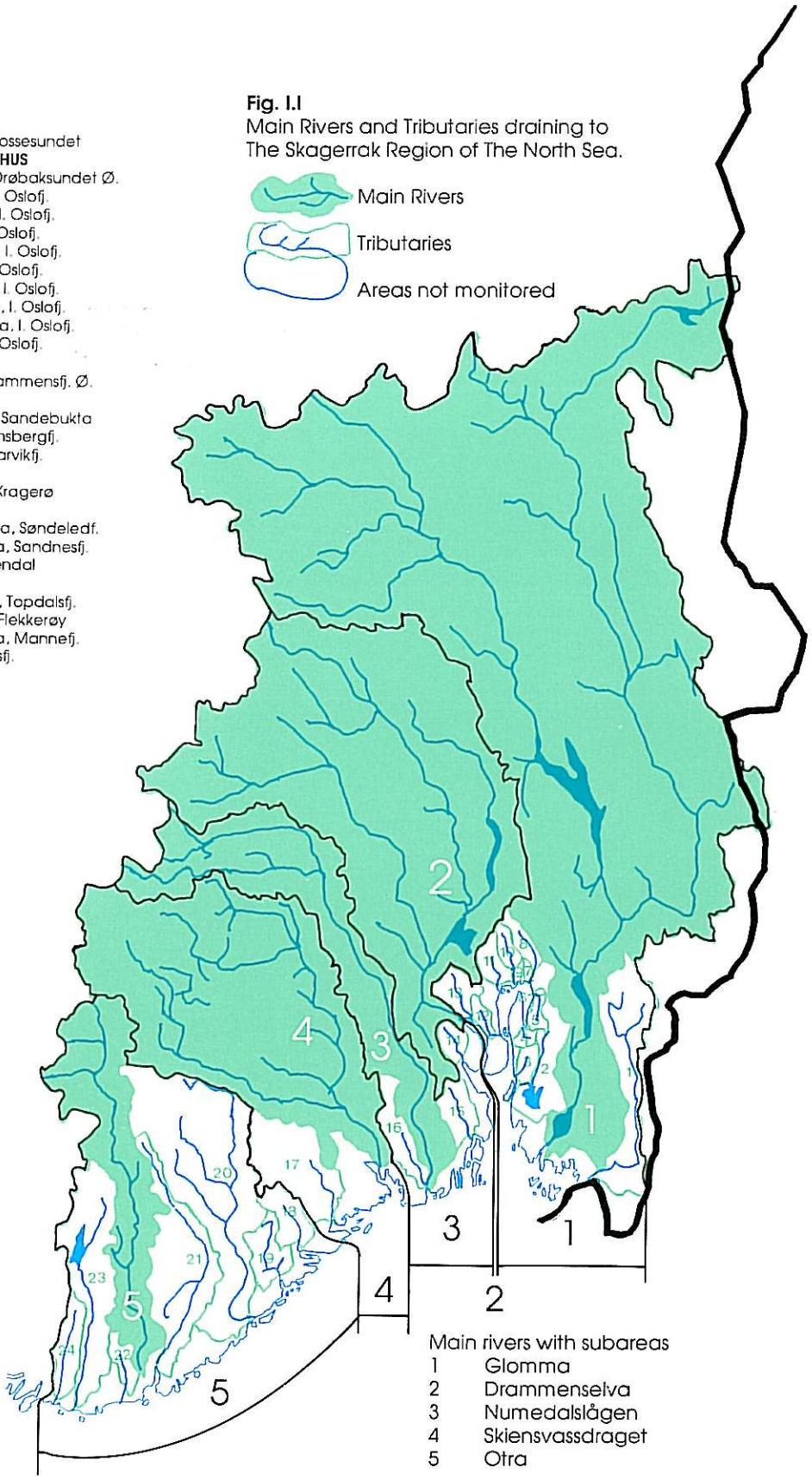
Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

*** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180

Fig. I.I
Main Rivers and Tributaries draining to
The Skagerrak Region of The North Sea.



1 **ØSTFOLD**
1 Tista, Iddefj.
2 Mosselva, Mossesundet
OSLO & AKERSHUS
3 Hølenelva, Drøbaksundet Ø.
4 Årungelva, I. Oslofj.
5 Gjersjøelva, I. Oslofj.
6 Ljanselva, I. Oslofj.
7 Loelva/Alna, I. Oslofj.
8 Akerselva, I. Oslofj.
9 Frognerelva, I. Oslofj.
10 Lysakerelva, I. Oslofj.
11 Sandvikselva, I. Oslofj.
12 Åroselva, I. Oslofj.
2 **BUSKERUD**
3 13 Lierelva, Drammensfj. Ø.
VESTFOLD
14 Sandeelva, Sandebukta
15 Aulielva, Tønsbergfj.
16 Farriselva, Larvikfj.
4 **TELEMARK**
5 17 Tokkeelva, Kragerø
AUST-AGDER
18 Gjerstadelva, Søndeledf.
19 Vegårdselva, Sandnesfj.
20 Nidelva, Arendal
VEST-AGDER
21 Tovdalselva, Topdalsfj.
22 Søgneelva, Flekkerøy
23 Mandalselva, Mannefj.
24 Audna, Sniksfj.

I North Sea/Skagerrak

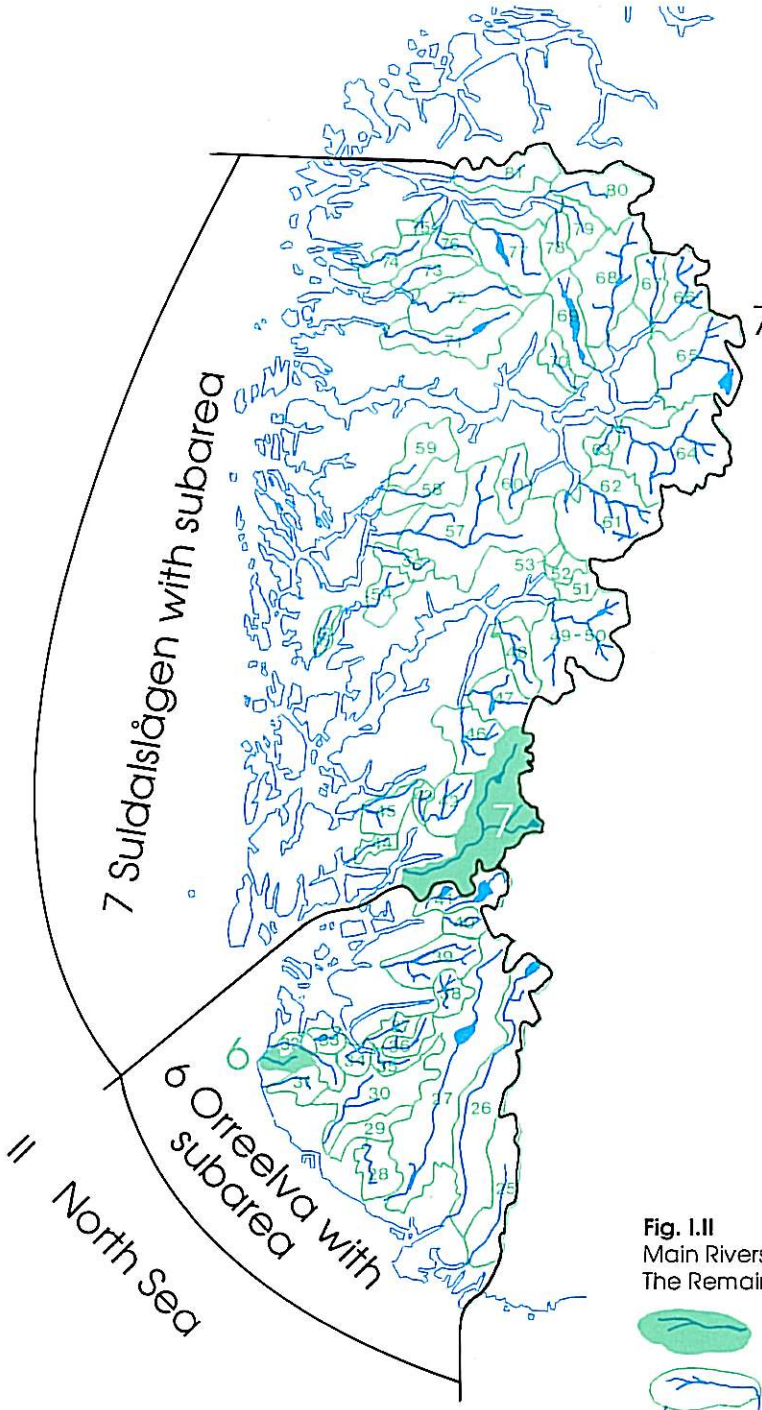
Table 1.2 TOTAL DISCHARGES to The Remaining North Sea 1998 (Fig. I.II).

The North Sea Region with main rivers : (6) Orreelva, (7) Suldalslågen

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		0.99	0.7	*	0.0	*	1.7	tonnes
Cadmium			0.9	**	0.0	**	1.9	tonnes
Mercury		39.74	33	*	0.4	*	73	kg
Mercury			56	**	1.8	**	97	kg
Copper		8.51	22		1		31	tonnes
Zinc		54.11	146		3		203	tonnes
Lead		4.76	9.9	*	0.2	*	14.9	tonnes
Lead			10.0	**	0.2	**	14.9	tonnes
Arsenic		0.00	5.4	*	0.0	*	5.5	tonnes
Arsenic			8.1	**	0.2	**	8.3	tonnes
Cr-T		1.17	0.0	*	0.0	*	1.2	tonnes
Cr-T			23.8	**	0.9	**	25.8	tonnes
Ni		6.56	26.9	*	0.3	*	33.7	tonnes
Ni			30.1	**	0.5	**	37.2	tonnes
V					0.0	*	0.0	tonnes
V					0.0	**	0.0	tonnes
PCBs ***			0.2	*	0.00	*	0.2	kg
PCBs			10.1	**	0.4	**	10.5	kg
gamma-HCH			17.3		0		18	kg
NH4-N	517	2736	719	*	11	*	3984	tonnes
NH4-N			719	**	11	**	3984	tonnes
NO3-N	5835	18	10677		396		16927	tonnes
PO4-P	51	223	57	*	3	*	335	tonnes
PO4-P			63	**	3	**	341	tonnes
Total N	9281	5059	16189		596		31126	tonnes
Total P	197	446	297		8		949	tonnes
SiO2			75432		1172		76604	tonnes
S.P.M.		1554425	38764		1665		1594854	tonnes
TOC		6938	80766		1459		89162	tonnes
COD		40832					40832	tonnes
BOD		13518					13518	tonnes

Measurements below detection limits are treated in two ways :
*) Detection limit = Zero
**) Detection limit = Limit

*** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180



6 **VEST-AGDER**
25 Lygna, Lyngdalsfj.
26 Kvina, Fedafj.
27 Sira, Åna-Sira
ROGALAND
28 Sokndalselva, Sogndalsstr.
29 Hellelandselva, Egersund
30 Bjerkreimselva, Egersund
31 Håelva, Håtangen
32 Figgjo, Solavika
33 Ims-Lutsi, Høgsfj./Boknafj.
34 Oltedalselva, Høgsfj./Boknafj.
35 Dirdalselva, Høgsfj./Boknafj.
36 Frafjordelva, Frafj./Boknafj.
37 Espedalselva, Høgsfj./Boknafj.
38 Lyseelva, Lysefj./Boknafj.
39 Årdalselva, Årdalsfj./Boknafj.
40 Førreelva, Jøsenfj./Boknafj.
41 Ulla, Jøsenfj./Boknafj.
7 42 Saudaelva, Sandsfj./Boknafj.
43 Åbøelva, Saudafj./Boknafj.
44 Vikedalselva, Boknafj.
HORDALAND
45 Etneelva, Etnefj./Bømlafj.
46 Opo, Sørfj./Hardangerfj.
47 Tysso, Sørfj./Hardangerfj.
48 Kinso, Sørfj./Hardangerfj.
49 Veig, Eidfj.v./Hardangerfj.
50 Bjoreia, Eidfj. v. Hardangerfj.
51 Sima, Eidfj./Hardangerfj.
52 Austdøla, Osafj./Eidfj.
53 Norddøla, Osafj./Eidfj.
54 Tysselva, Fusafj.
55 Oselva, Fusafj.
56 Bergsdalselva, Veafj./Herdlafj.
57 Vosso, Veafj./Sørfj.
58 Ekso, Osterfj.
59 Modalselva, Osterfj.
SOGN OG FJORDANE
60 Nærøyelva, Aurl.fj./Sognefj
61 Flåmselva, Aurl.fj./Sognefj.
62 Aurlandselva, Aurl.fj./Sognefj.
63 Erdalselva, Lærdalsfj./Sognefj.
64 Lærdalselva, Lærdalsfj./Sognefj.
65 Årdalselva, Årdalsfj./Sognefj.
66 Fortunelva, Lusterfj./Sognefj.
67 Mørkriselva, Lusterfj./Sognefj.
68 Jostedøla, Lusterfj./Sognefj.
69 Årøyelva, Sognd.fj./Sognefj.
70 Sogndalselva, Sognd.fj./Sognefj.
71 Gaular, Dalsfj./Bufj.
72 Jølstra, Førdefj.
73 Nausta, Førdefj.
74 Oselva, Høydalsfj.
75 Hopselva, Hyefj./Nordfj.S.
76 Gjengedalselva, Hyefj./Nordfj.S
77 Breimselva, Gloppenfj./Nordfj.S.
78 Oldenelva, Indre Nordfj.
79 Loenelva, Indre Nordfj.
80 Stryneelva, Indre Nordfj.
81 Hornindalselva, Nordfj.N.

Fig. I.II
Main Rivers and Tributaries draining to The Remaining North Sea.

Main Rivers

Tributaries

Areas not monitored

Table 1.3 TOTAL DISCHARGES to The Norwegian Sea 1998 (Fig. I.III).

The Norwegian Sea Region with main rivers (8) Orkla, (9) Vefsna

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		0.10	0.1	*	0.2	*	0.4	tonnes
Cadmium			0.7	**	0.2	**	1.0	tonnes
Mercury		21.27	28	*	8	*	57	kg
Mercury			70	**	11	**	102	kg
Copper		26.65	62		28		116	tonnes
Zinc		61.30	476		66		603	tonnes
Lead		0.93	15.5	*	2.2	*	18.7	tonnes
Lead			15.5	**	2.2	**	18.7	tonnes
Arsenic		0.40	8.5	*	0.8	*	9.7	tonnes
Arsenic			11.1	**	0.8	**	12.3	tonnes
Cr-T		1.08	395.0	*	0.1	*	396.2	tonnes
Cr-T			415.8	**	4.1	**	421.0	tonnes
Ni		2.50	173.0	*	5.4	*	180.8	tonnes
Ni			174.8	**	5.4	**	182.7	tonnes
V					0.1	*	0.1	tonnes
V					1.7	**	1.7	tonnes
PCBs ***			0.0	*	0.2	*	0.2	kg
PCBs			12.9	**	1.8	**	14.6	kg
gamma-HCH			22.9		1		24	kg
NH4-N	607	3024	428	*	78	*	4138	tonnes
NH4-N			442	**	78	**	4151	tonnes
NO3-N	6652	20	3827		609		11108	tonnes
PO4-P	103	310	74	*	18	*	504	tonnes
PO4-P			77	**	18	**	508	tonnes
Total N	10327	4807	9401		2403		26938	tonnes
Total P	419	592	258		46		1316	tonnes
SiO2			78119		14957		93076	tonnes
S.P.M.		1539978	141331		29323		1710632	tonnes
TOC		7621	60797		27729		96148	tonnes
COD		31751					31751	tonnes
BOD		15181					15181	tonnes

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

***** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180**

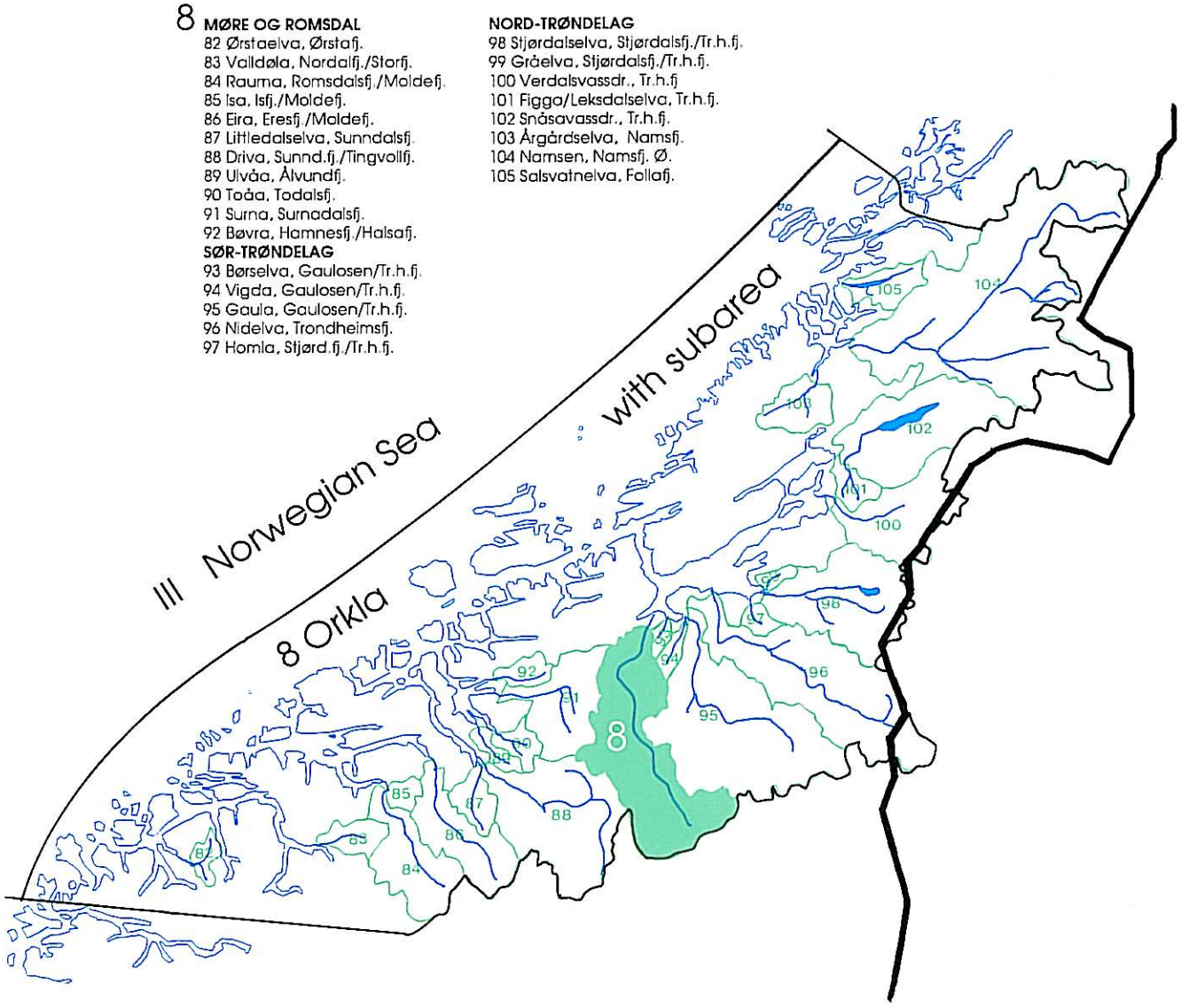


Fig. I.III A
Main Rivers and Tributaries draining to The Norwegian Sea (Southern Part).

Main Rivers

Tributaries

Areas not monitored

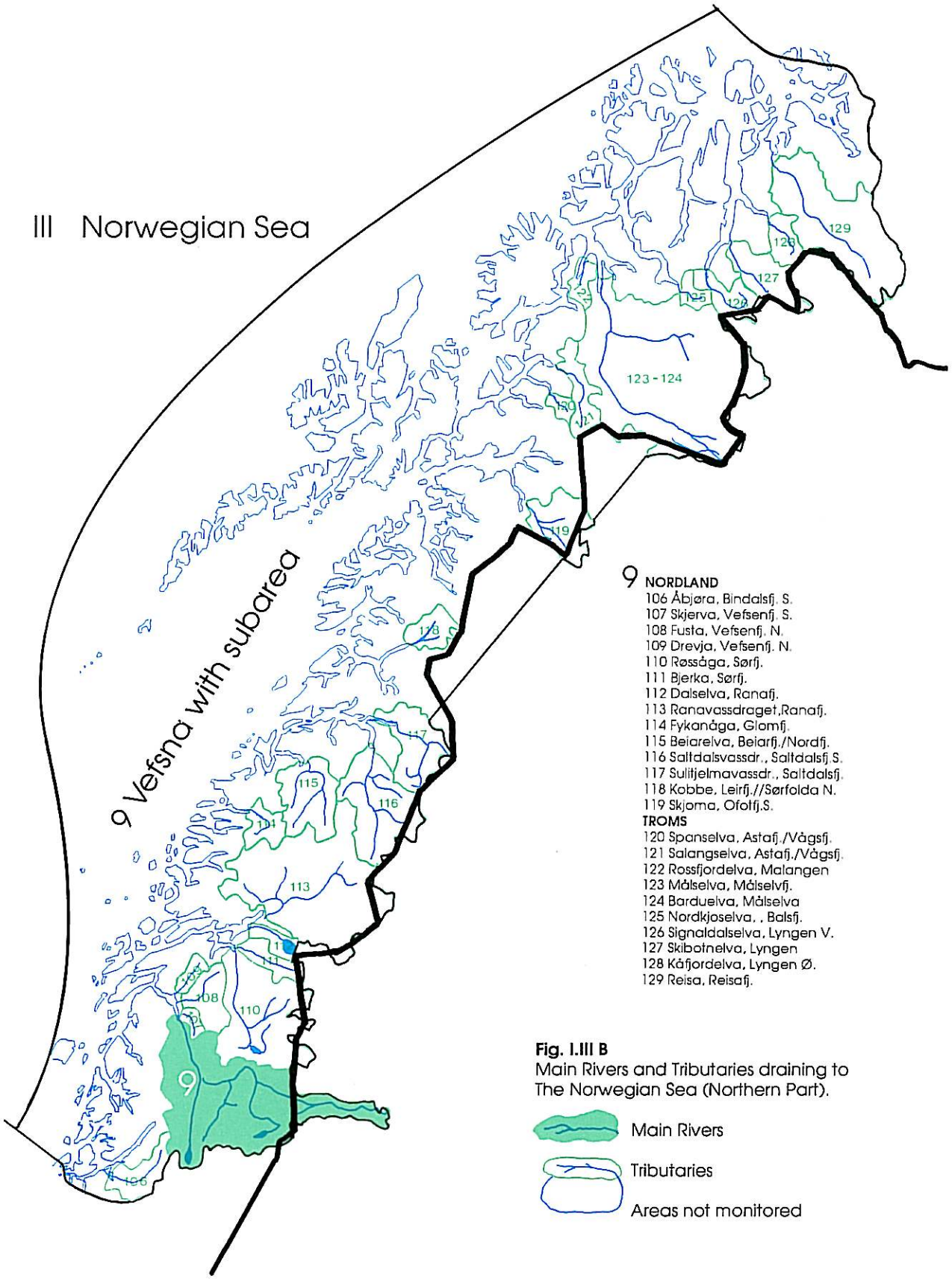


Fig. I.III B
Main Rivers and Tributaries draining to The Norwegian Sea (Northern Part).

Table 1.4 TOTAL DISCHARGES to The Barents Sea 1998 (Fig. I.IV).

The Barents Sea Region with main river (10) Alta

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		0.00	0.3	*	0.00	*	0.3	tonnes
Cadmium			0.4	**	0.03	**	0.4	tonnes
Mercury		0.00	11	*	5.31	*	17	kg
Mercury			18	**	5.79	**	24	kg
Copper		0.37	22		2.65		25	tonnes
Zinc		0.43	97		1.35		99	tonnes
Lead		0.01	3.9	*	0.11	*	4.0	tonnes
Lead			3.9	**	0.12	**	4.0	tonnes
Arsenic		0.00	2.9	*	1.47	*	4.3	tonnes
Arsenic			3.2	**	1.47	**	4.7	tonnes
Cr-T		0.04	11.0	*	0.00	*	11.0	tonnes
Cr-T			16.9	**	1.47	**	18.4	tonnes
Ni		0.12	34.3	*	0.89	*	35.3	tonnes
Ni			34.7	**	1.03	**	35.9	tonnes
V					0.00	*	0.0	tonnes
V					0.59	**	0.6	tonnes
PCBs ***			0.0	*	0.00	*	0.0	kg
PCBs			3.7	**	0.62	**	4.3	kg
gamma-HCH			3.7		0.12		4	kg
NH4-N	85	258.00	1420	*	18.93	*	1782	tonnes
NH4-N			1420	**	18.93	**	1782	tonnes
NO3-N	1015	1.72	332		122.03		1470	tonnes
PO4-P	18	26.51	111	*	9.53	*	165	tonnes
PO4-P			113	**	9.53	**	167	tonnes
Total N	1681	346	4447		609.01		7083	tonnes
Total P	88	44.70	236		26.63		396	tonnes
SiO2			77577		13252		90829	tonnes
S.P.M.		378568	30822		4786		414176	tonnes
TOC		363	40298		10307		50968	tonnes
COD		1230					1230	tonnes
BOD		726					726	tonnes

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

***** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180**

IV Barents Sea

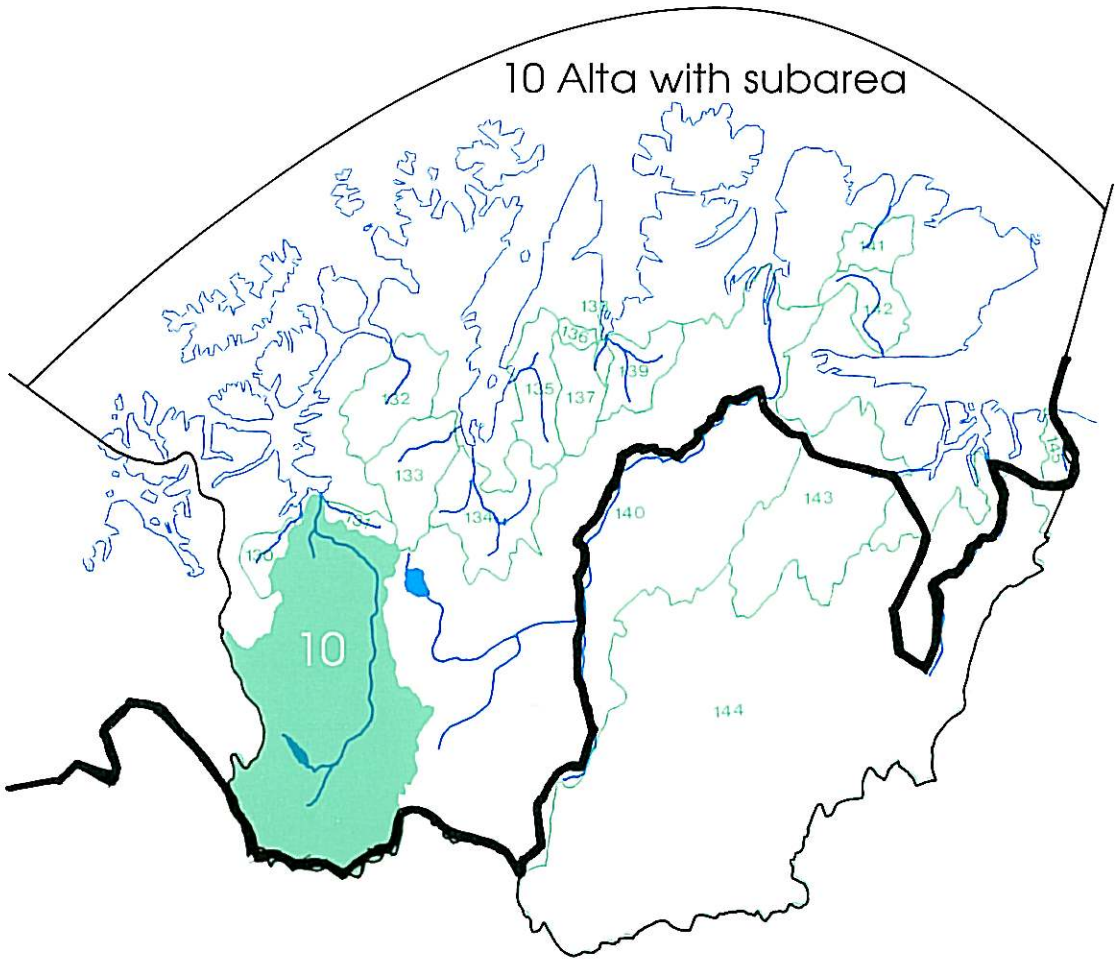


Fig. I.IV
Main Rivers and Tributaries draining to The Barents Sea.

Main Rivers

Tributaries

Areas not monitored

10 FINNMARK

130 Mattiselva, Kåfj./Altafj.
131 Tverrelva, Altafj.
132 Repparfjordelva, Repparfj.
133 Stabburselva, I. Porsangen V.
134 Lakselva, I. Porsangen S.
135 Børselva, I. Porsangen Ø.
136 Mattusjåkka, I. Laksefj. V.
137 Storelva, I. Laksefj. V.
138 Soussjåkka, I. Laksefj. V.
139 Adamselva, I. Laksefj. Ø.
140 Tanavassdr., Tanafj. S.
141 Vesterelva, Syltefj.
142 V. Jakobselv, Y. Varangerfj.
143 Neiden Munkfj./Varangerfj.
144 Passvikelva, Bøkfj./Varangerfj.
145 Grense Jakobselv, Varangerfj.

APPENDIX II : SEWAGE EFFLUENTS FROM DOWNSTREAM AREAS OF MAIN AND TRIBUTARY RIVERS AND RIVERS NOT MONITORED 1998 (Paragraph 7 - 8) **Page:**

Paragraph 7: Sewage effluents ./.

Paragraph 8: Measurements of calculation used - including information on the concentration upon which the measurement is based:

Paragraph 3.3 (Report A, 1991, 1992 - 1999)

Municipal sewage includes a portion of industrial effluents

Table II Sewage Effluents from down stream areas of mainland Norway to convention waters (1998).

Total quantity of substance discharged per year:

Regions:	I	II	III	IV		
	The Skagerrak	The North	The Norwegian	The Barents	Sum	
Substance:	Region	Sea	Sea	Sea		
Cd	99	52	48	1	200	kg
Hg	45	33	21	0	99	kg
Cu	15.8	7.8	9.2	0.4	33.2	tonnes
Zn	18.9	12.1	10.7	0.4	42.2	tonnes
Pb	593	278	283	12	1166	kg
Cr-T	2.0	0.8	0.9	0.0	3.8	tonnes
Ni	3.3	1.5	1.8	0.1	6.8	tonnes
PCBs						kg
gamma-HCH						kg
NH4-N	3907	2736	3024	258	9925	tonnes
NO3-N	25	18	20	2	65	tonnes
PO4-P	84	223	310	27	644	tonnes
Tot-N	4957	3648	4033	344	12981	tonnes
Tot-P	140	372	517	44	1074	tonnes
S.P.M.	7089	10818	12492	663	31062	tonnes
TOC	7367	6759	7590	363	22079	tonnes
COD	30467	24099	25117	1230	80913	tonnes
BOD	15033	13518	15181	726	44459	tonnes

Table 2.1 Sewage Effluents to The Skagerrak Region (1998).

The Skagerrak region with sub-areas: (1) Glomma, (2) Drammenselva, (3) Numedalslågen, (4) Skienselva, (5) Otra

	Total quantity of substance discharged per year:							Precision of the estimate of the load
Sub-areas :	1	2	3	4	5			
Substance:								
Cd	44	11	18	6	20	kg		%
Hg	16	6	11	3	9	kg		%
Cu	8.22	1.75	1.80	0.92	3.16	tonnes		%
Zn	9.26	2.04	2.84	1.07	3.74	tonnes		%
Pb	320	57	78	30	108	kg		%
Cr-T	1.12	0.18	0.34	0.09	0.31	tonnes		%
Ni	1.90	0.29	0.47	0.15	0.53	tonnes		
PCBs						kg		%
gamma-HCH						kg		%
NH4-N	2203	304	580	239	580	tonnes		
NO3-N	13	2	4	2	4	tonnes		%
PO4-P	28	7	19	5	25	tonnes		%
Tot-N	2685	406	773	319	774	tonnes		%
Tot-P	47	12	31	8	42	tonnes		%
S.P.M.	2651	396	1489	288	2265	tonnes		%
TOC	3579	533	1290	320	1645	tonnes		%
COD	15987	2131	4916	1175	6259	tonnes		%
BOD	7458	1066	2581	639	3289	tonnes		%

Table 2.2 Sewage Effluents to The Remaining North Sea Region (1998).

The remaining North Sea Region with sub-areas: (6) Orreelva, (7) Suldalslågen

	Total quantity of substance discharged per year:				Precision of the estimate of the load
Sub-areas :	6	7			
Substance:					
Cd	28	24	kg		%
Hg	22	11	kg		%
Cu	2.99	4.82	tonnes		%
Zn	6.48	5.62	tonnes		%
Pb	126	152	kg		%
Cr-T	0.35	0.48	tonnes		%
Ni	0.68	0.80	tonnes		
PCBs			kg		%
gamma-HCH			kg		%
NH4-N	872	1864	tonnes		
NO3-N	6	12	tonnes		%
PO4-P	46	178	tonnes		%
Tot-N	1162	2486	tonnes		%
Tot-P	77	296	tonnes		%
S.P.M.	3598	7220	tonnes		%
TOC	2573	4187	tonnes		%
COD	9827	14272	tonnes		%
BOD	5145	8373	tonnes		%

Table 2.3 Sewage Effluents to The Norwegian Sea Region (1998).

The Norwegian Sea Region with sub-areas: (8) Orkla, (9) Vefsna

	Total quantity of substance discharged per year:				Precision of the estimate of the load
Sub-areas :	8	9			
Substance:					
Cd	38	10	kg		%
Hg	14	7	kg		%
Cu	6.65	2.52	tonnes		%
Zn	7.76	2.94	tonnes		%
Pb	212	71	kg		%
Cr-T	0.66	0.25	tonnes		%
Ni	1.10	0.74	tonnes		
PCBs			kg		%
gamma-HCH			kg		%
NH4-N	1817	1208	tonnes		
NO3-N	12	8	tonnes		%
PO4-P	188	122	tonnes		%
Tot-N	2422	1611	tonnes		%
Tot-P	314	203	tonnes		%
S.P.M.	7511	4982	tonnes		%
TOC	4862	2728	tonnes		%
COD	16516	8601	tonnes		%
BOD	9724	5456	tonnes		%

Table 2.4 Sewage Effluents to The Barents Sea Region (1998).

The Barents Sea Region with sub-area: (10) Alta

	Total quantity of substance discharged per year:			Precision of the estimate of the load
Sub-area :	10			
Substance:				
Cd	1	kg		%
Hg	0	kg		%
Cu	0.37	tonnes		%
Zn	0.43	tonnes		%
Pb	12	kg		%
Cr-T	0.04	tonnes		%
Ni	0.12	tonnes		
PCBs		kg		%
gamma-HCH		kg		%
NH4-N	258	tonnes		
NO3-N	2	tonnes		%
PO4-P	27	tonnes		%
Tot-N	344	tonnes		%
Tot-P	44	tonnes		%
S.P.M.	663	tonnes		%
TOC	363	tonnes		%
COD	1230	tonnes		%
BOD	726	tonnes		%

APPENDIX III : INDUSTRIAL EFFLUENTS FROM DOWN STREAM AREAS OF MAIN AND TRIBUTARY RIVERS AND RIVERS NOT MONITORED 1998 (Paragraph 11 - 13) **Page:**

Paragraph 11: Industrial effluents ./.

Paragraph 12: Measurements of calculation used - including information on the concentration upon which the measurement is based:

Paragraph 3.3 (Report A, 1991, 1992 - 1999)

Paragraph 13: Any other relevant information (e.g. proportion of substance discharged as insoluble material):

A portion of industrial effluents is included in municipal sewage

Table III Industrial Effluents from down stream areas of mainland Norway to convention waters (1998).

Total quantity of substance discharged per year:

Regions:	I	II	III	IV		
	The Skagerrak	The North Sea	The Norwegian Sea	The Barents Sea	Sum	
Substance:						
Cd	16	941	50		1007	kg
Hg	10	7	0		16	kg
Cu	9.03	0.70	17.48		27	tonnes
Zn	0.82	42.01	50.60		93	tonnes
Pb	121	4479	650		5249	kg
Arsenic	195	4	403	0	602	kg
Cr-T	0.56	0.34	0.17	0	1.07	tonnes
Ni	1.88	5.07	0.66		7.62	tonnes
PCBs						kg
gamma-HCH						kg
NO3-N						tonnes
PO4-P						tonnes
Tot-N	1324	1411	774	2	3511	tonnes
Tot-P	77	74	76	1	227	tonnes
S.P.M.	2927	1543607	1527486	377905	3451925	tonnes
TOC	32	178	31		241	tonnes
COD	84428	16733	6634		107796	tonnes

Table 3.1 Industrial Effluents to The Skagerrak Region (1998).

The Skagerrak Region with sub-areas: (1) Glomma, (2) Drammenselva, (3) Numedalslågen, (4) Skienselva, (5) Otra

	Total quantity of substance discharged per year:							Precision of the estimate of the load
Sub-areas : Substance:	1	2	3	4	5			
Cd	9.46		6.30			kg	_____	%
Hg	9.52		0.08	0.00		kg	_____	%
Cu	7486		15	94	1434	kg	_____	%
Zn	547		112	4	157	kg	_____	%
Pb	29.1		54.9	0.3	36.3	kg	_____	%
Arsenic	0.0		0.0		195.0	kg	_____	%
Cr-T	553.6		5.3		0.3	kg	_____	%
Ni	344.2		234.8	126.5	1177	kg	_____	%
PCBs						kg	_____	%
gamma-HCH						kg	_____	%
NO3-N						tonnes	_____	%
PO4-P						tonnes	_____	%
Tot-N	165.7	17.2	190.5	947.2	3.3	tonnes	_____	%
Tot-P	31.7	0.7	20.2	22.4	1.9	tonnes	_____	%
S.P.M.	765	137	1381	464	179	tonnes	_____	%
TOC	0.0		22.3	9.2		tonnes	_____	%
COD	52133	422	23277	2477	6121	tonnes	_____	%

Table 3.2 Industrial Effluents to The Remaining North Sea Region (1998).

The remaining North Sea Region with sub-areas: (6) Orreelva, (7) Suldalslågen

	Total quantity of substance discharged per year:				Precision of the estimate of the load
Sub-areas :	6	7			
Substance:					
Cd		941	kg	_____	%
Hg		6.54	kg	_____	%
Cu	0	700	kg	_____	%
Zn	22	41989	kg	_____	%
Pb		4479	kg	_____	%
Arsenic		3.6	kg	_____	%
Cr-T	19.2	323.1	kg	_____	%
Ni	5006.9	67	kg	_____	%
PCBs			kg	_____	%
gamma-HCH			kg	_____	%
NO3-N			tonnes	_____	%
PO4-P			tonnes	_____	%
Tot-N	20.8	1390	tonnes	_____	%
Tot-P	4.4	69.3	tonnes	_____	%
S.P.M.	1531366	12241	tonnes	_____	%
TOC	31.8	146.5	tonnes	_____	%
COD	126	16607	tonnes	_____	%

Table 3.3 Industrial Effluents to The Norwegian Sea Region (1998).

The Norwegian Sea Region with sub-areas: (8) Orkla, (9) Vefsna

	Total quantity of substance discharged per year:				Precision of the estimate of the load
Sub-areas :	8	9			
Substance:					
Cd	47.74	2.40	kg	_____	%
Hg	0.18	0.09	kg	_____	%
Cu	1579	15904	kg	_____	%
Zn	8218	42380	kg	_____	%
Pb	220.6	429.4	kg	_____	%
Arsenic	0.8	402.2	kg	_____	%
Cr-T	149.0	21.9	kg	_____	%
Ni	54.5	608.7	kg	_____	%
PCBs			kg	_____	%
gamma-HCH			kg	_____	%
NO3-N			tonnes	_____	%
PO4-P			tonnes	_____	%
Tot-N	228.6	545.3	tonnes	_____	%
Tot-P	26.5	49.0	tonnes	_____	%
S.P.M.	466787	1060699	tonnes	_____	%
TOC	26.1	4.9	tonnes	_____	%
COD	6484.3	150.1	tonnes	_____	%

Table 3.4 Industrial Effluents toThe Barents Sea Region (1998).

The Barents Sea Region with sub-area: (10) Alta

	Total quantity of substance discharged per year:			Precision of the estimate of the load
Sub-area :	**10**			
Substance:				
Cd		**kg**	_____	**%**
Hg		**kg**	_____	**%**
Cu		**kg**	_____	**%**
Zn		**kg**	_____	**%**
Pb		**kg**	_____	**%**
Arsenic	**0.0**	**kg**	_____	**%**
Cr-T	**0.0**	**kg**	_____	**%**
Ni		**kg**	_____	**%**
PCBs		**kg**	_____	**%**
gamma-HCH		**kg**	_____	**%**
NO3-N		**tonnes**	_____	**%**
PO4-P		**tonnes**	_____	**%**
Tot-N	**2.0**	**tonnes**	_____	**%**
Tot-P	**0.5**	**tonnes**	_____	**%**
S.P.M.	**377905**	**tonnes**	_____	**%**
TOC		**tonnes**	_____	**%**
COD		**tonnes**	_____	**%**

APPENDIX IV : MAIN RIVERINE INPUTS 1998 (Paragraph 14 - 16) **Page:**

Paragraph 14: Main Rivers ./.

Paragraph15: Measurements of calculation used - including information on the concentration upon which the measurement is based:

Appendix VII (1-10) and Paragraph 3.2 (Report A, 1991, 1992 - 1999)

Paragraph 16: Any other relevant information (e.g. proportion of substance discharged as insoluble material):

Table 4.1 MAIN RIVERINE INPUTS 1998 (1) Glomma

Total volume: 65998 1000 m3/day **Long term average flow (LTA)** 60324 1000 m3/day
Minimum flow: 25229 1000 m3/day **LTA period :** 1961 to 1990
Maximum flow: 159408 1000 m3/day

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.16	12	0.02	0.62	µg/l	3.70	tonnes	YES	____	%
Cadmium **	0.16	12	0.02	0.62	µg/l	3.70	tonnes		____	%
Mercury *	141.75	12	0.0	915.0	ng/l	2504.2	kg	YES	____	%
Mercury **	141.83	12	1.0	915.0	ng/l	2505.9	kg		____	%
Copper	3.20	12	1.2	16.9	µg/l	76.6	tonnes	YES	____	%
Zinc	6.9	12	1.9	43.8	µg/l	151	tonnes	YES	____	%
Lead *	3.68	12	0.19	37.40	µg/l	97.58	tonnes	YES	____	%
Lead **	3.68	12	0.19	37.40	µg/l	97.58	tonnes		____	%
Arsenic *	0.19	1	0.19	0.19	µg/l	4.58	tonnes	YES	____	%
Arsenic **	0.19	1	0.19	0.19	µg/l	4.58	tonnes		____	%
Total Cr-T *	0.00	1	0.0	0.0	µg/l	0.00	tonnes	NO	____	%
Total Cr-T **	0.50	1	0.5	0.5	µg/l	12.04	tonnes		____	%
Ni *	1.53	12	0.5	9.9	µg/l	30.2	tonnes	YES	____	%
Ni **	1.53	12	0.5	9.9	µg/l	30.2	tonnes		____	%
V *	0.30	1	0.3	0.3	µg/l	7.2	tonnes	YES	____	%
V **	0.30	1	0.3	0.3	µg/l	7.2	tonnes		____	%
PCBs *		2			ng/l	0.00	kg	NO	____	%
PCBs **		2			ng/l	5.06	kg		____	%
gamma-HCH (lindane)	0.51	2	0.50	0.51	ng/l	12.15	kg	YES	____	%
Ammonia (NH4-N)	31.92	12	13	113	µg/l	627	tonnes	YES	____	%
Ammonia (NH4-N)	31.92	12	13	113	µg/l	627	tonnes		____	%
Nitrates (NO3-N)	383.8	12	91	705	µg/l	8102	tonnes	YES	____	%
Orthoph. (PO4-P)	5.25	12	2.0	11.0	µg/l	122.3	tonnes	YES	____	%
Orthoph. (PO4-P)	5.25	12	2.0	11.0	µg/l	122.3	tonnes		____	%
Total N	598.8	12	390	930	µg/l	13276	tonnes	YES	____	%
Total P	12.67	12	7	25	µg/l	297	tonnes	YES	____	%
SiO2	3.07	12	2.3	3.7	mg/l	71208	tonnes	YES	____	%
Susp. Part. Matter	5.78	12	2.48	14.6	mg/l	132315	tonnes	YES	____	%
TOC	5.10	1	5.1	5.1	mg/l	122856	tonnes	YES	____	%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 4.2 MAIN RIVERINE INPUTS 1998 (2) Drammenselva

Total volume: 29767 1000 m3/day
Minimum flow 16070 1000 m3/day
Maximum flov 64748 1000 m3/day

Long term average flow (LTA) 26743 1000 m3/day
LTA period : 1961 to 1990

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.01	12	0.00	0.03	µg/l	0.15	tonnes	NO		%
Cadmium **	0.02	12	0.01	0.03	µg/l	0.18	tonnes			%
Mercury *	0.54	12	0.00	1.50	ng/l	6.66	kg	NO		%
Mercury **	1.13	12	1.00	1.50	ng/l	12.09	kg			%
Copper	0.83	12	0.60	1.20	µg/l	9.23	tonnes	YES		%
Zinc	3.01	12	2.20	4.20	µg/l	32.83	tonnes	YES		%
Lead *	0.13	12	0.06	0.28	µg/l	1.54	tonnes	YES		%
Lead **	0.13	12	0.06	0.28	µg/l	1.54	tonnes			%
Arsenic *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
Arsenic **	0.10	1	0.10	0.10	µg/l	1.09	tonnes			%
Total Cr-T *	0.50	1	0.50	0.50	µg/l	5.43	tonnes	YES		%
Total Cr-T **	0.50	1	0.50	0.50	µg/l	5.43	tonnes			%
Ni *	0.51	12	0.40	0.80	µg/l	5.56	tonnes	YES		%
Ni **	0.51	12	0.40	0.80	µg/l	5.56	tonnes			%
V *	0.40	1	0.40	0.40	µg/l	4.35	tonnes	YES		%
V **	0.40	1	0.40	0.40	µg/l	4.35	tonnes			%
PCBs *		2			ng/l	0.00	kg	NO		%
PCBs **		2			ng/l	2.28	kg			%
gamma-HCH (linda	0.46	2	0.40	0.52	ng/l	5.00	kg	YES		%
Ammonia (NH4-N)	16.08	12	8.00	24.00	µg/l	164.3	tonnes	YES		%
Ammonia (NH4-N)	16.08	12	8.00	24.00	µg/l	164.3	tonnes			%
Nitrates (NO3-N)	264.6	12	215	355	µg/l	2850	tonnes	YES		%
Orthoph. (PO4-P)	1.18	12	0.70	3.00	µg/l	13.87	tonnes	YES		%
Orthoph. (PO4-P)	1.18	12	0.70	3.00	µg/l	13.87	tonnes			%
Total N	430.4	12	335	510	µg/l	4624	tonnes	YES		%
Total P	4.42	12	2.00	9.00	µg/l	49	tonnes	YES		%
SiO2	2.48	12	2.10	2.90	mg/l	26935	tonnes	YES		%
Susp. Part. Matter	1.51	12	0.67	3.04	mg/l	17137	tonnes	YES		%
TOC	3.40	1	3.40	3.40	mg/l	36941	tonnes	YES		%

Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

Table 4.3 MAIN RIVERINE INPUTS 1998 (3) Numedalslågen

Total volume: 10203 1000 m3/day
Minimum flow: 2601 1000 m3/day
Maximum flow: 43053 1000 m3/day

Long term average flow (LTA) 10082 1000 m3/day
LTA period : 1961 to 1990

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.04	12	0.00	0.24	µg/l	0.15	tonnes	YES		%
Cadmium **	0.04	12	0.01	0.24	µg/l	0.15	tonnes			%
Mercury *	1.95	11	0.00	4.00	ng/l	8.67	kg	YES		%
Mercury **	2.14	11	1.00	4.00	ng/l	9.15	kg			%
Copper	2.51	12	1.00	12.30	µg/l	7.02	tonnes	YES		%
Zinc	9.53	12	3.60	26.20	µg/l	35.8	tonnes	YES		%
Lead *	0.53	12	0.20	2.03	µg/l	2.28	tonnes	YES		%
Lead **	0.53	12	0.20	2.03	µg/l	2.28	tonnes			%
Arsenic *	0.14	1	0.14	0.14	µg/l	0.52	tonnes	YES		%
Arsenic **	0.14	1	0.14	0.14	µg/l	0.52	tonnes			%
Total Cr-T *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
Total Cr-T **	0.50	1	0.50	0.50	µg/l	1.86	tonnes			%
Ni *	0.43	12	0.30	0.60	µg/l	1.54	tonnes	YES		%
Ni **	0.43	12	0.30	0.60	µg/l	1.54	tonnes			%
V *	0.70	1	0.70	0.70	µg/l	2.61	tonnes	YES		%
V **	0.70	1	0.70	0.70	µg/l	2.61	tonnes			%
PCBs *		2			ng/l	0.00	kg	NO		%
PCBs **		2			ng/l	0.78	kg			%
gamma-HCH (lindan	0.41	2	0.36	0.45	ng/l	1.51	kg	YES		%
Ammonia (NH4-N)	31.3	12	8.00	61.0	µg/l	94.7	tonnes	YES		%
Ammonia (NH4-N)	31.3	12	8.00	61.0	µg/l	94.7	tonnes			%
Nitrates (NO3-N)	238	12	86	485	µg/l	812	tonnes	YES		%
Orthoph. (PO4-P)	4.17	12	1.00	11.0	µg/l	16.41	tonnes	YES		%
Orthoph. (PO4-P)	4.17	12	1.00	11.0	µg/l	16.41	tonnes			%
Total N	439	12	270	700	µg/l	1607	tonnes	YES		%
Total P	10.25	12	6.00	21.0	µg/l	42	tonnes	YES		%
SiO2	2.91	12	1.80	4.1	mg/l	10811	tonnes	YES		%
Susp. Part. Matter	4.31	12	1.95	8.33	mg/l	18337	tonnes	YES		%
TOC	3.40	1	3.40	3.40	mg/l	12662	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 4.4 MAIN RIVERINE INPUTS 1998 (4) Skienselva

Total volume:	**27363**	**1000 m3/day**	**Long term average flow (LTA)**	**22611**	**1000 m3/day**
Minimum flow:	**10670**	**1000 m3/day**	**LTA period :**	**1961 to 1990**	
Maximum flow:	**60981**	**1000 m3/day**			

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.02	12	0.00	0.03	µg/l	0.18	tonnes	YES		%
Cadmium **	0.02	12	0.01	0.03	µg/l	0.19	tonnes			%
Mercury *	0.58	12	0.00	1.50	ng/l	6.04	kg	NO		%
Mercury **	1.08	12	1.00	1.50	ng/l	10.65	kg			%
Copper	0.68	12	0.30	1.30	µg/l	6.6	tonnes	YES		%
Zinc	2.49	12	2.10	3.10	µg/l	24.9	tonnes	YES		%
Lead *	0.19	12	0.05	1.46	µg/l	1.37	tonnes	YES		%
Lead **	0.19	12	0.05	1.46	µg/l	1.37	tonnes			%
Arsenic *	0.19	1	0.19	0.19	µg/l	1.90	tonnes	YES		%
Arsenic **	0.19	1	0.19	0.19	µg/l	1.90	tonnes			%
Total Cr-T *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
Total Cr-T **	0.50	1	0.50	0.50	µg/l	4.99	tonnes			%
Ni *	0.25	12	0.00	0.40	µg/l	2.32	tonnes	YES		%
Ni **	0.28	12	0.20	0.40	µg/l	2.75	tonnes			%
V *	0.20	1	0.20	0.20	µg/l	2.00	tonnes	YES		%
V **	0.20	1	0.20	0.20	µg/l	2.00	tonnes			%
PCBs *		2			ng/l	0.00	kg	NO		%
PCBs **		2			ng/l	2.10	kg			%
gamma-HCH (lindane)	0.75	2	0.70	0.80	ng/l	7.51	kg	YES		%
Ammonia (NH4-N)	13.8	12	5.0	30.0	µg/l	131.2	tonnes	YES		%
Ammonia (NH4-N)	13.8	12	5.0	30.0	µg/l	131.2	tonnes			%
Nitrates (NO3-N)	213	12	160	270	µg/l	2181	tonnes	YES		%
Orthoph. (PO4-P)	1.04	12	0.50	4.00	µg/l	10.81	tonnes	YES		%
Orthoph. (PO4-P)	1.04	12	0.50	4.00	µg/l	10.81	tonnes			%
Total N	323	12	295	345	µg/l	3235	tonnes	YES		%
Total P	3.42	12	3	6	µg/l	34	tonnes	YES		%
SiO2	1.97	12	1.70	2.10	mg/l	19848	tonnes	YES		%
Susp. Part. Matter	0.86	12	0.55	1.26	mg/l	8478	tonnes	YES		%
TOC	2.20	1	2.20	2.20	mg/l	21972	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 4.5 MAIN RIVERINE INPUTS 1998 (5) Otra

Total volume:	12146	1000 m3/day	Long term average flow (LTA)	12841	1000 m3/day
Minimum flow:	4303	1000 m3/day	LTA period :	1961 to 1990	
Maximum flow:	46215	1000 m3/day			

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.03	12	0.02	0.05	µg/l	0.12	tonnes	YES		%
Cadmium **	0.03	12	0.02	0.05	µg/l	0.12	tonnes			%
Mercury *	0.58	12	0.00	2.00	ng/l	2.40	kg	NO		%
Mercury **	1.17	12	1.00	2.00	ng/l	5.09	kg			%
Copper	0.46	12	0.30	0.70	µg/l	1.98	tonnes	YES		%
Zinc	3.79	12	2.90	5.10	µg/l	16.9	tonnes	YES		%
Lead *	0.30	12	0.17	0.51	µg/l	1.34	tonnes	YES		%
Lead **	0.30	12	0.17	0.51	µg/l	1.34	tonnes			%
Arsenic *	0.15	1	0.15	0.15	µg/l	0.66	tonnes	YES		%
Arsenic **	0.15	1	0.15	0.15	µg/l	0.66	tonnes			%
Total Cr-T *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
Total Cr-T **	0.50	1	0.50	0.50	µg/l	2.22	tonnes			%
Ni *	0.95	12	0.50	2.00	µg/l	4.11	tonnes	YES		%
Ni **	0.95	12	0.50	2.00	µg/l	4.11	tonnes			%
V *	0.20	1	0.20	0.20	µg/l	0.89	tonnes	YES		%
V **	0.20	1	0.20	0.20	µg/l	0.89	tonnes			%
PCBs *		2			ng/l	0.00	kg	NO		%
PCBs **		2			ng/l	0.93	kg			%
gamma-HCH (lindane)	0.43	2	0.24	0.62	ng/l	1.91	kg	YES		%
Ammonia (NH4-N)	13.3	12	4.0	24.0	µg/l	62.5	tonnes	YES		%
Ammonia (NH4-N)	13.3	12	4.0	24.0	µg/l	62.5	tonnes			%
Nitrates (NO3-N)	140	11	97	195	µg/l	632	tonnes	YES		%
Orthoph. (PO4-P)	0.89	12	0.5	2.0	µg/l	3.78	tonnes	YES		%
Orthoph. (PO4-P)	0.89	12	0.5	2.0	µg/l	3.78	tonnes			%
Total N	264	11	230	315	µg/l	1176	tonnes	YES		%
Total P	2.91	11	2.0	4.0	µg/l	13	tonnes	YES		%
SiO2	1.68	12	1.30	2.10	mg/l	7634	tonnes	YES		%
Susp. Part. Matter	1.18	12	0.50	2.34	mg/l	5005	tonnes	YES		%
TOC	2.65	11	1.90	3.50	mg/l	11773	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 4.6 MAIN RIVERINE INPUTS 1998 (6) Orreelva

Total volume:	**331**	**1000 m3/day**	**Long term average flow (LTA)**	**333**	**1000 m3/day**
Minimum flow:	**55**	**1000 m3/day**	**LTA period : 1961 to 1990**		
Maximum flow:	**1187**	**1000 m3/day**			

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.01	12	0.00	0.02	µg/l	0.00	tonnes	NO		%
Cadmium **	0.01	12	0.01	0.02	µg/l	0.00	tonnes			%
Mercury *	0.21	12	0.00	1.50	ng/l	0.05	kg	NO		%
Mercury **	1.04	12	1.00	1.50	ng/l	0.13	kg			%
Copper	2.11	12	0.80	8.00	µg/l	0.37	tonnes	YES		%
Zinc	2.06	12	0.60	4.30	µg/l	0.33	tonnes	YES		%
Lead *	0.29	12	0.04	0.59	µg/l	0.04	tonnes	YES		%
Lead **	0.29	12	0.04	0.59	µg/l	0.04	tonnes			%
Arsenic *	0.29	1	0.29	0.29	µg/l	0.04	tonnes	YES		%
Arsenic **	0.29	1	0.29	0.29	µg/l	0.04	tonnes			%
Total Cr-T *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
Total Cr-T **	0.50	1	0.50	0.50	µg/l	0.06	tonnes			%
Ni *	1.18	12	0.50	1.80	µg/l	0.14	tonnes	YES		%
Ni **	1.18	12	0.50	1.80	µg/l	0.14	tonnes			%
V *	0.40	1	0.40	0.40	µg/l	0.05	tonnes	YES		%
V **	0.40	1	0.40	0.40	µg/l	0.05	tonnes			%
PCBs *		2			ng/l	0.00	kg	NO		%
PCBs **		2			ng/l	0.03	kg			%
gamma-HCH (lindane)	0.55	2	0.40	0.69	ng/l	0.06	kg	YES		%
Ammonia (NH4-N)	46.7	12	20	87	µg/l	6.18	tonnes	YES		%
Ammonia (NH4-N)	46.7	12	20	87	µg/l	6.18	tonnes			%
Nitrates (NO3-N)	898	12	82	1975	µg/l	114	tonnes	YES		%
Orthoph. (PO4-P)	12.25	12	3	28	µg/l	1.99	tonnes	YES		%
Orthoph. (PO4-P)	12.25	12	3	28	µg/l	1.99	tonnes			%
Total N	1565	12	640	2560	µg/l	223	tonnes	YES		%
Total P	40	12	24	80	µg/l	6	tonnes	YES		%
SiO2	0.50	1	0.50	0.50	mg/l	60	tonnes	YES		%
Susp. Part. Matter	4.42	12	0.53	10.20	mg/l	611	tonnes	YES		%
TOC	5.50	1	5.50	5.50	mg/l	665	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 4.7 MAIN RIVERINE INPUTS 1998 (7) Suldalslågen

Total volume:	**4350**	**1000 m3/day**	**Long term average flow (LTA)**	**7422**	**1000 m3/day**
Minimum flow:	**1192**	**1000 m3/day**	**LTA period : 1961 to 1990**		
Maximum flow:	**13608**	**1000 m3/day**			

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.01	4	0.01	0.01	µg/l	0.02	tonnes	YES		%
Cadmium **	0.01	4	0.01	0.01	µg/l	0.02	tonnes			%
Mercury *	0.38	4	0.00	1.50	ng/l	0.34	kg	NO		%
Mercury **	1.13	4	1.00	1.50	ng/l	1.70	kg			%
Copper	0.30	4	0.20	0.40	µg/l	0.46	tonnes	YES		%
Zinc	1.58	4	1.20	1.90	µg/l	2.37	tonnes	YES		%
Lead *	0.09	4	0.05	0.14	µg/l	0.13	tonnes	YES		%
Lead **	0.09	4	0.05	0.14	µg/l	0.13	tonnes			%
Arsenic *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
Arsenic **	0.10	1	0.10	0.10	µg/l	0.16	tonnes			%
Total Cr-T *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
Total Cr-T **	0.50	1	0.50	0.50	µg/l	0.79	tonnes			%
Ni *	0.13	4	0.00	0.30	µg/l	0.14	tonnes	NO		%
Ni **	0.23	4	0.20	0.30	µg/l	0.34	tonnes			%
V *	0.00	0	0.00	0.00	µg/l	0.00	tonnes	0		%
V **	0.00	0	0.00	0.00	µg/l	0.00	tonnes			%
PCBs *		1			ng/l	0.00	kg	NO		%
PCBs **		1			ng/l	0.33	kg			%
gamma-HCH (lindane)	0.12	1	0.12	0.12	ng/l	0.19	kg	YES		%
Ammonia (NH4-N)	3.25	4	3	4	µg/l	4.99	tonnes	YES		%
Ammonia (NH4-N)	3.25	4	3	4	µg/l	4.99	tonnes			%
Nitrates (NO3-N)	183	4	148	205	µg/l	282	tonnes	YES		%
Orthoph. (PO4-P)	0.75	4	0.5	1.0	µg/l	1.26	tonnes	YES		%
Orthoph. (PO4-P)	0.75	4	0.5	1.0	µg/l	1.26	tonnes			%
Total N	243	4	210	280	µg/l	374	tonnes	YES		%
Total P	1.50	4	1	2	µg/l	2	tonnes	YES		%
SiO2	0.70	1	0.70	0.70	mg/l	1112	tonnes	YES		%
Susp. Part. Matter	0.70	4	0.51	0.83	mg/l	1054	tonnes	YES		%
TOC	0.50	1	0.50	0.50	mg/l	794	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 4.8 MAIN RIVERINE INPUTS 1998 (8) Orkla

Total volume:	**5538**	**1000 m3/day**	**Long term average flow (LTA)**	**5374 1000 m3/day**
Minimum flow:	**1702**	**1000 m3/day**	**LTA period : 1961 to 1990**	
Maximum flow:	**19587**	**1000 m3/day**		

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.06	22	0.01	0.49	µg/l	0.11	tonnes	YES		%
Cadmium **	0.06	22	0.01	0.49	µg/l	0.11	tonnes			%
Mercury *	0.55	11	0.00	2.00	ng/l	1.54	kg	NO		%
Mercury **	1.18	11	1.00	2.00	ng/l	2.56	kg			%
Copper	6.44	22	2.60	13.70	µg/l	12.48	tonnes	YES		%
Zinc	17.5	22	7.20	38.50	µg/l	31.8	tonnes	YES		%
Lead *	0.08	22	0.02	0.30	µg/l	0.16	tonnes	YES		%
Lead **	0.08	22	0.02	0.30	µg/l	0.16	tonnes			%
Arsenic *	0.07	11	0.00	0.20	µg/l	0.14	tonnes	NO		%
Arsenic **	0.12	11	0.10	0.20	µg/l	0.22	tonnes			%
Total Cr-T *	0.05	11	0.00	0.50	µg/l	0.07	tonnes	NO		%
Total Cr-T **	0.50	11	0.50	0.50	µg/l	1.01	tonnes			%
Ni *	0.86	22	0.50	1.50	µg/l	1.92	tonnes	YES		%
Ni **	0.86	22	0.50	1.50	µg/l	1.92	tonnes			%
V *	0.05	11	0.00	0.30	µg/l	0.09	tonnes	NO		%
V **	0.22	11	0.20	0.30	µg/l	0.43	tonnes			%
PCBs *		1			ng/l	0.00	kg	NO		%
PCBs **		1			ng/l	0.42	kg			%
gamma-HCH (lindane)	0.15	1	0.15	0.15	ng/l	0.30	kg	YES		%
Ammonia (NH4-N)	6.82	11	3.0	15.0	µg/l	14.09	tonnes	YES		%
Ammonia (NH4-N)	6.82	11	3.0	15.0	µg/l	14.09	tonnes			%
Nitrates (NO3-N)	160	11	73	280	µg/l	294	tonnes	YES		%
Orthoph. (PO4-P)	1.28	15	0.5	4.9	µg/l	2.55	tonnes	YES		%
Orthoph. (PO4-P)	1.28	15	0.5	4.9	µg/l	2.55	tonnes			%
Total N	287	15	210	405	µg/l	581	tonnes	YES		%
Total P	4.11	15	2.0	10.0	µg/l	9	tonnes	YES		%
SiO2	2.80	1	2.80	2.80	mg/l	5660	tonnes	YES		%
Susp. Part. Matter	1.25	11	0.83	2.97	mg/l	2890	tonnes	YES		%
TOC	2.98	11	1.70	5.60	mg/l	6037	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 4.9 MAIN RIVERINE INPUTS 1998 (9) Vefsna

Total volume:	**16980**	**1000 m3/day**	**Long term average flow (LTA)**	**15620**	**1000 m3/day**
Minimum flow:	**3110**	**1000 m3/day**	**LTA period :**	**1961 to 1990**	
Maximum flow:	**89614**	**1000 m3/day**			

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	**0.02**	**12**	**0.00**	**0.07**	**µg/l**	**0.06**	**tonnes**	**NO**		**%**
Cadmium **	**0.03**	**12**	**0.01**	**0.07**	**µg/l**	**0.09**	**tonnes**			**%**
Mercury *	**0.71**	**12**	**0.0**	**3.0**	**ng/l**	**6.11**	**kg**	**NO**		**%**
Mercury **	**1.29**	**12**	**1.0**	**3.0**	**ng/l**	**8.45**	**kg**			**%**
Copper	**4.18**	**12**	**0.3**	**15.3**	**µg/l**	**15.4**	**tonnes**	**YES**		**%**
Zinc	**11.83**	**12**	**0.4**	**50.2**	**µg/l**	**33.9**	**tonnes**	**YES**		**%**
Lead *	**0.67**	**12**	**0.03**	**4.4**	**µg/l**	**2.08**	**tonnes**	**YES**		**%**
Lead **	**0.67**	**12**	**0.03**	**4.4**	**µg/l**	**2.08**	**tonnes**			**%**
Arsenic *	**0.10**	**1**	**0.10**	**0.10**	**µg/l**	**0.62**	**tonnes**	**YES**		**%**
Arsenic **	**0.10**	**1**	**0.10**	**0.10**	**µg/l**	**0.62**	**tonnes**			**%**
Total Cr-T *	**0.00**	**1**	**0.00**	**0.00**	**µg/l**	**0.00**	**tonnes**	**NO**		**%**
Total Cr-T **	**0.50**	**1**	**0.50**	**0.50**	**µg/l**	**3.10**	**tonnes**			**%**
Ni *	**0.61**	**12**	**0.00**	**1.80**	**µg/l**	**3.43**	**tonnes**	**YES**		**%**
Ni **	**0.63**	**12**	**0.20**	**1.80**	**µg/l**	**3.46**	**tonnes**			**%**
V *	**0.00**	**1**	**0.00**	**0.00**	**µg/l**	**0.00**	**tonnes**	**NO**		**%**
V **	**0.20**	**1**	**0.20**	**0.20**	**µg/l**	**1.24**	**tonnes**			**%**
PCBs *		**2**			**ng/l**	**0.16**	**kg**	**NO**		**%**
PCBs **		**2**			**ng/l**	**1.34**	**kg**			**%**
gamma-HCH (lindane)	**0.12**	**2**	**0.12**	**0.12**	**ng/l**	**0.74**	**kg**	**YES**		**%**
Ammonia (NH4-N)	**16.8**	**12**	**3.0**	**45.0**	**µg/l**	**63.6**	**tonnes**	**YES**		**%**
Ammonia (NH4-N)	**16.8**	**12**	**3.0**	**45.0**	**µg/l**	**63.6**	**tonnes**			**%**
Nitrates (NO3-N)	**81**	**12**	**28**	**137**	**µg/l**	**315**	**tonnes**	**YES**		**%**
Orthoph. (PO4-P)	**3.04**	**12**	**0.5**	**8.0**	**µg/l**	**15.2**	**tonnes**	**YES**		**%**
Orthoph. (PO4-P)	**3.04**	**12**	**0.5**	**8.0**	**µg/l**	**15.2**	**tonnes**			**%**
Total N	**465**	**12**	**134**	**1300**	**µg/l**	**1822**	**tonnes**	**YES**		**%**
Total P	**6.50**	**12**	**2.00**	**10.00**	**µg/l**	**38**	**tonnes**	**YES**		**%**
SiO2	**1.50**	**1**	**1.50**	**1.50**	**mg/l**	**9297**	**tonnes**	**YES**		**%**
Susp. Part. Matter	**3.99**	**12**	**1.00**	**7.86**	**mg/l**	**26433**	**tonnes**	**YES**		**%**
TOC	**3.50**	**1**	**3.50**	**3.50**	**mg/l**	**21692**	**tonnes**	**YES**		**%**

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 4.10 MAIN RIVERINE INPUTS 1998 (10) Altaelva

Total volume:	**8068**	**1000 m3/day**	**Long term average flow (LTA)**	**7487 1000 m3/day**
Minimum flow:	**2238**	**1000 m3/day**	**LTA period : 1961 to 1990**	
Maximum flow:	**68135**	**1000 m3/day**		

	Mean	Number of meas.	Minimum concentr. during the year	Maximum concentr. during the year		Total quantity of substance discharged each year		Were 70 % of measurements above limit of detection ?		Precision of the estimate of the load
Cadmium *	0.00	4	0.00	0.00	µg/l	0.00	tonnes	NO		%
Cadmium **	0.01	4	0.01	0.01	µg/l	0.03	tonnes			%
Mercury *	0.88	4	0.00	2.50	ng/l	5.31	kg	NO		%
Mercury **	1.38	4	1.00	2.50	ng/l	5.79	kg			%
Copper	0.85	4	0.60	1.00	µg/l	2.65	tonnes	YES		%
Zinc	0.43	4	0.20	0.80	µg/l	1.35	tonnes	YES		%
Lead *	0.05	4	0.00	0.08	µg/l	0.11	tonnes	YES		%
Lead **	0.05	4	0.02	0.08	µg/l	0.12	tonnes			%
Arsenic *	0.50	1	0.50	0.50	µg/l	1.47	tonnes	YES		%
Arsenic **	0.50	1	0.50	0.50	µg/l	1.47	tonnes			%
Total Cr-T *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
Total Cr-T **	0.50	1	0.50	0.50	µg/l	1.47	tonnes			%
Ni *	0.20	4	0.00	0.40	µg/l	0.89	tonnes	NO		%
Ni **	0.30	4	0.20	0.40	µg/l	1.03	tonnes			%
V *	0.00	1	0.00	0.00	µg/l	0.00	tonnes	NO		%
V **	0.20	1	0.20	0.20	µg/l	0.59	tonnes			%
PCBs *		1			ng/l	0.00	kg	NO		%
PCBs **		1			ng/l	0.62	kg			%
gamma-HCH (lindane)	0.04	1	0.04	0.04	ng/l	0.12	kg	YES		%
Ammonia (NH4-N)	6.50	4	3	13	µg/l	18.93	tonnes	YES		%
Ammonia (NH4-N)	6.50	4	3	13	µg/l	18.93	tonnes			%
Nitrates (NO3-N)	62.3	4	25	96	µg/l	122	tonnes	YES		%
Orthoph. (PO4-P)	6.00	4	1.00	9	µg/l	9.53	tonnes	YES		%
Orthoph. (PO4-P)	6.00	4	1.00	9	µg/l	9.53	tonnes			%
Total N	194	4	175	215	µg/l	609	tonnes	YES		%
Total P	10.25	4	8	13	µg/l	27	tonnes	YES		%
SiO2	4.50	1	4.50	4.50	mg/l	13252	tonnes	YES		%
Susp. Part. Matter	0.94	4	0.32	2.22	mg/l	4786	tonnes	YES		%
TOC	3.50	1	3.50	3.50	mg/l	10307	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

APPENDIX V : INPUTS FROM TRIBUTARY RIVERS 1998 (Paragraph 17 - 19) Page :

Paragraph 17: Tributary rivers ./.

Paragraph18: Measurements of calculation used - including information on the concentration upon which the measurement is based:

Appendix VIII and IX (1-10) and Paragraph 3.2 (Report A, 1991, 1992 - 1999)

Paragraph 19: Any other relevant information (e.g. proportion of substance discharged as insoluble material):

Table 5.1 The Skagerrak Region. Inputs from tributary rivers 1998 in The Subareas (1-5).

The Skagerrak Region with sub-areas: (1A) Glomma, (1B) Inner Oslofj., (2) Drammenselva, (3) Numedalslågen, (4) Skienselva, (5) Otra

Total quantity of substance discharged per year:								Were 70 % of measurements above the detection limit ?	Precision of the estimate of the load
Sub-areas :	1A	1B	2	3	4	5			
Substance:									
Cd *	0.03	0.02	0.01	0.03	0.03	0.33	tonnes	YES	%
Cd **	0.04	0.02	0.01	0.03	0.03	0.33	tonnes		%
Hg *	0.85	0.96	0.59	0.74	1.14	9.43	kg	YES	%
Hg **	1.17	1.01	0.59	0.86	1.14	13.59	kg		%
Cu	1.2	2.4	0.6	0.6	0.3	4.3	tonnes	YES	%
Zn	2.3	3.9	2.1	9.6	5.7	54.4	tonnes	YES	%
Pb *	0.19	0.33	0.31	0.40	0.31	5.25	tonnes	YES	%
Pb **	0.19	0.33	0.31	0.40	0.31	5.25	tonnes		%
Arsenic *	0.38	0.14	0.17	0.16	0.20	2.27	tonnes	YES	%
Arsenic **	0.38	0.14	0.17	0.16	0.20	2.27	tonnes		%
Cr-T *	1.18	3.64	0.47	1.01	0.00	0.00	tonnes	NO	%
Cr-T **	1.33	3.83	0.47	1.17	0.57	5.34	tonnes		%
Ni *	0.80	1.17	0.44	0.36	0.34	2.66	tonnes	YES	%
Ni **	0.80	1.20	0.44	0.45	0.34	3.32	tonnes		%
PCBs *	0.00	0.06	0.00	0.00	0.00	0.00	kg	NO	%
PCBs **	0.22	0.15	0.06	0.14	0.24	2.24	kg		%
gamma-HCH	0.62	0.34	0.15	0.33	0.91	8.09	kg	YES	%
NH4-N *	39	19	2	34	27	264	tonnes	YES	%
NH4-N **	39	19	2	34	27	264	tonnes		%
NO3-N	658	461	297	776	140	1984	tonnes	YES	%
PO4-P *	6	5	8	8	1	15	tonnes	YES	%
PO4-P **	6	5	8	8	1	15	tonnes		%
Total N	1210	657	416	924	307	3913	tonnes	YES	%
Total P	20	19	12	33	5	54	tonnes	YES	%
SiO2	2243	2170	2126	4012	2838	21296	tonnes	YES	%
S.P.M.	2943	5053	5433	9047	1567	16052	tonnes	YES	%
TOC	7467	3086	1742	2730	6244	39284	tonnes	YES	%

Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

Table 5.2 The remaining North Sea Region. Inputs from tributary rivers 1998 in The Subareas (6-7).

The remaining North Sea Region with sub-areas: (6) Orreelva, (7) Suldalslågen

Total quantity of substance discharged per year:				Were 70 % of measurements above the detection limit ?		Precision of the estimate of the load
Sub-areas :	6	7				
Substance:						
Cd *	0.27	0.44	tonnes	NO	_____	%
Cd **	0.30	0.57	tonnes		_____	%
Hg *	19.68	13.04	kg	NO	_____	%
Hg **	22.04	33.60	kg		_____	%
Cu	5.8	16.2	tonnes	YES	_____	%
Zn	52.3	94.1	tonnes	YES	_____	%
Pb *	6.76	3.18	tonnes	YES	_____	%
Pb **	6.76	3.21	tonnes		_____	%
Arsenic *	2.30	3.12	tonnes	NO	_____	%
Arsenic **	2.66	5.40	tonnes		_____	%
Cr-T *	0.00	0.00	tonnes	NO	_____	%
Cr-T **	7.94	15.88	tonnes		_____	%
Ni *	18.46	8.41	tonnes	NO	_____	%
Ni **	19.24	10.89	tonnes		_____	%
PCBs *	0.00	0.16	kg	NO	_____	%
PCBs **	3.33	6.81	kg		_____	%
gamma-HCH	9.00	8.29	kg	YES	_____	%
NH4-N *	219	500	tonnes	YES	_____	%
NH4-N **	219	500	tonnes		_____	%
NO3-N	4578	6099	tonnes	YES	_____	%
PO4-P *	29	28	tonnes	NO	_____	%
PO4-P **	29	34	tonnes		_____	%
Total N	6975	9214	tonnes	YES	_____	%
Total P	188	109	tonnes	YES	_____	%
SiO2	29263	46169	tonnes	YES	_____	%
S.P.M.	15069	23696	tonnes	YES	_____	%
TOC	49268	31497	tonnes	YES	_____	%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 5.3 The Norwegian Sea Region. Inputs from tributary rivers 1998 in The Subareas (8-9).

The Norwegian Sea Region with sub-areas: (8) Orkla, (9) Vefsna

Total quantity of substance discharged per year:				Were 70 % of measurements above the detection limit ?		Precision of the estimate of the load
Sub-areas :	8	9				
Substance:						
Cd *	0.05	0.09	tonnes	NO	_____	%
Cd **	0.36	0.30	tonnes		_____	%
Hg *	27.6	0.2	kg	NO	_____	%
Hg **	44.0	26.2	kg		_____	%
Cu	33.8	28.1	tonnes	YES	_____	%
Zn	81.8	393.8	tonnes	YES	_____	%
Pb *	13.10	2.38	tonnes	YES	_____	%
Pb **	13.10	2.42	tonnes		_____	%
Arsenic *	4.33	4.19	tonnes	NO	_____	%
Arsenic **	6.33	4.75	tonnes		_____	%
Cr-T *	81.32	313.72	tonnes	NO	_____	%
Cr-T **	94.79	320.98	tonnes		_____	%
Ni *	41.51	131.48	tonnes	YES	_____	%
Ni **	42.89	131.89	tonnes		_____	%
PCBs *	0.00	0.00	kg	NO	_____	%
PCBs **	7.40	5.49	kg		_____	%
gamma-HCH	14.38	8.51	kg	YES	_____	%
NH4-N *	241	187	tonnes	YES	_____	%
NH4-N **	255	187	tonnes		_____	%
NO3-N	2844	983	tonnes	YES	_____	%
PO4-P *	47	27	tonnes	YES	_____	%
PO4-P **	47	30	tonnes		_____	%
Total N	6913	2488	tonnes	YES	_____	%
Total P	163	95	tonnes	YES	_____	%
SiO2	51300	26819	tonnes	YES	_____	%
S.P.M.	71929	69402	tonnes	YES	_____	%
TOC	56863	3934	tonnes	YES	_____	%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 5.4 The Barents Region. Inputs from tributary rivers 1998 in The Subarea (10).

The Barents Sea Region with sub-area: (10) Alta

Total quantity of substance discharged per year:			Were 70 % of measurements above the detection limit ?		Precision of the estimate of the load
Sub-area :	10				
Substance:					
Cd *	0.34	tonnes	NO		%
Cd **	0.40	tonnes			%
Hg *	11.36	kg	NO		%
Hg **	17.81	kg			%
Cu	21.8	tonnes	YES		%
Zn	97.4	tonnes	YES		%
Pb *	3.85	tonnes	YES		%
Pb **	3.89	tonnes			%
Arsenic *	2.86	tonnes	NO		%
Arsenic **	3.20	tonnes			%
Cr-T *	11.01	tonnes	NO		%
Cr-T **	16.88	tonnes			%
Ni *	34.30	tonnes	YES		%
Ni **	34.73	tonnes			%
PCBs *	0.00	kg	NO		%
PCBs **	3.70	kg			%
gamma-HCH	3.66	kg	YES		%
NH4-N *	1420	tonnes	YES		%
NH4-N **	1420	tonnes			%
NO3-N	332	tonnes	YES		%
PO4-P *	111	tonnes	NO		%
PO4-P **	113	tonnes			%
Total N	4447	tonnes	YES		%
Total P	236	tonnes	YES		%
SiO2	77577	tonnes	YES		%
S.P.M.	30822	tonnes	YES		%
TOC	40298	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

APPENDIX VI : OTHER INPUTS 1998 (Paragraph 20) **Page:**

Paragraph 20: Any available information on discharge through urban run-off - storm water overflow - polder effluents etc.:

"Background" is runoff from forested areas and highlands, including effect of acid precipitation

Agriculture runoff:
- "Area" is runoff from arable land
- "Point"-sources are drainage from silos, manures etc.

Paragraph 3.3 (Report A, 1991, 1992 - 1999)

Table 6.1 Nutrients from "Down Stream Areas" of main and tributary rivers and rivers not monitored 1998.

Direct runoff of P and N :

Sub-areas:		Back-ground tonnes	Agriculture Area tonnes	Sum tonnes
1 Glomma	P	18.4	10.4	28.8
	N	463.1	498.7	961.7
	PO4-P	3.7	3.1	6.8
	NO3-N	277.8	349.1	626.9
	NH4-N	23.2	34.9	58.1
1 Inner Oslofjord	P	3.4	2.2	5.6
	N	72.8	85.7	158.5
	PO4-P	0.7	0.6	1.3
	NO3-N	43.7	60.0	103.7
	NH4-N	3.6	6.0	9.6
2 Drammenselva	P	1.4	2.1	3.6
	N	64.0	68.3	132.3
	PO4-P	0.3	0.6	0.9
	NO3-N	38.4	47.8	86.2
	NH4-N	3.2	4.8	8.0
3 Numedalslågen	P	4.9	10.6	15.5
	N	184.7	427.6	612.3
	PO4-P	1.0	3.2	4.2
	NO3-N	110.8	299.3	410.2
	NH4-N	9.2	29.9	39.2
4 Skienselva	P	6.8	2.1	8.9
	N	331.3	89.5	420.7
	PO4-P	1.4	0.6	2.0
	NO3-N	198.8	62.6	261.4
	NH4-N	16.6	6.3	22.8
5 Otra	P	7.0	3.9	11.0
	N	391.8	99.5	491.3
	PO4-P	1.4	1.2	2.6
	NO3-N	235.1	69.7	304.7
	NH4-N	19.6	7.0	26.6
6 Orreelva	P	22.8	47.5	70.3
	N	1463.8	1307.0	2770.9
	PO4-P	4.6	14.3	18.8
	NO3-N	878.3	914.9	1793.2
	NH4-N	73.2	91.5	164.7
7 Suldalslågen	P	58.0	69.1	127.2
	N	5151.3	1359.0	6510.3
	PO4-P	11.6	20.7	32.3
	NO3-N	3090.8	951.3	4042.0
	NH4-N	257.6	95.1	352.7
8 Orkla	P	142.1	153.4	295.5
	N	3850.8	3626.9	7477.6
	PO4-P	28.4	46.0	74.4
	NO3-N	2310.5	2538.8	4849.3
	NH4-N	192.5	253.9	446.4
9 Vefsna	P	83.6	39.4	123.0
	N	1920.5	929.0	2849.5
	PO4-P	16.7	11.8	28.5
	NO3-N	1152.3	650.3	1802.6
	NH4-N	96.0	65.0	161.1
10 Altaelva	P	86.1	2.1	88.2
	N	1618.3	62.4	1680.7
	PO4-P	17.2	0.6	17.9
	NO3-N	971.0	43.7	1014.7
	NH4-N	80.9	4.4	85.3

SUM	P	778	tonnes
SUM	N	24066	tonnes
SUM	PO4-P	190	tonnes
SUM	NO3-N	15295	tonnes
SUM	NH4-N	1374	tonnes

APPENDIX VII : MAIN RIVERS 1 - 10. MEASURED CONCENTRATIONS 1998 **Page:**

Table 7.1 Measured concentrations - 1998

Watercourse : Glomma

Annual flow . . . . . : 24089 mill. cbm Min : 292 cbm/s

Drainage area . . . . . : 41218 sq.km Max: 1845 cbm/s

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm HCH	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
																	28	52	101	118	138	153	180				
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	µg/l	µg/l	µg/l	µg/l
980114	579	5.37	13	6	890	695	34	1.5	4.5	0.04	0.87	5.58	3.4		1.5												0.8
980223	461	5.45	25	11	930	705	40	1.6	4.6	0.06	0.50	14.6	3.7		1.5	0.51	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				1.1
980323	307	4.66	7	2	550	365	44	1.2	2.9	0.16	0.20	2.48	3.2		1.0												0.5
980415	461	5.22	16	9	745	570	113	2.1	4.9	0.02	0.37	9.54	3.4		915												9.9
980516	1584	3.12	13	5	390	195	15	2.6	4.6	0.12	0.33	6.12	3.0		3.5												0.8
980615	1005	4.09	8	4	490	325	16	3.0	2.9	0.21	0.21	2.74	2.3		1.0												0.6
980722	820	4.10	9	3	485	91	13	2.1	1.9	0.03	37.4	4.04	2.4	5.1	42												0.9
980817	654	4.57	14	5	475	260	21	1.7	2.0	0.08	0.24	5.19	2.6		1.0												0.7
980914	1086	4.01	11	5	440	260	16	2.8	3.8	0.17	0.27	4.43	2.7		2.5												0.7
981020	615	4.74	16	6	655	430	20	1.4	2.7	0.06	0.28	5.74	3.2		<1.0									0.19	0.3	<0.5	0.6
981116	589	4.18	12	4	565	330	24	16.9	43.8	0.37	3.31	5.15	3.4		730	0.50	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.9
981214	487	4.64	8	3	570	380	27	1.5	3.7	0.62	0.19	3.80	3.5		2.0												0.9
Min.:	307	3.12	7.0	2.0	390	91	13	1.2	1.9	0.02	0.19	2.48	2.3	5.1	1	0.5	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.19	0.3	0.5	0.5
Max.:	1584	5.45	25.0	11.0	930	705	113	16.9	43.8	0.62	37.40	14.60	3.70	5.10	915.0	0.51	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.19	0.3	0.5	9.9
Aver.:	721	4.51	12.7	5.3	599	384	32	3.2	6.9	0.16	3.68	5.78	3.07	5.10	141.8	0.51	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.19	0.3	0.5	1.5
St.dev.:	355	0.66	4.9	2.6	174	190	27	4.4	11.7	0.18	10.65	3.33	0.46		320.6	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00				2.6
Numb.:	12	12	12	12	12	12	12	12	12	12	12	12	12	1	12	2	2	2	2	2	2	2	2	1	1	1	12

Table 7.2 Measured concentrations - 1998

Watercourse : Drammenselva

Annual flow . . . . . : 10865 mill. cbm Min : 186.0 cbm/s

Drainage area . . . . . : 17028 sq.km Max: 749.4 cbm/s

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	HCH ng/l	28 ng/l	52 ng/l	101 ng/l	118 ng/l	138 ng/l	153 ng/l	180 ng/l	µg/l	µg/l	µg/l	µg/l
980116	300.8	4.36	2	0.8	335	245	12	1.2	4.2	<0.01	0.18	1.80	2.9		<1.0												0.5
980215	285.9	3.42	4	0.8	445	295	13	0.7	2.5	0.02	0.09	1.13	2.4		<1.0	0.40	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.4
980315	292.3	3.34	4	1.0	415	285	14	0.7	3.2	0.01	0.15	1.45	2.3		<1.0												0.4
980415	278.5	3.36	5	1.0	490	355	16	0.7	2.5	<0.01	0.09	1.65	2.6		<1.0												0.5
980516	744.0	2.88	5	2.0	390	245	8	1.0	2.9	0.02	0.19	1.97	2.4		1.0												0.5
980616	321.0	3.52	4	1.0	395	235	16	0.8	3.4	<0.01	0.11	1.81	2.3		<1.0												0.5
980715	345.4	1.38	5	1.0	425	230	16	0.8	2.9	0.02	0.15	1.57	2.3	3.4	1.0												0.8
980816	215.8	3.62	4	0.9	415	215	18	0.7	2.2	<0.01	0.07	0.98	2.1		<1.0												0.5
980915	305.1	3.36	9	3.0	500	260	22	0.9	3.8	0.01	0.28	3.04	2.7		1.5												0.4
981014	284.9	3.60	4	0.9	420	215	24	0.6	2.3	0.02	0.12	0.78	2.4		<1.0									<0.1	0.4	0.5	0.4
981115	291.2	3.65	4	1.0	510	305	20	0.8	3.2	0.03	0.11	1.21	2.8		1.5	0.52	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.5
981215	297.6	3.53	3	0.7	425	290	14	1.0	3.0	0.02	0.06	0.67	2.6		1.5												0.7
Min.:	216	1.38	2.0	0.7	335	215	8	0.6	2.2	0.01	0.06	0.67	2.10	3.40	1.00	0.40	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.10	0.4	0.5	0.4
Max.:	744	4.36	9.0	3.0	510	355	24	1.2	4.2	0.03	0.28	3.04	2.90	3.40	1.5	0.52	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.10	0.4	0.5	0.8
Aver.:	330	3.34	4.4	1.2	430	265	16	0.8	3.0	0.02	0.13	1.51	2.48	3.40	1.1	0.46	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.10	0.4	0.5	0.5
St.dev.:	134	0.70	1.7	0.7	50	42	4	0.2	0.6	0.01	0.06	0.64	0.24		0.2	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.1
Numb.:	12	12	12	12	12	12	12	12	12	12	12	12	12	1	12	2	2	2	2	2	2	2	2	1	1	1	12

Table 7.3 Measured concentrations - 1998

Watercourse : Numedalslågen

Annual flow . . . . . : 3724 mill. cbm **Min : 30.1 cbm/s**

Drainage area . . . . . : 5513 sq.km **Max: 498.3 cbm/s**

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	HCH ng/l	28 ng/l	52 ng/l	101 ng/l	118 ng/l	138 ng/l	153 ng/l	180 ng/l	µg/l	µg/l	µg/l	µg/l
980120	95.5	4.01	11	6	700	485	31	1.1	12.8	0.02	0.61	3.42	4.1		2.5												
980219	89.4	3.04	7	4	440	275	42	2.0	4.5	0.02	0.21	2.86	3.0		<1.0	0.36	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.5
980318	78.0	2.88	7	3	385	220	49	2.0	3.9	0.01	0.20	2.66	2.7		<1.0												0.4
980415	111.5	3.49	13	6	590	425	48	2.5	6.6	0.04	0.48	6.38	3.2	3.4	1.0												0.3
980519	192.9	1.75	10	3	270	99	8	1.2	9.2	0.03	0.37	4.51	2.1		3.0												0.5
980623	128.1	2.20	21	11	310	86	16	1.5	26.2	0.03	2.03	5.65	1.8		4.0												0.3
980715	95.0	0.96	6	2	285	105	11	1.1	4.6	0.02	0.24	2.53	2.1		2.0												0.5
980817	53.5	2.98	7	1	350	155	31	2.9	3.6	<0.01	0.26	7.04	1.9		1.5												0.5
980917	267.0	2.59	14	4	475	165	10	1.0	7.8	0.03	0.81	8.33	3.5		3.5												0.4
981019	90.5	2.80	7	2	345	170	22	1.1	7.1	0.04	0.36	2.00	2.8		1.5												0.4
981112	86.3	3.90	13	5	650	400	47	1.4	8.2	0.24	0.47	4.37	4.0		2.5	0.45	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.14	0.7	<0.5	0.3
981208	51.7	3.58	7	3	470	275	61	12.3	19.8	0.04	0.32	1.95	3.7														0.4
																											0.6
Min.:	52	0.96	6.0	1.0	270	86	8	1.0	3.6	0.01	0.20	1.95	1.80	3.40	1.00	0.36	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.14	0.7	0.5	0.3
Max.:	267	4.01	21.0	11.0	700	485	61	12.3	26.2	0.24	2.03	8.33	4.10	3.40	4.00	0.45	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.14	0.7	0.5	0.6
Aver.:	112	2.85	10.3	4.2	439	238	31	2.5	9.5	0.04	0.53	4.31	2.91	3.40	2.14	0.41	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.14	0.7	0.5	0.4
St.dev.:	61	0.89	4.4	2.7	143	136	18	3.1	6.9	0.06	0.51	2.12	0.81		1.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.1
Numb.:	12	12	12	12	12	12	12	12	12	12	12	12	12	1	11	2	2	2	2	2	2	2	2	1	1	1	12

Table 7.4 Measured concentrations - 1998

Watercourse : Skienselva

Annual flow . . . . . : 9987 mill. cbm **Min : 124 cbm/s**

Drainage area . . . . . : 10348 sq.km **Max: 706 cbm/s**

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
																HCH	28	52	101	118	138	153	180				
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	µg/l	µg/l	µg/l	µg/l
980113	357.3	2.20	6	4.0	330	255	9	0.5	2.4	0.02	0.06	0.57	2.0		<1.0												0.3
980218	263.6	2.11	3	0.6	315	230	11	0.4	2.6	0.02	0.06	0.58	2.1		<1.0	0.7	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.2
980318	332.4	2.05	3	0.5	315	260	8	1.3	2.4	0.01	0.05	0.69	2.0		<1.0												0.2
980416	340.7	2.24	3	0.6	340	270	5	0.7	2.4	0.03	0.06	0.93	2.1	2.2	<1.0												0.3
980513	503.4	2.04	3	0.5	315	235	11	0.5	2.4	0.02	0.09	0.69	2.0		1.0												0.3
980615	166.0	1.96	3	0.9	295	190	8	0.4	2.1	0.02	0.05	0.55	1.9		<1.0												0.3
980714	174.0	2.02	3	0.6	305	175	15	0.3	2.1	0.01	0.09	1.04	1.9		1.0												0.4
980812	172.0	2.11	3	0.5	320	160	22	0.8	2.1	<0.01	1.46	0.97	1.7		1.5												0.3
980917	492.8	2.06	3	0.7	325	175	18	0.3	2.3	0.02	0.08	1.04	2.0		1.0												<0.2
981019	204.4	2.00	4	0.6	335	175	30	0.9	3.1	0.03	0.11	1.03	1.9		<1.0									0.19	0.2	<0.5	0.3
981120	286.9	2.13	4	2.0	330	205	17	1.0	3.0	0.01	0.08	1.26	2.0		1.0	0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.2
981215	308.1	2.13	3	1.0	345	220	12	1.0	3.0	0.02	0.05	0.92	2.0		1.5												0.4
Min.:	166	1.96	3.0	0.5	295	160	5	0.3	2.1	0.01	0.05	0.55	1.70	2.20	1.00	0.70	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.19	0.2	0.5	0.2
Max.:	503	2.24	6.0	4.0	345	270	30	1.3	3.1	0.03	1.46	1.26	2.10	2.20	1.50	0.80	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.19	0.2	0.5	0.4
Aver.:	300	2.09	3.4	1.0	323	213	14	0.7	2.5	0.02	0.19	0.86	1.97	2.20	1.08	0.75	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.19	0.2	0.5	0.3
St.dev.:	115	0.08	0.9	1.0	15	38	7	0.3	0.4	0.01	0.40	0.23	0.11		0.19	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.1
Numb.:	12	12	12	12	12	12	12	12	12	12	12	12	12	1	12	2	2	2	2	2	2	2	2	1	1	1	12

Table 7.5 Measured concentrations - 1998

Watercourse : Otra

Annual flow . . . . . : 4433 mill. cbm **Min : 49.8 cbm/s**

Drainage area . . . . . : 3730 sq.km **Max: 534.9 cbm/s**

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
																HCH	28	52	101	118	138	153	180				
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	µg/l	µg/l	µg/l	µg/l
980114	141.9	1.86	3	0.7	315	175	20	0.6	5.1	0.05	0.35	0.95	2.1	3.4	<1.0												2.0
980218	167.3	1.61	3	1.0	265	150	20	0.4	3.6	0.03	0.27	0.78	1.8	2.4	<1.0												1.0
980318	163.1	1.63	2	0.5	250	155	14	0.3	3.3	0.02	0.19	0.63	1.7	1.9	<1.0	0.24	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.5
980415	194.3	1.77	2	0.6	265	195	10	0.4	3.8	0.03	0.23	0.89	1.8	2.1	<1.0												0.8
980513	120.1	1.49	2	0.6	245	143	5	0.4	3.1	0.02	0.22	0.93	1.5	2.1	<1.0												0.8
980616	99.6	1.61	3	0.9	230	124	4	0.3	2.9	0.02	0.18	1.07	1.3	2.4	<1.0												0.5
980714	112.8	1.76	4	1.0	295	110	5	0.6	3.6	0.03	0.32	2.34	1.4	3.5	1.0												1.0
980812	53.3			1.0			8	0.7	4.4	0.02	0.44	1.66	1.3		1.5												1.6
980916	187.3	1.51	4	0.9	250	97	17	0.5	4.2	0.03	0.51	1.66	1.8	3.5	1.5												1.0
981019	102.1	1.48	3	2.0	235	109	13	0.4	4.0	0.04	0.39	1.45	1.8	2.5	<1.0												0.6
981111	165.7	1.72	4	0.9	290	136	19	0.5	4.2	0.02	0.38	1.25	1.9	3.2	1.0	0.62	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.15	0.2	<0.5	0.8
981214	120.7	1.53	2	0.6	265	146	24	0.4	3.3	0.02	0.17	0.50	1.7	2.1	2.0												0.8
Min.:	53	1.48	2.0	0.5	230	97	4	0.3	2.9	0.02	0.17	0.50	1.30	1.90	1.00	0.24	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.15	0.2	0.5	0.5
Max.:	194	1.86	4.0	2.0	315	195	24	0.7	5.1	0.05	0.51	2.34	2.10	3.50	2.00	0.62	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.15	0.2	0.5	2.0
Aver.:	136	1.63	2.9	0.9	264	140	13	0.5	3.8	0.03	0.30	1.18	1.68	2.65	1.17	0.43	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.15	0.2	0.5	1.0
St.dev.:	42	0.13	0.8	0.4	26	29	7	0.1	0.6	0.01	0.11	0.52	0.25	0.63	0.33	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.4
Numb.:	12	11	11	12	11	11	12	12	12	12	12	12	12	11	12	2	2	2	2	2	2	2	2	1	1	1	12

Table 7.6 Measured concentrations - 1998

Watercourse : Orreelva

Annual flow . . . . . : 120.8 mill. cbm **Min : 0.637 cbm/s**

Drainage area . . . . . : 105 sq.km **Max: 13.74 cbm/s**

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	HCH ng/l	28 ng/l	52 ng/l	101 ng/l	118 ng/l	138 ng/l	153 ng/l	180 ng/l	µg/l	µg/l	µg/l	µg/l
980113	3.8	18.9	36	18	2240	1805	87	1.9	3.1	<0.01	0.39	3.26			<1.0												1.2
980216	11.2	17.9	45	23	2560	420	67	8.0	4.3	0.01	0.30	3.07			1.0												1.2
980323	4.4	17.0	41	12	2480	1975	20	2.1	3.5	0.01	0.27	7.02			<1.0	0.69	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				1.3
980414	4.8	17.0	47	16	2050	1715	44	2.0	2.4	0.02	0.28	5.65			<1.0												1.2
980511	1.5	16.8	30	5	1680	1250	42	1.6	0.8	<0.01	0.19	1.83			<1.0												1.1
980615	0.8	18.5	25	5	908	380	38	1.5	0.7	<0.01	0.12	2.41			<1.0												1.3
980713	1.7	18.4	24	3	865	89	41	1.3	0.6	<0.01	0.14	4.40			<1.0												1.6
980810	2.3	17.5	24	3	640	82	30	1.2	0.6	<0.01	0.04	0.53			<1.0												1.3
980914	3.3	17.9	24	4	710	170	34	0.8	1.2	<0.01	0.25	2.14	0.5	5.5	<1.0												0.5
981019	4.8	17.6	56	14	1040	420	38	0.9	1.5	<0.01	0.52	6.88			<1.0												0.7
981110	6.8	16.4	80	28	1810	1205	55	1.8	3.3	0.02	0.59	10.2			1.5	0.40	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.29	0.4	<0.5	1.0
981207	3.2	18.0	51	16	1800	1270	64	2.2	2.7	<0.01	0.33	5.62			<1.0												1.8
Min.:	0.80	16.40	24.0	3.0	640	82	20	0.8	0.6	0.01	0.04	0.53	0.50	5.50	1.00	0.40	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.29	0.4	0.5	0.5
Max.:	11.20	18.90	80.0	28.0	2560	1975	87	8.0	4.3	0.02	0.59	10.20	0.50	5.50	1.50	0.69	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.29	0.4	0.5	1.8
Aver.:	4.05	17.66	40.3	12.3	1565	898	47	2.1	2.1	0.01	0.29	4.42	0.50	5.50	1.04	0.55	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.29	0.4	0.5	1.2
St.dev.:	2.81	0.75	16.9	8.4	703	712	19	1.9	1.3	0.00	0.16	2.75			0.14	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.3
Numb.:	12	12	12	12	12	12	12	12	12	12	12	12	1	1	12	2	2	2	2	2	2	2	2	1	1	1	12

Table 7.7 Measured concentrations - 1998

Watercourse : Suldalslågen

Annual flow . . . . . : 1588 mill. cbm **Min : 13.8 cbm/s**

Drainage area . . . . . : 1457 sq.km **Max: 157.5 cbm/s**

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
																HCH	28	52	101	118	138	153	180				
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	µg/l	µg/l	µg/l	µg/l
980217	31.8	1.76	2	0.5	265	205	4	0.3	1.9	0.01	0.12	0.83			1.5	0.12	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.3
980615	68.1	1.50	1	0.7	215	180	3	0.2	1.3	0.01	0.05	0.67			<1.0												<0.2
980810	71.7	1.40	1	1.0	210	148	3	0.3	1.2	0.01	0.06	0.51			<1.0												<0.2
981021	50.3	1.80	2	0.8	280	200	3	0.4	1.9	0.01	0.14	0.77	0.7	0.5	<1.0									<0.1		<0.5	0.2
Min.:	32	1.40	1.0	0.5	210	148	3	0.2	1.2	0.01	0.05	0.51	0.70	0.50	1.00	0.12	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.10		0.5	0.2
Max.:	72	1.80	2.0	1.0	280	205	4	0.4	1.9	0.01	0.14	0.83	0.70	0.50	1.50	0.12	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.10		0.5	0.3
Aver.:	55	1.62	1.5	0.8	243	183	3	0.3	1.6	0.01	0.09	0.70	0.70	0.50	1.13	0.12	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.10		0.5	0.2
St.dev.:	18	0.20	0.6	0.2	35	26	1	0.1	0.4	0.00	0.04	0.14			0.25												0.1
Numb.:	4	4	4	4	4	4	4	4	4	4	4	4	1	1	4	1	1	1	1	1	1	1	1	1	0	1	4

Table 7.8 Measured concentrations - 1998

Watercourse : Orkla

Annual flow . . . . . : 2021 mill. cbm **Min : 19.7 cbm/s**

Drainage area . . . . . : 2872 sq.km **Max: 226.7 cbm/s**

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	HCH	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
																	28	52	101	118	138	153	180				
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	µg/l	µg/l	µg/l	µg/l
980105	52.9	4.97	2.0	1.0	230	150	10	4.3	7.2	0.03	0.03	0.98			<1.0												0.6
980113	52.9	5.40						3.9	9.0	0.01	0.04			2.0													0.6
980202	51.5	5.22	2.0	0.5	240	146	8	5.1	13.0	0.03	0.04	0.95			<1.0									<0.1	<0.2	<0.5	0.7
980216	57.4	6.10						6.1	24.0	0.07	0.03			5.6										0.1	<0.2	<0.5	0.7
980303	44.3	5.33	3.0	0.6	265	175	3	9.0	21.6	0.07	0.09	0.83			<1.0	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.9
980316	57.4	5.90	5.5	0.8	300			6.5	17.4	0.06	0.04			2.8										<0.1	<0.2	<0.5	0.8
980403	39.7	6.99	4.0	0.5	390	265	5	13.0	38.5	0.09	0.04	1.15			<1.0												0.9
980420	25.6	9.70						13.7	26.8	0.07	0.08			3.6										0.2	<0.2	<0.5	0.9
980504	113.2	4.02	7.0	2.0	310	117	7	9.0	18.2	0.04	0.26	2.97			2.0												1.4
980518	139.9	3.20						6.2	10.1	0.03	0.08			2.9										0.1	<0.2	<0.5	1.0
980603	36.3	3.45	4.0	1.0	210	73	5	4.4	8.4	0.02	0.03	1.50			2.0												0.8
980615	54.6	4.70	10.0	4.9	250			6.9	13.2	0.02	0.10			4.9										<0.1	0.3	<0.5	1.1
980714	79.3	4.50						4.5	8.9	0.02	0.05			2.6										0.1	<0.2	<0.5	1.5
980802	78.6	4.72	4.0	0.7	265	78	5	6.0	17.7	0.05	0.04	1.05			1.0												1.0
980817	40.5	6.40						8.2	23.9	0.05	0.05			1.7										0.2	<0.2	<0.5	1.1
980904	38.2	5.53	5.0	3.0	295	165	3	4.3	17.7	0.04	0.30	0.83			<1.0												0.5
980914	45.4	7.30	4.4	0.8	340			6.8	18.8	0.04	0.06			1.8										0.1	0.3	0.5	0.9
981002	25.1	8.09	3.0	1.0	350	210	5	5.5	16.8	0.49	0.09	1.62			<1.0												0.5
981104	32.5	8.15	3.0	0.8	405	280	9	5.5	27.2	0.07	0.11	0.92			<1.0												0.6
981116	47.3	8.70						6.8	24.6	0.05	0.05			2.5										<0.1	<0.2	<0.5	0.6
981202	49.7	5.37	2.0	0.8	240	106	15	3.3	13.5	0.03	0.02	0.90			1.0												1.1
981215	60.5	6.00	2.7	0.8	210			2.6	7.8	0.02	0.02		2.8	2.4										<0.1	<0.2	<0.5	0.7
Min.:	25.1	3.20	2.0	0.5	210	73	3	2.60	7.20	0.01	0.02	0.83	2.80	1.70	1.00	0.15	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.10	0.2	0.5	0.5
Max.:	139.9	9.70	10.0	4.9	405	280	15	13.70	38.50	0.49	0.30	2.97	2.80	5.60	2.00	0.15	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.20	0.3	0.5	1.5
Aver.:	55.6	5.90	4.1	1.3	287	160	7	6.44	17.47	0.06	0.08	1.25	2.80	2.98	1.18	0.15	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.12	0.2	0.5	0.9
St.dev.:	27.1	1.68	2.2	1.2	62	69	4	2.80	7.91	0.10	0.07	0.63		1.25	0.40									0.04	0.0	0.0	0.3
Numb.:	22	22	15	15	15	11	11	22	22	22	22	11	1	11	11	1	1	1	1	1	1	1	1	11	11	11	22

Table 7.9 Measured concentrations - 1998

Watercourse : Vefsna

Annual flow . . . . . : 6198 mill. cbm Min : 36.0 cbm/s

Drainage area . . . . . : 4113 sq.km Max: 1037 cbm/s

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
																HCH	28	52	101	118	138	153	180				
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	µg/l	µg/l	µg/l	µg/l
980119	46.5	8.30	6	1.0	1010	137	45	10.1	7.2	0.03	0.03	1.82			3.0												0.8
980217	67.8	7.43	8	1.0	1300	132	41	15.3	50.2	0.06	1.73	3.26			1.0												1.8
980316	69.4	7.49	10	7.0	680	95	23	5.3	38.7	0.07	4.42	5.35			<1.0	0.12	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03				0.6
980414	49.1	11.2	8	8.0	215	123	5	1.6	1.0	0.02	0.18	7.86			<1.0												<0.2
980511	440.9	4.77	6	3.0	135	40	3	0.8	0.9	<0.01	0.18	5.54			1.0												0.4
980615	619.0	3.66	6	2.0	310	42	13	3.8	4.4	0.01	0.13	2.39			2.0												0.8
980713	383.4	1.04	4	2.0	185	28	8	0.3	0.4	<0.01	0.08	4.10			<1.0												0.4
980824	161.7	4.32	2	0.5	134	28	3	2.2	3.0	<0.01	0.14	4.20	1.5	3.5	<1.0												0.6
980914	326.6	3.24	9	2.0	215	28	4	0.6	1.9	<0.01	0.34	7.76			1.5												0.3
981019	104.3	6.40	4	2.0	385	85	13	0.6	1.4	0.01	0.16	1.01			<1.0									0.1	<0.2	<0.5	0.2
981116	38.3	7.57	6	3.0	655	107	31	6.0	18.9	0.04	0.51	1.00			<1.0	0.12	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.8
981207	104.7	6.82	9	5.0	350	131	12	3.5	13.9	0.03	0.15	3.55			<1.0												0.6
Min.:	38	1.04	2.0	0.5	134	28	3	0.3	0.4	0.01	0.03	1.00	1.50	3.50	1.00	0.12	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.10	0.2	0.5	0.2
Max.:	619	11.20	10.0	8.0	1300	137	45	15.3	50.2	0.07	4.42	7.86	1.50	3.50	3.00	0.12	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.10	0.2	0.5	1.8
Aver.:	201	6.02	6.5	3.0	465	81	17	4.2	11.8	0.03	0.67	3.99	1.50	3.50	1.29	0.12	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.10	0.2	0.5	0.6
St.dev.:	193	2.73	2.4	2.4	374	45	15	4.5	16.5	0.02	1.27	2.32			0.62	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00				0.4
Numb.:	12	12	12	12	12	12	12	12	12	12	12	12	1	1	12	2	2	2	2	2	2	2	2	1	1	1	12

Table 7.10 Measured concentrations - 1998

Watercourse : Alta

Annual flow . . . . . : 2945 mill. cbm **Min : 25.9 cbm/s**

Drainage area . . . . . : 7367 sq.km **Max: 788.6 cbm/s**

Date	Q	Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	SiO2	TOC	Hg	Gamm HCH	PCB (The folloving Congeners) IUPAC NOS							As	V	Cr-T	Ni
																	28	52	101	118	138	153	180				
	m3/s	mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	µg/l	µg/l	µg/l	µg/l
980620	362.5	4.08	8	1	215	25	5	1.0	0.5	<0.01	0.04	2.22			2.5												0.4
981102	107.8	12.1	10	7	205	75	13	0.6	0.2	<0.01	<0.02	0.53	4.5	3.5	1.0									0.50	<0.2	<0.5	<0.2
980316	29.7	16.8	10	9	180	96	3	1.0	0.2	<0.01	0.08	0.32			<1.0	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.2
980812	62.3	20.3	13	7	175	53	5	0.8	0.8	<0.01	0.07	0.68			<1.0												0.4
Min.:	30	4.08	8.0	1.0	175	25	3	0.6	0.2	0.01	0.02	0.32	4.50	3.50	1.00	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.50	0.2	0.5	0.2
Max.:	363	20.30	13.0	9.0	215	96	13	1.0	0.8	0.01	0.08	2.22	4.50	3.50	2.50	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.50	0.2	0.5	0.4
Aver.:	141	13.32	10.3	6.0	194	62	7	0.9	0.4	0.01	0.05	0.94	4.50	3.50	1.38	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.50	0.2	0.5	0.3
St.dev.:	151	7.02	2.1	3.5	19	30	4	0.2	0.3	0.00	0.03	0.87			0.75												0.1
Numb.:	4	4	4	4	4	4	4	4	4	4	4	4	1	1	4	1	1	1	1	1	1	1	1	1	1	1	4

APPENDIX VIII : TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998 **Page:**

(1)	Glomma	"tributaries"	: Tista	- Hølenelva
(1)	Inner Oslo-fjord		: Årungelva	- Åroselva
(2)	Drammenselva	"tributary"	: Lierelva	
(3)	Numedalslågen	"tributaries"	: Sandeelva	- Farriselva
(4)	Skienselva	"tributary"	: Tokkeelva	
(5)	Otra	"tributaries"	: Gjerstade.	- Audna
(6)	Orreelva	"tributaries"	: Lygna	- Ulla
(7)	Suldalslågen	"tributaries"	: Saudaelva	- Hornindalselva
(8)	Orkla	"tributaries"	: Ørstaelva	- Salsvatnelva
(9)	Vefsna	"tributaries"	: Åbjøra	- Reisa
(10)	Alta	"tributaries	: Mattiselva	- Grense Jacobse.

Table 8.1 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)										
		ge area			Discharge														
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	Hg
					Normal	1998	Normal	1998												
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	ng/l
Østfold	Tista, Iddefj.	1588	1582	1582	14.4	13.3	14.4	13.3	6.00	10.4	2.0	923	670	6	0.9	2.5	0.05	0.15	1.52	1.0
(1.)	Mosselva, Mossesundet	690	689	689	14.5	14.5	14.5	14.5	10.60	27.3	5.0	1305	275	95	1.5	1.3	<0.01	0.21	4.38	<1.0
Oslo og	Hølenelva, Drøbaksundet Ø	137	121		14.0	14.1			20.80	80.0	57.0	3460	2360	87	2.6	4.3	0.02	0.51	10.30	3.5
Akershus	Arungelva, I. Oslofj.	52	50		13.0	13.1			26.90	21.0	3.0	2990	2305	25	1.9	0.8	<0.01	0.08	4.77	1.0
(1.)	Gjersjøelva, I. Oslofj.	86	85	85	14.0	14.1			19.10	8.0	0.8	1700	1445	5	1.7	1.8	0.02	0.09	4.08	<1.0
	Ljanselva, I. Oslofj.	42	41	41	13.0	10.2			28.00	82.0	32.0	1470	835	20	12.5	12.3	0.12	0.98	25.80	1.0
	Loelva/Alna, I. Oslofj.	75	69	69	13.0	20.3			29.00	157.0	47.0	1727	1025	86	3.2	11.1	0.04	1.03	48.80	3.0
	Akerselva, I. Oslofj.	227	225	225	17.5	16.1			6.00	23.0	3.0	767	300	28	1.1	9.0	0.03	0.57	6.00	4.0
	Frognerelva, I. Oslofj.	23	20	20	15.0	25.1			22.00	62.0	31.0	1990	1180	133	15.8	11.2	0.02	0.39	10.40	<1.0
	Lysakerelva, I. Oslofj.	178	173	173	16.8	22.7	16.8		5.90	14.4	3.0	606	370	9	11.2	12.5	0.07	0.82	5.20	1.0
	Sandvikselva, I. Oslofj.	223	187	187	18.4	24.4	18.4	24.4	12.90	15.0	6.0	880	700	15	0.8	1.7	0.01	0.27	0.89	1.0
	Aroselva, I. Oslofj.	113	109	109	17.0	18.9	17.0		18.30	36.1	11.0	1755	1590	93	1.6	3.0	0.04	0.79	10.50	1.0
Buskerud	Lierelva, Drammensfj. Ø	309	266	222	18.6	35.2	18.6	35.2	20.10	41.6	27.0	1410	1005	8	1.9	7.1	0.02	1.06	18.40	2.0
(2.)																				
Vestfold	Sandeelva, Sandebukta	193	190		17.0	19.6			16.00	16.0	6.0	1150	935	37	1.4	49.9	0.11	1.78	5.14	<1.0
(3.)	Aulielva, Tønsbergfj.	363	362	362	14.9	17.6	14.9	17.6	26.00	143.0	29.0	3078	2660	130	1.5	5.6	0.03	0.67	41.20	2.0
	Farriselva, Larvikfj.	491	491	491	21.6	21.8	21.6	21.8	3.90	6.0	3.0	505	390	11	0.4	7.6	0.03	0.17	0.49	1.0
Telemark	Tokkeelva, Kragerø	1238	1200	1200	26.7	30.0	26.7	30.0	1.59	4.0	0.6	270	123	24	0.3	5.0	0.03	0.27	1.38	1.0
(4.)																				
Aust-	Gjerstadelva, Søndeledfj.	419	414	291	27.0	30.4	27.0	30.4	2.57	6.0	1.0	440	218	35	0.5	6.4	0.04	0.58	1.46	1.5
Agder	Vegårdselva, Sandnesfj.	457	429	291	29.3	32.2	29.3		2.81	6.0	2.0	414	193	34	0.6	8.2	0.03	0.54	2.98	1.0
(5.)	Nidelva, Arendal	4025	4020	3956	29.8	32.8	29.8		1.80	4.0	0.8	334	189	17	0.5	5.0	0.03	0.34	1.08	<1.0

Table 8.1 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)											
		ge area			Discharge															
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station													
					Normal	1998	Normal	1998												
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		Cond mS/m	Tot-P µg/l	PO4-P µg/l	Tot-N µg/l	NO3-N µg/l	NH4-N µg/l	Cu µg/l	Zn µg/l	Cd µg/l	Pb µg/l	S.P.M. mg/l	Hg ng/l
Vest-	Tovdalselva, Topdalsfj.	1856	1854	1794	33.9	36.6	33.9	36.6	1.93	5.0	3.0	396	151	27	0.3	5.7	0.04	0.55	1.74	1.5
Agder	Søgneelva, Flekkerøy	204	192	192	38.0	39.9	38.0		5.57	18.7	3.0	535	480	10	0.6	7.4	0.04	0.55	1.66	1.0
(5.)	Mandalselva, Mannefj.	1809	1800	1740	46.0	47.4	47.6	49.1	1.70	4.5	1.0	312	143	32	0.3	3.7	0.02	0.62	1.63	1.5
	Audna, Sniksfj.	450	400	59	45.0	48.2	51.8		3.92	9.0	1.0	580	335	30	0.3	5.9	0.04	0.64	1.93	1.5
(6.)	Lygna, Lyngdalsfj.	664	660	266	48.0	51.5	57.9	62.1	2.50	5.0	1.0	393	221	8	0.3	4.6	0.04	0.46	1.48	1.5
	Kvina, Fedafj.	1445	1140	1140	57.6	63.4	57.6		2.96	6.0	2.0	384	211	7	0.3	4.5	0.02	0.78	1.84	2.5
	Sira, Ana-Sira	1916	1872	1872	59.4	68.3	59.4		2.79	2.0	0.6	450	223	27	0.3	3.6	0.02	0.46	0.68	1.0
Rogaland	Sokndalselva, Sogndalsstr.	294	293	107	51.1	56.5	51.1	56.5	4.24	9.0	3.0	405	260	25	0.5	5.3	0.04	0.39	0.91	1.0
(6.)	Hellelandselva, Egersund	241	240	194	57.5	48.6	71.1		3.01	9.0	3.0	470	305	10	0.8	5.8	0.04	0.63	1.76	1.5
	Bjerkreimselva, Egersund	705	704	639	77.7	65.6	86.4	73.0	3.24	4.0	1.0	477	389	7	0.5	2.9	0.02	0.26	0.54	<1.0
	Håelva, Håtangen	165	160	135	46.9	57.7	46.9	57.7	12.50	34.6	15.0	1777	1350	37	0.9	3.7	0.01	0.37	2.58	2.0
	Figgjo, Solavika	229	218	135	50.0	60.0	50.0		14.20	295.0	23.0	1827	1705	34	1.3	6.1	0.02	0.63	3.38	1.5
	Ims-Lutsi. Høgsfj.Boknafj.	127	127	127	34.9	46.5	34.9	46.5	6.82	7.0	1.0	905	655	13	0.4	2.3	0.01	0.43	0.61	<1.0
	Oltedalse.,Høgsfj.Boknafj.	102	101	129	70.0	77.0	70.0		3.16	5.0	1.0	440	325	24	0.3	3.2	0.02	0.28	0.98	<1.0
	Dirdalse., Høgsfj.Boknafj.	158	158	95	83.0	91.3	83.0		1.75	2.5	0.6	315	243	20	0.7	3.1	<0.01	0.31	0.50	1.5
	Frafjorde.,Frafj. Boknafj.	178	178	124	94.4	103.4	94.4		1.89	3.0	0.8	250	144	5	0.3	1.8	<0.01	0.29	0.66	1.0
	Espedalse.,Høgsfj.Boknafj.	138	138	124	90.0	99.0	90.0		2.60	6.3	<0.5	316	235	3	0.2	1.3	<0.01	0.25	0.48	1.0
	Lysee., Lysefj.Boknafj.	182	182	46	74.0	81.4	74.0		2.00	1.0	0.8	150	100	3	0.2	1.7	<0.01	0.24	0.32	<1.0
	Ardalse., Ardalsfj.Boknafj.	519	516	501	81.4	89.5	81.4		2.02	2.0	0.5	232	160	3	0.2	1.4	0.01	0.30	0.41	1.5
	Førree., Jøsenfj.Boknafj.	163	163	163	85.8	94.4	85.8		2.30	3.0	0.5	250	240	7	0.3	0.9	0.01	0.20	0.20	1.0
	Ulla, Jøsenfj.Boknafj.	393	393	385	83.4	91.7	83.4		2.09	2.0	0.5	250	138	3	0.2	2.1	<0.01	0.21	0.42	1.5
(7.)	Saudae., Saudafj.Boknafj.	353	353		85.0	102.0	85.0		2.86	2.0	<0.5	910	820	3	0.8	30.7	0.07	0.13	0.28	1.0
	Abøelva, Saudafj.Boknafj.	82	82		85.0	102.0	85.0		1.14	2.0	1.0	200	144	3	0.2	1.8	<0.01	0.13	0.32	1.5
	Vikedalse., Boknafj.	118	117	115	80.0	99.8	80.0	99.8	1.78	3.0	0.8	218	149	3	0.5	3.3	0.03	0.24	1.35	1.0

Table 8.1 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)											
		ge area			Discharge															
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	Hg
					Normal	1998	Normal	1998												
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	ng/l
Hordaland	Etneelva, Etnefj. Bømlafj.	252	250	127	48.8	51.9	96.0	103.7	2.34	6.0	1.0	365	235	3	0.4	1.9	<0.01	0.19	1.69	1.0
(7.)	Opo, Sørfj. Hardangerfj.	482	480	464	79.3	81.0	79.3	81.0	1.71	3.8	2.1	853	124	196	0.5	2.9	0.02	0.37	1.92	1.5
	Tysso, Sørfj. Hardangerfj.	388	385	407	79.3	81.0	79.3	81.0	1.47	0.9	<0.5	155	114	5	0.3	2.9	0.02	0.06	0.25	<1.0
	Kinso, Sørfj. Hardangerfj.	281	281	232	46.0	50.2	46.0	50.2	1.85	1.0	<0.5	116	79	3	0.2	0.9	<0,01	0.05	0.44	1.5
	Veig, Eidfjv. Hardangerfj.	496	496	386	41.8	39.2	41.8	39.2	1.38	2.0	<0.5	122	60	3	2.4	1.3	<0.01	0.55	0.55	<1.0
	Bjoreia, " , Hardangerfj.	592	592	592	26.0	9.6	26.0	9.6	1.38	2.0	<0.5	122	60	3	2.4	1.3	<0.01	0.55	0.55	<1.0
	Sima, Eidfj. Hardangerfj.	145	145	128	69.2	79.6	69.2		2.59	1.0	<0.5	175	145	3	0.2	0.7	<0.01	0.06	0.56	<1.0
	Austdøla, Osafj. Eidfj.	131	130	89	74.6	85.8	74.6		7.90	0.8	<0.5	350	330	6	0.3	1.0	0.01	0.04	0.71	1.0
	Norddøla, Osafj. Eidfj.	40	39	89	74.6	85.8	74.6		7.90	0.8	<0.5	350	330	6	0.3	1.0	0.01	0.04	0.71	1.0
	Tysseelva, Fusafj.	240	240		85.0	93.5	85.0		1.68	3.7	2.0	802	104	9	0.7	2.2	0.03	0.23	0.54	<1.0
	Oselva, Fusafj.	109	108	50	91.7	106.0	91.7	106.0	3.71	12.0	3.0	410	245	11	1.1	3.9	0.02	0.16	1.32	1.0
	Bergsdalse, Veafj.Herdlafj.	198	198		80.0	88.0	80.0		1.45	2.0	<0.5	160	132	12	0.5	7.6	0.03	0.09	0.54	<1.0
	Vosso, Veafj. Sørfj.	1492	1465	1102	58.2	60.2	58.2	60.2	2.00	7.1	0.6	225	144	12	0.4	1.4	0.02	0.06	0.46	1.0
	Ekso, Osterfj.	414	400	342	86.2	90.5	86.2		1.41	3.0	0.5	167	98	5	0.3	1.7	0.03	0.17	0.60	<1.0
	Modalselva, Osterfj.	385	384	248	95.5	100.3	95.5		1.01	2.0	0.5	172	106	4	0.2	2.6	0.01	0.19	0.59	<1.0

Table 8.1 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)											
		ge area			Discharge															
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station													
					Normal	1998	Normal	1998												
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		Cond mS/m	Tot-P µg/l	PO4-P µg/l	Tot-N µg/l	NO3-N µg/l	NH4-N µg/l	Cu µg/l	Zn µg/l	Cd µg/l	Pb µg/l	S.P.M. mg/l	Hg ng/l
Sogn og Fjordane (7.)	Nærøye., Aurl.fj. Sognefj.	290	290	267	59.5	65.9	59.5		1.99	1.0	<0.5	320	255	11	0.6	6.7	0.02	0.08	0.22	<1.0
	Flåmse., Aurl.fj. Sognefj.	280	275	275	52.4	57.1	52.4	57.1	46.80	0.8	<0.5	310	290	6	0.4	1.0	0.01	0.03	0.65	<1.0
	Aurlandv. Aurl.fj. Sognefj.	800	799	762	48.6	51.0	48.6		1.43	2.0	<0.5	335	270	30	0.3	0.9	<0.01	0.04	1.43	<1.0
	Erdalse., Lærd.fj. Sognefj.	138	138		30.0	31.5	30.0		1.07	2.0	0.5	122	64	3	0.3	0.9	0.02	0.09	0.76	<1.0
	Lærdalsv. Lærd.fj. Sognefj.	1184	1172	1172	30.0	21.8	30.0	21.8	1.65	3.7	1.0	206	158	4.5	0.7	1.0	0.09	0.09	1.04	<1.0
	Ardalsv., Ardalsfj.Sognefj.	989	989	989	44.9	43.3	44.9	43.3	0.96	4.0	2.0	200	77	7	1.3	1.0	0.01	0.02	1.16	<1.0
	Fortunv., Lusterfj.Sognefj.	508	508	367	51.0	49.9	51.0	49.9	2.08	2.0	1.0	280	230	9	0.8	1.0	<0.01	0.06	0.88	<1.0
	Mørkrisv., Lusterfj.Sognefj.	282	282	203	54.7	52.0	54.7		2.04	0.9	0.7	305	275	6	0.4	1.0	<0.01	<0.02	0.28	<1.0
	Jostedøla, " Sognefj.	865	864	573	68.0	51.3	68.0	51.3	17.60	1.0	<0.5	400	325	12	0.8	1.2	<0.01	0.06	0.24	<1.0
	Arøye., Sognd.fj. Sognefj.	449	446	384	77.2	73.3	77.2		1.50	2.0	<0.5	170	149	6	0.3	0.9	<0.01	0.04	0.67	<1.0
	Sogndalse, " Sognefj.	175	172	111	66.1	64.8	66.1		2.11	4.0	2.0	360	320	6	0.4	4.3	<0.01	0.02	0.33	<1.0
	Gaular, Dalsfj. Bufj.	627	625	505	79.3	84.5	79.3	84.5	0.95	5.0	2.0	158	79	12	0.3	1.4	<0.01	0.05	0.47	1.0
	Jølstra, Førdefj.	714	709	384	74.3	78.0	74.3		1.65	4.0	2.0	250	215	12	0.3	2.7	<0.01	0.03	0.48	<1.0
	Nausta, Førdefj.	277	273	232	81.7	85.8	81.7		1.21	10.0	6.0	140	60	6	0.1	3.1	<0.01	<0.02	0.74	1.0
	Oselva, Høydalsfj.	287	285	225	78.7	82.6	78.7		2.00	3.0	0.6	170	113	5	0.3	2.0	0.01	0.13	0.40	1.5
	Hopse., Hyefj. Nordfj.S	73	73	161	75.0	78.8	75.0		1.43	2.0	<0.5	210	200	6	0.3	3.7	0.02	0.12	0.69	1.5
	Gjengedalse.," Nordfj.S	170	168	161	75.0	78.8	75.0		1.18	3.0	0.7	200	142	6	0.3	1.1	<0.01	0.09	0.52	2.0
	Breimse., Gloppenfj. "	636	634	585	68.8	80.0	68.8		1.53	3.5	0.5	223	275	3	0.3	1.2	0.01	0.02	0.30	<1.0
	Oldene., Indre Nordfj.	226	225	204	70.1	71.5	70.1	71.5	1.63	3.3	<0.5	243	250	9	0.4	1.0	<0.01	0.05	0.66	<1.0
	Loenelva, Indre Nordfj.	261	260	234	65.0	66.2	65.0	66.2	2.05	2.8	1.0	166	205	3	0.4	0.5	<0.01	0.04	0.40	<1.0
	Strynee., Indre Nordfj.	532	530	493	60.2	56.8	60.2	56.8	1.78	2.8	<0.5	198	151	18	0.6	3.5	0.02	0.15	3.45	<1.0
	Hornindalse., Nordfj. N	428	424	378	58.1	55.8	58.1	55.8	2.58	5.0	0.6	315	115	3	0.4	1.1	<0.01	0.06	0.83	<1.0

Table 8.1 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)											
		ge area			Discharge															
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station													
					Normal	1998	Normal	1998												
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		Cond mS/m	Tot-P µg/l	PO4-P µg/l	Tot-N µg/l	NO3-N µg/l	NH4-N µg/l	Cu µg/l	Zn µg/l	Cd µg/l	Pb µg/l	S.P.M. mg/l	Hg ng/l
Møre og Romsdal (8.)	Ørstae., Ørstafj.	160	155		70.0	73.5	70.0		3.59	17.0	6.0	565	280	37	1.1	5.8	0.01	0.20	2.95	1.0
	Valldøla, Nordalfj.Storfj.	359	357		60.0	63.0	60.0		1.20	3.0	0.6	107	57	3	0.4	1.0	<0.01	0.06	1.03	<1.0
	Rauma, Romsdalsfj.Moldefj.	1202	1190	1142	32.8	31.9	32.8	31.9	2.06	2.0	0.7	118	68	<3	0.4	1.1	<0.01	0.04	1.40	<1.0
	Isa, Isfj. Moldefj.	175	175	89	57.0	58.8	57.0	58.8	1.50	2.0	0.6	115	73	<3	0.3	1.6	0.01	0.07	0.64	<1.0
	Eira, Eresfj. Moldefj.	1119	1119	1085	34.8	35.9	34.8	35.9	1.93	2.0	0.5	150	109	4	0.5	0.8	<0.01	0.08	0.56	<1.0
	Littledalse., Sunndalsfj.	359	330	330	41.0	47.9	41.0	47.9	0.99	1.0	0.5	68	21	4	0.3	0.4	<0.01	0.02	0.49	<1.0
	Driva, Sunnd.fj.Tingvollfj.	2487	2435	2435	27.9	32.1	27.9	32.1	2.94	2.0	0.5	225	135	<3	0.8	0.9	<0.01	0.08	0.62	<1.0
	Ulvåa, Alvundfj.	199	199	207	57.0	34.3	60.7	36.5	3.46	7.0	2.0	690	510	6	1.3	1.7	<0.01	0.12	1.26	1.5
	Toåa, Todalsfj.	251	251	207	58.5	60.9	58.5		1.27	2.0	0.5	107	47	<3	0.3	0.4	0.02	0.04	0.58	<1.0
	Surna, Surnadalsfj.	1200	1200	1125	48.0	51.8	49.3		1.83	3.0	0.9	175	84	5	0.4	1.6	0.01	0.24	0.99	<1.0
	Bøvra, Hamnesfj. Halsafj.	243	243	196	55.0	57.8	55.0		2.30	3.0	0.7	185	51	6	0.6	1.0	0.01	0.23	1.10	1.0
Sør-Trøndelag (8.)	Børse.,Gaulosen Tr.h.fj.	110	100		30.0	28.9	30.0		9.33	12.0	5.0	490	255	14	1.4	0.6	<0.01	0.22	3.22	<1.0
	Vigda, Gaulosen Tr.h.fj.	150	150		30.0	28.9	30.0		11.50	9.0	3.0	370	185	21	1.0	0.5	<0.01	0.15	4.67	<1.0
	Gaula, Gaulosen Tr.h.fj.	3659	3650	3062	26.4	25.4	26.4	25.4	6.75	7.0	3.0	175	150	12	1.9	4.2	<0.01	2.26	6.70	<1.0
	Nidelva, Trondheimsfj.	3110	3100	3049	35.5	34.9	35.5	34.9	3.40	9.1	1.0	234	54	5	0.8	0.6	<0.01	0.06	2.01	<1.0
	Homla, Stjørd.fj.Tr.h.fj.	157	157		30.0	29.5	30.0		4.97	5.0	0.9	240	41	16	2.1	3.6	<0.01	0.11	1.09	1.5
Nord-Trøndelag (8.)	Stjørdalsv, " Tr.h.fj.	2117	2117	1863	38.5	38.1	38.5	38.1	2.95	4.0	2.0	185	55	5	3.3	4.0	<0.01	0.11	2.91	1.5
	Gråe., " Tr.h.fj.	93	93		25.0	24.8	25.0		15.10	14.0	11.0	1110	1020	18	1.1	0.3	<0.01	0.13	1.07	<1.0
	Verdalsvassdr., Tr.h.fj.	1472	1472	898	40.0	39.9	44.5	44.8	5.04	4.0	1.0	225	90	8	0.9	4.5	<0.01	0.12	2.14	1.0
	Figga/Leksdalse.,Tr.h.fj.	282	282	178	30.0	30.2	33.6		5.85	15.0	7.0	550	295	10	1.2	1.2	<0.01	0.25	8.84	1.5
	Snåsavassdr., Trondh.fj.	2153	2125	2125	35.1	31.8	35.1	31.8	3.97	5.0	1.0	270	98	13	0.7	2.9	<0.01	0.05	1.39	1.5
	Argårdselva, Namsfj.	543	510	238	43.0	44.8	50.9	53.0	5.34	21.0	6.0	570	180	47	0.9	1.4	<0.01	0.28	7.72	2.5
	Namsen, Namsfj. Ø	6277	6276	5718	43.4	51.2	43.4	51.2	29.50	3.0	0.9	138	26	5	0.6	1.6	<0.01	0.41	1.23	1.5
	Salsvatnelva, Follafj.	432	432	422	59.7	63.5	59.7	63.5	4.73	0.9	<0.5	129	66	3	0.9	14.3	0.01	0.09	0.52	<1.0

Table 8.1 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)										
		ge area			Discharge														
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	Hg
					Normal	1998	Normal	1998												
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	ng/l
Nordland	Abjøra, Bindalsfj. S	526	520	384	80.2	75.5	80.2		1.34	1.0	0.6	60	10	3	0.1	0.5	<0.01	0.06	0.48	<1.0
(9.)	Skjerva, Vefsenfj. S	104	104	98	41.3	38.9	41.3		6.50	24.0	11.0	665	420	55	1.5	2.4	0.02	0.48	11.04	1.5
	Fusta, Vefsenfj. N	544	543	520	63.4	59.7	63.4	59.7	2.38	3.0	0.9	89	15	10	0.3	1.6	<0.01	0.06	1.14	<1.0
	Drevja, Vefsenfj. N	177	176	98	65.0	61.2	65.0		4.03	3.0	1.0	89	32	1	0.3	1.8	<0.01	0.09	1.95	<1.0
	Røssåga, Sørfj.	2092	2087	1880	45.4	54.5	45.4		3.56	2.0	<0.5	89	32	9	0.5	5.4	<0.01	0.07	0.63	<1.0
	Bjerka, Sørfj.	385	385	273	55.4	49.9	55.4		2.92	1.0	<0.5	59	17	5	0.4	1.2	<0.01	0.05	0.40	<1.0
	Dalselva, Ranafj. N	211	211	129	39.5	35.6	39.5		2.14	1.0	<0.5	48	9	4	0.3	0.7	<0.01	0.04	0.63	<1.0
	Ranavassdraget, Ranafj. N	3847	3846	1892	44.9	40.4	44.9		1.99	2.0	1.0	63	30	5	0.2	1.3	<0.01	0.08	1.45	<1.0
	Fykanåga, Glomfjord	297	297	243	103.7	98.3	103.7		4.44	1.0	0.5	126	77	12	0.5	10.4	<0.01	0.02	0.23	<1.0
	Beiare., Beiarfj. Nordfj.	1064	875	797	45.1	45.1	45.1		7.14	5.0	3.0	53	48	5	0.5	4.8	<0.01	0.12	6.75	<1.0
	Saltdalsvassdr., Saltd.fj.S	1544	1543	1168	32.1	33.4	32.1		3.72	4.5	2.0	83	21	5	1.0	177.1	<0.01	<0.02	4.13	<1.0
	Sulitjelmavassdr., Saltd.fj	1028	800	791	44.0	46.2	44.0		19.60	1.0	<0.5	71	34	3	8.5	15.1	0.04	0.15	0.51	<1.0
	Kobbe., Leirfj. Sørfolda N	405	405	386	66.9	64.8	66.9	64.8	1.54	1.0	<0.5	60	26	4	0.2	1.2	<0.01	0.05	0.70	<1.0
	Skjoma, Ofotfj. S	845	840	797	36.3	34.5	36.3		1.02	4.0	2.0	41	13	4	0.5	2.6	<0.01	0.19	3.11	<1.0

Table 8.1 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)											
		ge area			Discharge															
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd	Pb	S.P.M.	Hg
					Normal	1998	Normal	1998												
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	ng/l
Troms	Spanselva, Astafj. Vågsfj.	142	142	533	50.0	52.5	50.0		4.18	3.0	1.0	59	17	3	0.5	0.6	<0.01	0.07	2.79	<1.0
(9.)	Salangse., Astafj. Vågsfj.	539	539	533	40.9	42.9	40.9		6.04	2.0	0.7	65	27	4	0.3	0.2	<0.01	0.04	0.92	<1.0
	Rossfjorde., Malangen	196	190		39.5	39.5	39.5		7.60	4.0	0.7	132	4	19	0.4	0.3	<0.01	0.05	0.98	<1.0
	Målse., Målselvfj. "	3239	3200	3118	28.7	21.7	28.7	21.7	7.30	13.0	2.6	219	78	19	2.1	9.0	0.01	0.19	7.86	<1.0
	Bardue., Målselva	2906	2906	2049	28.3	21.4	28.3		7.55	7.1	0.5	169	71	5	2.1	9.0	0.01	0.19	7.86	<1.0
	Nordkjoselva, Balsfj.	191	191	415	27.7	19.4	27.7		2.96	2.0	0.8	48	17	3	0.9	0.5	<0.01	0.06	1.46	<1.0
	Signaldalselva, Lyngen V	473	467	415	27.7	19.4	27.7		2.46	2.0	1.0	56	17	6	2.0	3.4	<0.01	0.11	2.37	<1.0
	Skibotnelva, Lyngen	770	770	724	18.0	18.0	18.0	18.0	2.47	1.0	0.8	59	20	4	0.6	0.3	<0.01	<0.02	0.86	<1.0
	Käfjordelva, Lyngen Ø	358	358	348	20.0	14.0	20.0		3.20	1.0	0.5	120	79	5	1.1	0.7	<0.01	0.02	0.40	<1.0
	Reisa, Reisafj.	2702	2702		16.0	12.0	16.0		5.26	2.0	0.7	74	16	5	0.8	0.6	<0.01	0.02	0.98	<1.0
Finnmark	Mattiselva, Käfj. Altafj.	325	325	319	26.5	26.9	26.5		2.31	3.0	<0.5	72	7	5	1.3	1.6	<0.01	0.24	0.67	<1.0
(10.)	Tverrelva, Altafj.	234	233	233	15.1	15.3	15.1		3.78	4.0	1.0	146	32	14	1.5	0.9	<0.01	0.09	0.80	<1.0
	Repparfjordv., Repparfj.	1090	1089		25.0	22.5	25.0		2.89	1.0	<0.5	89	14	8	1.0	0.8	0.01	0.23	0.96	<1.0
	Stabburse., I. Porsangen V	1108	1102	870	18.3	16.5	18.3		4.41	3.0	<0.5	77	62	5	0.2	0.8	<0.01	0.03	0.55	<1.0
	Lakse., Indre Porsangen S	1533	1532	941	15.9	14.3	15.9		3.68	4.0	1.0	105	7	16	0.6	0.9	<0.01	0.03	1.79	<1.0
	Børselva.Indre Porsangen Ø	883	883	863	29.8	26.8	29.8		2.81	1.0	<0.5	65	6	21	0.3	1.2	<0.01	0.06	0.52	<1.0
	Mattusjäkka, I. Laksefj. V	101	101	101	22.8	21.7	22.8		7.32	1.0	0.5	59	2	3	0.2	0.2	0.01	0.02	0.31	4.0
	Storelva.Indre Laksefj. V	690	690	760	21.9	20.8	19.9		2.64	1.0	<0.5	48	27	4	0.3	2.7	<0.01	<0.02	0.20	<1.0
	Soussjäkka, I. Laksefj. V	92	92	102	25.3	23.9	22.8		4.20	0.9	<0.5	59	17	4	0.2	1.0	<0.01	0.03	0.32	<1.0
	Adamselva, I. Laksefj. Ø	705	705	760	19.9	18.9	19.9		5.52	2.0	<0.5	89	9	17	0.3	1.5	<0.01	0.10	0.56	<1.0
	Tanavassdraget, Tanafj. S	16389	15713	14169	11.5	10.9	11.5		5.13	14.3	5.2	185	42	6	2.1	14.2	0.03	0.58	0.31	1.0
	Vesterelva, Syltefj.	469	469	79	34.6	34.9	34.6		3.97	4.0	3.0	48	4	13	0.2	0.5	<0.01	0.06	0.62	<1.0
	V. Jakobse., Y.Varangerfj.	627	627	239	18.1	19.9	18.1		4.21	4.0	2.0	50	3	5	0.2	0.2	<0.01	0.02	0.76	<1.0
	Passvike., Bøkfj.Varang.fj.	18404	18400	18175	9.3	9.8	9.3		3.59	25.0	14.0	500	3	231	1.3	2.6	0.03	0.05	3.10	1.0
	Neiden, Munkfj. Varang.fj.	2960	2960	2911	9.8	13.7	9.8	13.7	2.72	3.0	<0.5	160	4	10	0.2	0.2	<0.01	<0.02	5.84	<1.0
	Grense Jakobse.,Varang.fj.	234	234		18.0	18.9			4.36	3.0	0.7	129	8	31	2.1	1.9	0.01	0.10	0.76	<1.0

Table 8.2 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)												
		ge area			Discharge																
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Gamma	PCB (The folloving Congeners) IUPAC NOS											
					Normal	1998	Normal	1998	HCH	28	52	101	118	138	153	180	TOC	SiO2	Cr-T	Ni	As
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	mg/l	mg/l	ug/l	ug/l	ug/l
Østfold	Tista, Iddefj.	1588	1582	1582	14.4	13.3	14.4	13.3	0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	6.70	2.50	1.7	0.5	0.28
(1.)	Mosselva, Mossesundet	690	689	689	14.5	14.5	14.5	14.5	0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	7.90	0.30	<0.5	1.0	0.5
Oslo og	Hølenelva, Drøbaksundet Ø	137	121		14.0	14.1			0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	9.90	9.10	0.9	2.8	0.59
Akershus	Arungelva, I. Oslofj.	52	50		13.0	13.1			0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.80	0.10	<0.5	1.6	0.36
(1.)	Gjersjøelva, I. Oslofj.	86	85	85	14.0	14.1			0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	6.20	3.20	<0.5	2.2	0.18
	Ljanselva, I. Oslofj.	42	41	41	13.0	10.2			0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	6.50	6.70	0.7	4.0	0.46
	Loelva/Alna, I. Oslofj.	75	69	69	13.0	20.3			0.28	0.17	0.08	0.18	0.05	0.11	0.11	0.06	6.00	7.10	0.6	0.4	0.28
	Akerselva, I. Oslofj.	227	225	225	17.5	16.1			0.65	0.04	0.05	0.04	0.03	0.04	0.04	<0.03	3.90	3.60	<0.5	0.3	0.25
	Frognerelva, I. Oslofj.	23	20	20	15.0	25.1			0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.10	6.60	39.4	17.4	0.39
	Lysakerelva, I. Oslofj.	178	173	173	16.8	22.7	16.8		0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	5.50	4.70	24.1	5.1	0.21
	Sandvikselva, I. Oslofj.	223	187	187	18.4	24.4	18.4	24.4	0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	5.90	1.00	<0.5	<0.2	0.18
	Aroselva, I. Oslofj.	113	109	109	17.0	18.9	17.0		0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	6.20	6.20	<0.5	0.7	0.37
Buskerud	Lierelva, Drammensfj. Ø	309	266	222	18.6	35.2	18.6	35.2	0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	5.90	7.20	1.6	1.5	0.56
(2.)																					
Vestfold	Sandeelva, Sandebukta	193	190		17.0	19.6			0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.60	6.30	<0.5	<0.2	0.31
(3.)	Aulielva, Tønsbergfj.	363	362	362	14.9	17.6	14.9	17.6	0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	5.10	9.90	<0.5	1.8	0.37
	Farriselva, Larvikfj.	491	491	491	21.6	21.8	21.6	21.8	0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.80	3.80	3.0	<0.2	0.14
Telemark	Tokkeelva, Kragerø	1238	1200	1200	26.7	30.0	26.7	30.0	0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	5.50	2.50	<0.5	0.3	0.18
(4.)																					
Aust-	Gjerstadelva, Søndeledfj.	419	414	291	27.0	30.4	27.0	30.4	0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	5.50	2.50	<0.5	0.8	0.29
Agder	Vegårdselva, Sandnesfj.	457	429	291	29.3	32.2	29.3		0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.80	2.90	<0.5	0.7	0.24
(5.)	Nidelva, Arendal	4025	4020	3956	29.8	32.8	29.8		0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.00	2.20	<0.5	0.3	0.2

Table 8.2 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data			Discharge				Parameters (mean values)												
		ge area			Sampling station		gauging station														
		Outlet	Sampl. station	Disch. gaug. station	Normal	1998	Normal	1998	Gamma HCH	PCB (The folloving Congeners) IUPAC NOS 28	52	101	118	138	153	180	TOC	SiO2	Cr-T	Ni	As
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	mg/l	mg/l	ug/l	ug/l	ug/l
Vest-	Tovdalselva, Topdalsfj.	1856	1854	1794	33.9	36.6	33.9	36.6	0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.50	1.90	<0.5	0.3	0.22
Agder	Søgneelva, Flekkerøy	204	192	192	38.0	39.9	38.0		0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.80	3.60	<0.5	0.6	0.27
(5.)	Mandalselva, Mannefj.	1809	1800	1740	46.0	47.4	47.6	49.1	0.7	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.80	1.30	<0.5	<0.2	0.2
	Audna, Sniksfj.	450	400	59	45.0	48.2	51.8		0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.90	2.40	<0.5	<0.2	0.23
(6.)	Lygna, Lyngdalsfj.	664	660	266	48.0	51.5	57.9	62.1	0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.90	2.00	<0.5	0.3	0.21
	Kvina, Fedafj.	1445	1140	1140	57.6	63.4	57.6		0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.10	1.80	<0.5	0.4	0.27
	Sira, Ana-Sira	1916	1872	1872	59.4	68.3	59.4		0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.50	1.20	<0.5	0.9	0.16
Rogaland	Sokndalselva, Sogndalsstr.	294	293	107	51.1	56.5	51.1	56.5	0.9	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.60	1.70	<0.5	4.4	0.14
(6.)	Hellelandselva, Egersund	241	240	194	57.5	48.6	71.1		0.9	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.70	1.50	<0.5	4.3	0.19
	Bjerkreimselva, Egersund	705	704	639	77.7	65.6	86.4	73.0	0.9	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.20	1.80	<0.5	3.6	0.16
	Håelva, Håtangen	165	160	135	46.9	57.7	46.9	57.7	0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.98	4.30	<0.5	0.5	0.34
	Figgjo, Solavika	229	218	135	50.0	60.0	50.0		0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	7.13	4.50	<0.5	0.8	0.28
	Ims-Lutsi. Høgsfj.Boknafj.	127	127	127	34.9	46.5	34.9	46.5	0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.40	1.50	<0.5	<0.2	0.11
	Oltedalse.,Høgsfj.Boknafj.	102	101	129	70.0	77.0	70.0		0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.40	1.30	<0.5	<0.2	<0.10
	Dirdalse., Høgsfj.Boknafj.	158	158	95	83.0	91.3	83.0		0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.10	4.80	<0.5	6.0	<0.10
	Frafjorde.,Frafj. Boknafj.	178	178	124	94.4	103.4	94.4		0.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.00	1.30	<0.5	2.1	<0.10
	Espedalse.,Høgsfj.Boknafj.	138	138	124	90.0	99.0	90.0		0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.73	1.90	<0.5	<0.2	<0.10
	Lysee., Lysefj.Boknafj.	182	182	46	74.0	81.4	74.0		0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.50	2.00	<0.5	<0.2	<0.10
	Ardalse., Ardalsfj.Boknafj.	519	516	501	81.4	89.5	81.4		0.36	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.40	1.90	<0.5	<0.2	<0.10
	Førree., Jøsenfj.Boknafj.	163	163	163	85.8	94.4	85.8		0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.90	1.40	<0.5	0.1	0.11
	Ulla, Jøsenfj.Boknafj.	393	393	385	83.4	91.7	83.4		0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.90	2.00	<0.5	<0.2	0.13
(7.)	Saudae., Saudafj.Boknafj.	353	353		85.0	102.0	85.0		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.40	2.00	<0.5	0.4	<0.10
	Abøelva, Saudafj.Boknafj.	82	82		85.0	102.0	85.0		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.90	2.20	<0.5	<0.2	<0.10
	Vikedalse., Boknafj.	118	117	115	80.0	99.8	80.0	99.8	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.20	2.10	<0.5	0.4	0.25

Table 8.2 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)												
		ge area			Discharge																
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Gamma	PCB (The folloving Congeners) IUPAC NOS											
					Normal	1998	Normal	1998	HCH	28	52	101	118	138	153	180	TOC	SiO2	Cr-T	Ni	As
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	mg/l	mg/l	ug/l	ug/l	ug/l
Hordaland	Etneelva, Etnefj. Bømlafj.	252	250	127	48.8	51.9	96.0	103.7	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.90	1.00	<0.5	0.3	0.21
(7.)	Opo, Sørfj. Hardangerfj.	482	480	464	79.3	81.0	79.3	81.0	0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.10	0.60	<0.5	<0.2	<0.10
	Tysso, Sørfj. Hardangerfj.	388	385	407	79.3	81.0	79.3	81.0	0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.20	1.30	<0.5	<0.2	<0.10
	Kinso, Sørfj. Hardangerfj.	281	281	232	46.0	50.2	46.0	50.2	0.33	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.50	2.70	<0.5	<0.2	<0.10
	Veig, Eidfjv. Hardangerfj.	496	496	386	41.8	39.2	41.8	39.2	0.23	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.10	0.90	<0.5	3.5	<0.10
	Bjoreia, " , Hardangerfj.	592	592	592	26.0	9.6	26.0	9.6	0.23	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.10	1.20	<0.5	3.5	<0.10
	Sima, Eidfj. Hardangerfj.	145	145	128	69.2	79.6	69.2		0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.30	1.00	<0.5	<0.2	<0.10
	Austdøla, Osafj. Eidfj.	131	130	89	74.6	85.8	74.6		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.20	2.20	<0.5	0.4	<0.10
	Norddøla, Osafj. Eidfj.	40	39	89	74.6	85.8	74.6		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.20	2.20	<0.5	0.4	<0.10
	Tysseelva, Fusafj.	240	240		85.0	93.5	85.0		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.80	0.60	<0.5	0.3	<0.10
	Oselva, Fusafj.	109	108	50	91.7	106.0	91.7	106.0	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.40	1.60	<0.5	0.4	0.12
	Bergsdalse, Veafj.Herdlafj.	198	198		80.0	88.0	80.0		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.90	0.60	<0.5	0.5	<0.10
	Vosso, Veafj. Sørfj.	1492	1465	1102	58.2	60.2	58.2	60.2	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.90	1.00	<0.5	0.4	0.54
	Ekso, Osterfj.	414	400	342	86.2	90.5	86.2		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.20	1.00	<0.5	<0.2	<0.10
	Modalselva, Osterfj.	385	384	248	95.5	100.3	95.5		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.80	0.90	<0.5	<0.2	<0.10

Table 8.2 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)												
		ge area			Discharge																
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Gamma	PCB (The folloving Congeners) IUPAC NOS											
					Normal	1998	Normal	1998	HCH	28	52	101	118	138	153	180	TOC	SiO2	Cr-T	Ni	As
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	mg/l	mg/l	ug/l	ug/l	ug/l
Sogn og Fjordane (7.)	Nærøye., Aurl.fj. Sognefj.	290	290	267	59.5	65.9	59.5		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.40	3.70	<0.5	0.3	<0.10
	Flåmse., Aurl.fj. Sognefj.	280	275	275	52.4	57.1	52.4	57.1	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.30	1.70	<0.5	0.4	<0.10
	Aurlandv. Aurl.fj. Sognefj.	800	799	762	48.6	51.0	48.6		0.12	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.40	0.90	<0.5	0.2	<0.10
	Erdalse., Lærd.fj. Sognefj.	138	138		30.0	31.5	30.0		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.90	2.10	<0.5	0.2	<0.10
	Lærdalsv. Lærd.fj. Sognefj.	1184	1172	1172	30.0	21.8	30.0	21.8	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.88	2.20	<0.5	0.3	<0.10
	Ardalsv., Ardalsfj.Sognefj.	989	989	989	44.9	43.3	44.9	43.3	0.25	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.76	1.40	<0.5	0.2	<0.10
	Fortunv., Lusterfj.Sognefj.	508	508	367	51.0	49.9	51.0	49.9	0.28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.30	1.60	<0.5	0.3	0.85
	Mørkrisv., Lusterfj.Sognefj.	282	282	203	54.7	52.0	54.7		0.28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.40	2.10	<0.5	0.4	<0.10
	Jostedøla, " Sognefj.	865	864	573	68.0	51.3	68.0	51.3	0.28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.40	4.20	<0.5	0.3	<0.10
	Arøye., Sognd.fj. Sognefj.	449	446	384	77.2	73.3	77.2		0.28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.60	1.40	<0.5	0.2	<0.10
	Sogndalse, " Sognefj.	175	172	111	66.1	64.8	66.1		0.28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.90	2.10	<0.5	0.2	<0.10
	Gaular, Dalsfj. Bufj.	627	625	505	79.3	84.5	79.3	84.5	0.36	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.30	1.10	<0.5	<0.2	0.15
	Jølstra, Førdefj.	714	709	384	74.3	78.0	74.3		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.10	1.10	<0.5	<0.2	<0.10
	Nausta, Førdefj.	277	273	232	81.7	85.8	81.7		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.60	1.60	<0.5	<0.2	<0.10
	Oselva, Høydalsfj.	287	285	225	78.7	82.6	78.7		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.50	0.50	<0.5	0.3	<0.10
	Hopse., Hyefj. Nordfj.S	73	73	161	75.0	78.8	75.0		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.70	0.80	<0.5	<0.2	<0.10
	Gjengedalse.," Nordfj.S	170	168	161	75.0	78.8	75.0		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.49	1.10	<0.5	<0.2	0.15
	Breimse., Gloppenfj. "	636	634	585	68.8	80.0	68.8		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.70	1.30	<0.5	0.2	0.2
	Oldene., Indre Nordfj.	226	225	204	70.1	71.5	70.1	71.5	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.80	1.40	<0.5	<0.2	<0.10
	Loenelva, Indre Nordfj.	261	260	234	65.0	66.2	65.0	66.2	0.3	0.30	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.50	1.80	<0.5	<0.2	0.15
	Strynee., Indre Nordfj.	532	530	493	60.2	56.8	60.2	56.8	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.50	1.30	<0.5	<0.2	<0.10
	Hornindalse., Nordfj. N	428	424	378	58.1	55.8	58.1	55.8	0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.20	1.40	<0.5	0.2	<0.10

Table 8.2 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)												
		ıge area			Discharge																
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Gamma	PCB (The folloving Congeners) IUPAC NOS								TOC	SiO2	Cr-T	Ni	As
					Normal	1998	Normal	1998	HCH	28	52	101	118	138	153	180					
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	mg/l	mg/l	ug/l	ug/l	ug/l
Møre og Romsdal (8.)	Ørstae., Ørstafj.	160	155		70.0	73.5	70.0		0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.35	2.60	<0.5	0.7	<0.10
	Valldøla, Nordalfj.Storfj.	359	357		60.0	63.0	60.0		0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.45	1.50	<0.5	<0.2	<0.10
	Rauma, Romsdalsfj.Moldefj.	1202	1190	1142	32.8	31.9	32.8	31.9	0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.50	3.20	<0.5	<0.2	<0.10
	Isa, Isfj. Moldefj.	175	175	89	57.0	58.8	57.0	58.8	0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.65	1.80	<0.5	<0.2	<0.10
	Eira, Eresfj. Moldefj.	1119	1119	1085	34.8	35.9	34.8	35.9	0.31	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.50	1.50	<0.5	<0.2	<0.10
	Littledalse., Sunndalsfj.	359	330	330	41.0	47.9	41.0	47.9	0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.60	0.10	<0.5	<0.2	<0.10
	Driva, Sunnd.fj.Tingvollfj.	2487	2435	2435	27.9	32.1	27.9	32.1	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.25	2.60	<0.5	<0.2	<0.10
	Ulvåa, Alvundfj.	199	199	207	57.0	34.3	60.7	36.5	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.40	4.00	<0.5	0.3	<0.10
	Toåa, Todalsfj.	251	251	207	58.5	60.9	58.5		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.90	1.60	<0.5	<0.2	<0.10
	Surna, Surnadalsfj.	1200	1200	1125	48.0	51.8	49.3		0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.70	1.20	<0.5	0.2	<0.10
	Bøvra, Hamnesfj. Halsafj.	243	243	196	55.0	57.8	55.0		0.7	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.75	1.10	<0.5	0.2	<0.10
Sør-Trøndelag (8.)	Børse.,Gaulosen Tr.h.fj.	110	100		30.0	28.9	30.0		0.9	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.50	0.80	0.5	1.5	0.34
	Vigda, Gaulosen Tr.h.fj.	150	150		30.0	28.9	30.0		0.8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.80	1.00	<0.5	0.9	0.41
	Gaula, Gaulosen Tr.h.fj.	3659	3650	3062	26.4	25.4	26.4	25.4	0.7	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.45	3.00	0.7	1.8	0.61
	Nidelva, Trondheimsfj.	3110	3100	3049	35.5	34.9	35.5	34.9	0.57	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.80	1.40	<0.5	0.8	0.12
	Homla, Stjørd.fj.Tr.h.fj.	157	157		30.0	29.5	30.0		0.55	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.50	1.40	6.9	2.7	0.64
Nord-Trøndelag (8.)	Stjørdalsv, " Tr.h.fj.	2117	2117	1863	38.5	38.1	38.5	38.1	0.55	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.95	0.90	<0.5	0.6	0.16
	Gråe., " Tr.h.fj.	93	93		25.0	24.8	25.0		0.55	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.50	4.20	<0.5	0.7	0.26
	Verdalsvassdr., Tr.h.fj.	1472	1472	898	40.0	39.9	44.5	44.8	0.55	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.10	1.20	11.6	4.1	0.28
	Figga/Leksdalse.,Tr.h.fj.	282	282	178	30.0	30.2	33.6		0.54	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.60	1.40	0.7	0.9	0.38
	Snåsavassdr., Trondh.fj.	2153	2125	2125	35.1	31.8	35.1	31.8	0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.45	1.10	7.7	2.8	0.22
	Argårdselva, Namsfj.	543	510	238	43.0	44.8	50.9	53.0	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4.50	2.20	<0.5	0.6	0.27
	Namsen, Namsfj. Ø	6277	6276	5718	43.4	51.2	43.4	51.2	0.24	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.80	<0.5	0.4	<0.10
	Salsvatnelva, Follafj.	432	432	422	59.7	63.5	59.7	63.5	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.00	46.4	14.1	0.28

Table 8.2 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)												
		ıge area			Discharge																
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station														
					Normal	1998	Normal	1998	Gamma	PCB (The folloving Congeners) IUPAC NOS								TOC	SiO2	Cr-T	Ni	As
									HCH	28	52	101	118	138	153	180						
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l		mg/l	mg/l	ug/l	ug/l	ug/l
Nordland	Abjøra, Bindalsfj. S	526	520	384	80.2	75.5	80.2		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.40	<0.5	<0.2	0.12
(9.)	Skjerva, Vefsenfj. S	104	104	98	41.3	38.9	41.3		0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.30	0.7	1.4	0.3
	Fusta, Vefsenfj. N	544	543	520	63.4	59.7	63.4	59.7	0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.40	<0.5	0.2	0.15
	Drevja, Vefsenfj. N	177	176	98	65.0	61.2	65.0		0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.40	<0.5	0.4	0.18
	Røssåga, Sørfj.	2092	2087	1880	45.4	54.5	45.4		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.50	16.3	5.5	0.16
	Bjerka, Sørfj.	385	385	273	55.4	49.9	55.4		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.50	<0.5	0.4	0.12
	Dalselva, Ranafj. N	211	211	129	39.5	35.6	39.5		0.25	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.50	<0.5	0.3	0.13
	Ranavassdraget, Ranafj. N	3847	3846	1892	44.9	40.4	44.9		0.25	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.60	<0.5	0.3	0.11
	Fykanåga, Glomfjord	297	297	243	103.7	98.3	103.7		0.25	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.70	0.6	0.5	<0.10
	Beiare., Beiarfj. Nordfj.	1064	875	797	45.1	45.1	45.1		0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.60	4.40	<0.5	0.4	0.18
	Saltdalsvassdr., Saltd.fj.S	1544	1543	1168	32.1	33.4	32.1		0.7	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.80	14.8	4.0	<0.10
	Sulitjelmavassdr., Saltd.fj	1028	800	791	44.0	46.2	44.0		0.74	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.80	<0.5	0.5	<0.10
	Kobbe., Leirfj. Sørfolda N	405	405	386	66.9	64.8	66.9	64.8	0.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.80	<0.5	<0.2	<0.10
	Skjoma, Ofotfj. S	845	840	797	36.3	34.5	36.3		0.4	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.70	11.0	3.7	0.3

Table 8.2 TRIBUTARY RIVERS. MEAN CONCENTRATIONS 1998.

County	Watercourse	Runoff data							Parameters (mean values)												
		ge area			Discharge																
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Gamma	PCB (The folloving Congeners) IUPAC NOS								TOC	SiO2	Cr-T	Ni	As
					Normal	1998	Normal	1998	HCH	28	52	101	118	138	153	180					
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	mg/l	mg/l	ug/l	ug/l	ug/l
Troms	Spanselva, Astafj. Vågsfj.	142	142	533	50.0	52.5	50.0		0.35	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.60	<0.5	0.5	<0.10
(9.)	Salangse., Astafj. Vågsfj.	539	539	533	40.9	42.9	40.9		0.35	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.60	<0.5	0.4	0.12
	Rossfjorde., Malangen	196	190		39.5	39.5	39.5		0.33	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.40	<0.5	0.5	<0.10
	Målse., Målselvfj. "	3239	3200	3118	28.7	21.7	28.7	21.7	0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.00	52.7	23.1	0.44
	Bardue., Målselva	2906	2906	2049	28.3	21.4	28.3		0.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.00	52.7	23.1	0.44
	Nordkjoselva, Balsfj.	191	191	415	27.7	19.4	27.7		0.1	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.30	<0.5	0.5	0.15
	Signaldalselva, Lyngen V	473	467	415	27.7	19.4	27.7		0.1	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.10	6.1	2.7	0.1
	Skibotnelva, Lyngen	770	770	724	18.0	18.0	18.0	18.0	0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.20	<0.5	0.9	<0.10
	Käfjordelva, Lyngen Ø	358	358	348	20.0	14.0	20.0		0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.80	<0.5	0.5	<0.10
	Reisa, Reisafj.	2702	2702		16.0	12.0	16.0		0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.90	4.60	<0.5	0.3	0.11
Finnmark	Mattiselva, Käfj. Altafj.	325	325	319	26.5	26.9	26.5		0.1	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.80	<0.5	<0.2	0.12
(10.)	Tverrelva, Altafj.	234	233	233	15.1	15.3	15.1		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1..9	<0.5	0.4	0.14
	Repparfjordv., Repparfj.	1090	1089		25.0	22.5	25.0		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.80	<0.5	0.3	<0.10
	Stabburse., I. Porsangen V	1108	1102	870	18.3	16.5	18.3		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	2.40	4.20	<0.5	<0.2	<0.10
	Lakse., Indre Porsangen S	1533	1532	941	15.9	14.3	15.9		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		2.10	<0.5	0.5	<0.10
	Børselva.Indre Porsangen Ø	883	883	863	29.8	26.8	29.8		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		2.10	<0.5	0.3	0.1
	Mattusjåkka, I. Laksefj. V	101	101	101	22.8	21.7	22.8		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		1.40	<0.5	0.2	0.1
	Storelva.Indre Laksefj. V	690	690	760	21.9	20.8	19.9		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		2.30	11.2	3.7	<0.10
	Soussjåkka, I. Laksefj. V	92	92	102	25.3	23.9	22.8		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		2.60	<0.5	0.3	<0.10
	Adamselva, I. Laksefj. Ø	705	705	760	19.9	18.9	19.9		0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		2.40	<0.5	0.3	<0.10
	Tanavassdraget, Tanafj. S	16389	15713	14169	11.5	10.9	11.5		0.11	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.10	7.00	1.1	0.9	0.1
	Vesterelva, Syltefj.	469	469	79	34.6	34.9	34.6		0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		4.20	<0.5	0.2	0.31
	V. Jakobse., Y.Varangerfj.	627	627	239	18.1	19.9	18.1		0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		3.30	<0.5	0.2	<0.10
	Passvike., Bøkfj.Varang.fj.	18404	18400	18175	9.3	9.8	9.3		0.32	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	3.90	4.30	<0.5	4.5	0.29
	Neiden, Munkfj. Varang.fj.	2960	2960	2911	9.8	13.7	9.8	13.7	0.35	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		2.10	<0.5	<0.2	0.27
	Grense Jakobse.,Varang.fj.	234	234		18.0	18.9			0.35	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		3.30	<0.5	7.1	0.24

APPENDIX IX : TRIBUTARY RIVERS. ANNUAL LOAD 1998 **Page:**

(1)	Glomma	"tributaries"	: Tista	- Hølenelva
(1)	Inner Oslo-fjord		: Årungelva	- Åroselva
(2)	Drammenselva	"tributary"	: Lierelva	
(3)	Numedalslågen	"tributaries"	: Sandeelva	- Farriselva
(4)	Skienselva	"tributary"	: Tokkeelva	
(5)	Otra	"tributaries"	: Gjerstade.	- Audna
(6)	Orreelva	"tributaries"	: Lygna	- Ulla
(7)	Suldalslågen	"tributaries"	: Saudaelva	- Hornindalselva
(8)	Orkla	"tributaries"	: Ørstaelva	- Salsvatnelva
(9)	Vefsna	"tributaries"	: Åbjøra	- Reisa
(10)	Alta	"tributaries	: Mattiselva	- Grense Jacobse.

* Measurements below detection limits are treated in two ways:
"Detection limit = Zero", and "Detection limit = limit". This concerns the substances Cd, Pb, Hg and PCBs. In Tables 9.1-9.2 as well as in Tables 5.1-5.4 both "zero- and limit-values" are shown.

Table 9.1 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Runoff data							Parameters (mean values)															
		Drainage area			Discharge																			
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N		Cu	Zn	C d		P b		S.P.M.	H g	
					Normal	1997	Normal	1997						zero	limit			zero	limit	zero	limit		zero	limit
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes	kg	kg
Østfold	Tista, Iddefj.	1588	1582	1582	14.4	13.3	14.4	13.3	6.00	6.90	1.33	612.4	444.6	4.0	3.98	0.60	1.66	0.03	0.03	0.10	0.10	1.01	0.66	0.66
(1.)	Mosselva, Mossesundet	690	689	689	14.5	14.5	14.5	14.5	10.60	8.60	1.58	411.2	86.6	29.9	29.93	0.47	0.41	0.00	0.00	0.07	0.07	1.38	0.00	0.32
Oslo &	Hølenelva, Drøbaksundet Ø	137	121		14.0	14.1			20.80	4.30	3.07	186.2	127.0	4.7	4.68	0.14	0.23	0.00	0.00	0.03	0.03	0.55	0.19	0.19
Akershus	Årungelva, I. Oslofj.	52	50		13.0	13.1			26.90	0.43	0.06	61.8	47.6	0.5	0.52	0.04	0.02	0.00	0.00	0.00	0.00	0.10	0.02	0.02
(1.)	Gjersjøelva, I. Oslofj.	86	85	85	14.0	14.1			19.10	0.30	0.03	64.3	54.6	0.2	0.19	0.06	0.07	0.00	0.00	0.00	0.00	0.15	0.00	0.04
	Ljanselva, I. Oslofj.	42	41	41	13.0	10.2			28.00	1.08	0.42	19.4	11.0	0.3	0.26	0.16	0.16	0.00	0.00	0.01	0.01	0.34	0.01	0.01
	Loelva/Alna, I. Oslofj.	75	69	69	13.0	20.3			29.00	6.94	2.08	76.3	45.3	3.8	3.80	0.14	0.49	0.00	0.00	0.05	0.05	2.16	0.13	0.13
	Akerselva, I. Oslofj.	227	225	225	17.5	16.1			6.00	2.63	0.34	87.6	34.3	3.2	3.20	0.13	1.03	0.00	0.00	0.07	0.07	0.69	0.46	0.46
	Frognerelva, I. Oslofj.	23	20	20	15.0	25.1			22.00	0.98	0.49	31.5	18.7	2.1	2.11	0.25	0.18	0.00	0.00	0.01	0.01	0.16	0.00	0.02
	Lysakerelva, I. Oslofj.	178	173	173	16.8	22.7	16.8		5.90	1.78	0.37	75.1	45.8	1.1	1.11	1.39	1.55	0.01	0.01	0.10	0.10	0.64	0.12	0.12
	Sandvikselva, I. Oslofj.	223	187	187	18.4	24.4	18.4	24.4	12.90	2.16	0.86	126.6	100.7	2.2	2.16	0.12	0.24	0.00	0.00	0.04	0.04	0.13	0.14	0.14
	Åroselva, I. Oslofj.	113	109	109	17.0	18.9	17.0		18.30	2.35	0.71	114.0	103.3	6.0	6.04	0.10	0.19	0.00	0.00	0.05	0.05	0.68	0.06	0.06
Buskerud	Lierelva, Drammensfj. Ø	309	266	222	18.6	35.2	18.6	35.2	20.10	12.28	7.97	416.3	296.8	2.4	2.36	0.56	2.10	0.01	0.01	0.31	0.31	5.43	0.59	0.59
(2.)																								
Vestfold	Sandeelva, Sandebukta	193	190		17.0	19.6			16.00	1.88	0.70	135.1	109.8	4.3	4.35	0.16	5.86	0.01	0.01	0.21	0.21	0.60	0.00	0.12
(3.)	Aulielva, Tønsbergfj.	363	362	362	14.9	17.6	14.9	17.6	26.00	28.73	5.83	618.4	534.5	26.1	26.12	0.30	1.13	0.01	0.01	0.13	0.13	8.28	0.40	0.40
	Farriselva, Larvikfj.	491	491	491	21.6	21.8	21.6	21.8	3.90	2.03	1.01	170.5	131.6	3.7	3.71	0.14	2.57	0.01	0.01	0.06	0.06	0.17	0.34	0.34
Telemark	Tokkeelva, Kragerø	1238	1200	1200	26.7	30.0	26.7	30.0	1.59	4.54	0.68	306.5	139.6	27.2	27.25	0.34	5.68	0.03	0.03	0.31	0.31	1.57	1.14	1.14
(4.)																								
Aust-Agder	Gjerstadelva, Søndeledfj.	419	414	291	27.0	30.4	27.0	30.4	2.57	2.38	0.40	174.6	86.5	13.9	13.89	0.20	2.54	0.02	0.02	0.23	0.23	0.58	0.60	0.60
(5.)	Vegårdselva, Sandnesfj.	457	429	291	29.3	32.2	29.3		2.81	2.61	0.87	180.4	84.1	14.8	14.81	0.26	3.57	0.01	0.01	0.24	0.24	1.30	0.44	0.44
	Nidelva, Arendal	4025	4020	3956	29.8	32.8	29.8		1.80	16.63	3.33	1388.8	785.9	70.7	70.69	2.08	20.79	0.12	0.12	1.41	1.41	4.49	0.00	4.16

Table 9.1 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Runoff data							Parameters (mean values)																	
		Drainage area			Discharge																					
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N		Cu	Zn	C d		P b		S.P.M.	H g	
					Normal	1997	Normal	1997						zero	limit			zero	limit	zero	limit		zero	limit
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes	kg	kg
Vest-Agder	Tovdalselva, Topdalsfj.	1856	1854	1794	33.9	36.6	33.9	36.6	1.93	10.70	6.42	847.4	323.1	57.8	57.78	0.64	12.20	0.09	0.09	1.18	1.18	3.72	3.21	3.21
(5.)	Søgneelva, Flekkerøy	204	192	192	38.0	39.9	38.0		5.57	4.52	0.72	129.3	116.0	2.4	2.42	0.14	1.79	0.01	0.01	0.13	0.13	0.40	0.24	0.24
	Mandalselva, Mannefj.	1809	1800	1740	46.0	47.4	47.6	49.1	1.70	12.11	2.69	839.5	384.8	86.1	86.10	0.81	9.96	0.05	0.05	1.67	1.67	4.39	4.04	4.04
	Audna, Sniksfj.	450	400	59	45.0	48.2	51.8		3.92	5.47	0.61	352.6	203.7	18.2	18.24	0.18	3.59	0.02	0.02	0.39	0.39	1.17	0.91	0.91
(6.)	Lygna, Lyngdalsfj.	664	660	266	48.0	51.5	57.9	62.1	2.50	5.36	1.07	421.3	236.9	8.6	8.58	0.32	4.93	0.04	0.04	0.49	0.49	1.59	1.61	1.61
	Kvina, Fedafj.	1445	1140	1140	57.6	63.4	57.6		2.96	13.68	4.56	875.2	480.9	16.0	15.96	0.68	10.26	0.05	0.05	1.78	1.78	4.19	5.70	5.70
	Sira, Åna-Sira	1916	1872	1872	59.4	68.3	59.4		2.79	8.06	2.42	1814.5	899.2	108.9	108.87	1.21	14.52	0.08	0.08	1.85	1.85	2.74	4.03	4.03
Rogaland	Sokndalselva, Sogndalsstr.	294	293	107	51.1	56.5	51.1	56.5	4.24	4.70	1.57	211.4	135.7	13.1	13.05	0.26	2.77	0.02	0.02	0.20	0.20	0.48	0.52	0.52
(6.)	Hellelandselva, Egersund	241	240	194	57.5	48.6	71.1		3.01	3.31	1.10	172.9	112.2	3.7	3.68	0.29	2.13	0.01	0.01	0.23	0.23	0.65	0.55	0.55
	Bjerkreimselva, Egersund	705	704	633	77.7	65.6	86.4	73.0	3.24	5.83	1.46	694.7	566.5	10.2	10.19	0.73	4.22	0.03	0.03	0.38	0.38	0.79	0.00	1.46
	Håelva, Håtangen	165	160	135	46.9	57.7	46.9	57.7	12.50	10.07	4.37	517.4	393.0	10.8	10.77	0.26	1.08	0.00	0.00	0.11	0.11	0.75	0.58	0.58
	Figgjo, Solavika	229	218	135	50.0	60.0	50.0		14.20	121.68	9.49	753.6	703.3	14.0	14.02	0.54	2.52	0.01	0.01	0.26	0.26	1.39	0.62	0.62
	Ims-Lutsi. Høgsfj.Boknafj.	127	127	127	34.9	46.5	34.9	46.5	6.82	1.30	0.19	168.5	122.0	2.4	2.42	0.07	0.43	0.00	0.00	0.08	0.08	0.11	0.00	0.19
	Oltedalse.,Høgsfj.Boknafj.	102	101	129	70.0	77.0	70.0		3.16	1.23	0.25	107.9	79.7	5.9	5.89	0.07	0.78	0.00	0.00	0.07	0.07	0.24	0.00	0.25
	Dirdalse., Høgsfj.Boknafj.	158	158	95	83.0	91.3	83.0		1.75	1.14	0.27	143.3	110.5	9.1	9.10	0.32	1.41	0.00	0.00	0.14	0.14	0.23	0.68	0.68
	Frafjorde.,Frafj. Boknafj.	178	178	124	94.4	103.4	94.4		1.89	1.74	0.46	145.1	83.6	2.9	2.90	0.17	1.04	0.00	0.01	0.17	0.17	0.38	0.58	0.58
	Espedalse.,Høgsfj.Boknafj.	138	138	124	90.0	99.0	90.0		2.60	2.71	0.22	136.1	101.2	1.3	1.29	0.09	0.56	0.00	0.00	0.11	0.11	0.21	0.43	0.43
	Lysee., Lysefj.Boknafj.	182	182	46	74.0	81.4	74.0		2.00	0.47	0.37	70.1	46.7	1.4	1.40	0.09	0.79	0.00	0.00	0.11	0.11	0.15	0.00	0.47
	Årdalse., Årdalsfj.Boknafj.	519	516	501	81.4	89.5	81.4		2.02	2.91	0.73	337.9	233.0	4.4	4.37	0.29	2.04	0.01	0.01	0.44	0.44	0.60	2.18	2.18
	Førree., Jøsenfj.Boknafj.	163	163	163	85.8	94.4	85.8		2.30	1.46	0.24	121.3	116.5	3.4	3.40	0.15	0.44	0.00	0.00	0.10	0.10	0.10	0.49	0.49
	Ulla, Jøsenfj.Boknafj.	393	393	385	83.4	91.7	83.4		2.09	2.27	0.57	284.1	156.8	3.4	3.41	0.23	2.39	0.00	0.01	0.24	0.24	0.48	1.70	1.70
(7.)	Saudae., Saudafj.Boknafj.	353	353		85.0	102.0	85.0		2.86	2.27	0.57	1033.3	931.1	3.4	3.41	0.91	34.86	0.08	0.08	0.15	0.15	0.32	1.14	1.14
	Åbøelva, Saudafj.Boknafj.	82	82		85.0	102.0	85.0		1.14	0.53	0.26	52.8	38.0	0.8	0.79	0.05	0.47	0.00	0.00	0.03	0.03	0.08	0.40	0.40
	Vikedalse., Boknafj.	118	117		80.0	99.8	80.0	99.8	1.78	1.10	0.29	80.3	54.9	1.1	1.10	0.18	1.22	0.01	0.01	0.09	0.09	0.50	0.37	0.37

Table 9.1 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Runoff data							Parameters (mean values)															
		Drainage area			Discharge																			
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N		Cu	Zn	C d		P b		S.P.M.	H g	
					Normal	1997	Normal	1997						zero	limit			zero	limit	zero	limit		zero	limit
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes	kg	kg
Hordaland	Etneelva, Etnefj. Bømlafj.	252	250	127	48.8	51.9	96.0	103.7	2.34	2.46	0.41	149.4	96.2	1.2	1.23	0.16	0.78	0.00	0.00	0.08	0.08	0.69	0.41	0.41
(7.)	Opo, Sørfj. Hardangerfj.	482	480	464	79.3	81.0	79.3	81.0	1.71	4.66	2.57	1045.9	152.0	240.3	240.32	0.61	3.56	0.02	0.02	0.45	0.45	2.35	1.84	1.84
	Tysso, Sørfj. Hardangerfj.	388	385	407	79.3	81.0	79.3	81.0	1.47	0.89	0.49	152.4	112.1	4.9	4.92	0.30	2.85	0.02	0.02	0.06	0.06	0.25	0.00	0.98
	Kinso, Sørfj. Hardangerfj.	281	281	232	46.0	50.2	46.0	50.2	1.85	0.44	0.22	51.6	35.1	1.3	1.33	0.09	0.40	0.00	0.00	0.02	0.02	0.20	0.67	0.67
	Veig, Eidfjv. Hardangerfj.	496	496	386	41.8	39.2	41.8	39.2	1.38	1.23	0.31	74.8	36.8	1.8	1.84	1.47	0.80	0.00	0.01	0.34	0.34	0.34	0.00	0.61
	Bjoreia, " , Hardangerfj.	592	592	592	26.0	9.6	26.0	9.6	1.38	0.36	0.09	21.9	10.8	0.5	0.54	0.43	0.23	0.00	0.00	0.10	0.10	0.10	0.00	0.18
	Sima, Eidfj. Hardangerfj.	145	145	128	69.2	79.6	69.2		2.59	0.36	0.18	63.7	52.8	1.1	1.09	0.07	0.25	0.00	0.00	0.02	0.02	0.20	0.00	0.36
	Austdøla, Osafj. Eidfj.	131	130	89	74.6	85.8	74.6		7.90	0.28	0.18	123.1	116.1	2.1	2.11	0.11	0.35	0.00	0.00	0.01	0.01	0.25	0.35	0.35
	Norddøla, Osafj. Eidfj.	40	39	89	74.6	85.8	74.6		7.90	0.08	0.05	36.9	34.8	0.6	0.63	0.03	0.11	0.00	0.00	0.00	0.00	0.07	0.11	0.11
	Tysseelva, Fusafj.	240	240		85.0	93.5	85.0		1.68	2.62	1.42	567.5	73.6	6.4	6.37	0.50	1.56	0.02	0.02	0.16	0.16	0.38	0.00	0.71
	Oselva, Fusafj.	109	108	50	91.7	106.0	91.7	106.0	3.71	4.33	1.08	148.0	88.5	4.0	3.97	0.40	1.41	0.01	0.01	0.06	0.06	0.48	0.36	0.36
	Bergsdalse, Veafj.Herdlafj.	198	198		80.0	88.0	80.0		1.45	1.10	0.27	87.9	72.5	6.6	6.59	0.27	4.18	0.02	0.02	0.05	0.05	0.30	0.00	0.55
	Vosso, Veafj. Sørfj.	1492	1465	1102	58.2	60.2	58.2	60.2	2.00	19.75	1.67	625.8	400.5	33.4	33.38	1.11	3.89	0.06	0.06	0.17	0.17	1.28	2.78	2.78
	Ekso, Osterfj.	414	400	342	86.2	90.5	86.2		1.41	3.42	0.57	190.6	111.9	5.7	5.71	0.34	1.94	0.03	0.03	0.19	0.19	0.68	0.00	1.14
	Modalselva, Osterfj.	385	384	248	95.5	100.3	95.5		1.01	2.43	0.61	208.9	128.7	4.9	4.86	0.24	3.16	0.01	0.01	0.23	0.23	0.72	0.00	1.21

Table 9.1 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Runoff data							Parameters (mean values)																
		Drainage area			Discharge																				
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N		Cu	Zn	C d		P b		S.P.M.	H g	
					Normal	1997	Normal	1997						zero	limit			zero	limit	zero	limit		zero	limit
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes	kg	kg
Sogn og Fjordane (7.)	Nærøye., Aurl.fj. Sognefj.	290	290	267	59.5	65.9	59.5		1.99	0.60	0.30	192.9	153.7	6.6	6.63	0.36	4.04	0.01	0.01	0.05	0.05	0.13	0.00	0.60
	Flåmse., Aurl.fj. Sognefj.	280	275	275	52.4	57.1	52.4	57.1	46.80	0.40	0.25	153.5	143.6	3.0	2.97	0.20	0.50	0.00	0.00	0.01	0.01	0.32	0.00	0.50
	Aurlandv. Aurl.fj. Sognefj.	800	799	762	48.6	51.0	48.6		1.43	2.57	0.64	430.5	347.0	38.6	38.55	0.39	1.16	0.00	0.01	0.05	0.05	1.84	0.00	1.29
	Erdalse., Lærd.fj. Sognefj.	138	138		30.0	31.5	30.0		1.07	0.27	0.07	16.7	8.8	0.4	0.41	0.04	0.12	0.00	0.00	0.01	0.01	0.10	0.00	0.14
	Lærdalsv. Lærd.fj. Sognefj.	1184	1172	1172	30.0	21.8	30.0	21.8	1.65	2.98	0.81	166.0	127.3	3.6	3.63	0.56	0.81	0.07	0.07	0.07	0.07	0.84	0.00	0.81
	Årdalsv., Årdalsfj.Sognefj.	989	989	989	44.9	43.3	44.9	43.3	0.96	5.40	2.70	270.1	104.0	9.5	9.45	1.76	1.35	0.01	0.01	0.03	0.03	1.57	0.00	1.35
	Fortunv., Lusterfj.Sognefj.	508	508	367	51.0	49.9	51.0	49.9	2.08	1.60	0.80	223.8	183.9	7.2	7.19	0.64	0.80	0.00	0.01	0.05	0.05	0.70	0.00	0.80
	Mørkrisv., Lusterfj.Sognefj.	282	282	203	54.7	52.0	54.7		2.04	0.42	0.32	141.0	127.2	2.8	2.77	0.18	0.46	0.00	0.00	0.00	0.01	0.13	0.00	0.46
	Jostedøla, " Sognefj.	865	864	573	68.0	51.3	68.0	51.3	17.60	1.40	0.70	559.1	454.3	16.8	16.77	1.12	1.68	0.00	0.01	0.08	0.08	0.34	0.00	1.40
	Årøye., Sognd.fj. Sognefj.	449	446	384	77.2	73.3	77.2		1.50	2.06	0.52	175.3	153.6	6.2	6.19	0.31	0.93	0.00	0.01	0.04	0.04	0.69	0.00	1.03
	Sogndalse, " Sognefj.	175	172	111	66.1	64.8	66.1		2.11	1.41	0.70	126.5	112.5	2.1	2.11	0.14	1.51	0.00	0.00	0.01	0.01	0.12	0.00	0.35
	Gaular, Dalsfj. Bufj.	627	625	505	79.3	84.5	79.3	84.5	0.95	8.33	3.33	263.1	131.6	20.0	19.99	0.50	2.33	0.00	0.02	0.08	0.08	0.78	1.67	1.67
	Jølstra, Førdefj.	714	709	384	74.3	78.0	74.3		1.65	6.98	3.49	436.0	375.0	20.9	20.93	0.52	4.71	0.00	0.02	0.05	0.05	0.84	0.00	1.74
	Nausta, Førdefj.	277	273	232	81.7	85.8	81.7		1.21	7.39	4.43	103.4	44.3	4.4	4.43	0.07	2.29	0.00	0.01	0.00	0.01	0.55	0.74	0.74
	Oselva, Høydalsfj.	287	285	225	78.7	82.6	78.7		2.00	2.23	0.45	126.2	83.9	3.7	3.71	0.22	1.48	0.01	0.01	0.10	0.10	0.30	1.11	1.11
	Hopse., Hyefj. Nordfj.S	73	73	161	75.0	78.8	75.0		1.43	0.36	0.09	38.1	36.3	1.1	1.09	0.05	0.67	0.00	0.00	0.02	0.02	0.13	0.27	0.27
	Gjengedalse.," Nordfj.S	170	168	161	75.0	78.8	75.0		1.18	1.25	0.29	83.5	59.3	2.5	2.50	0.13	0.46	0.00	0.00	0.04	0.04	0.22	0.83	0.83
	Breimse., Gloppenfj. "	636	634	585	68.8	80.0	68.8		1.53	5.60	0.80	356.7	439.9	4.8	4.80	0.48	1.92	0.02	0.02	0.03	0.03	0.48	0.00	1.60
	Oldene., Indre Nordfj.	226	225	214	70.1	71.5	70.1	71.5	1.63	1.67	0.25	123.3	126.8	4.6	4.57	0.20	0.51	0.00	0.01	0.03	0.03	0.33	0.00	0.51
	Loenelva, Indre Nordfj.	261	260	234	65.0	66.2	65.0	66.2	2.05	1.52	0.54	90.1	111.3	1.6	1.63	0.22	0.27	0.00	0.01	0.02	0.02	0.22	0.00	0.54
	Strynee., Indre Nordfj.	532	530	493	60.2	56.8	60.2	56.8	1.78	2.66	0.47	188.0	143.4	17.1	17.09	0.57	3.32	0.02	0.02	0.14	0.14	3.28	0.00	0.95
	Hornindalse., Nordfj. N	428	424	378	58.1	55.8	58.1	55.8	2.58	3.73	0.45	235.0	85.8	2.2	2.24	0.30	0.82	0.00	0.01	0.04	0.04	0.62	0.00	0.75

Table 9.1 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Runoff data							Parameters (mean values)																
		Drainage area			Discharge																				
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N		Cu	Zn	C d		P b		S.P.M.	H g	
					Normal	1997	Normal	1997						zero	limit			zero	limit	zero	limit		zero	limit
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes	kg	kg
Møre og Romsdal (8.)	Ørstae., Ørstafj.	160	155		70.0	73.5	70.0		3.59	6.11	2.16	203.0	100.6	13.3	13.29	0.40	2.08	0.00	0.00	0.07	0.07	1.06	0.36	0.36
	Valldøla, Nordalfj.Storfj.	359	357		60.0	63.0	60.0		1.20	2.13	0.43	75.9	40.4	2.1	2.13	0.28	0.71	0.00	0.01	0.04	0.04	0.73	0.00	0.71
	Rauma, Romsdalsfj.Moldefj.	1202	1190	1142	32.8	31.9	32.8	31.9	2.06	2.39	0.84	141.3	81.4	0.0	3.59	0.48	1.32	0.00	0.01	0.05	0.05	1.68	0.00	1.20
	Isa, Isfj. Moldefj.	175	175	89	57.0	58.8	57.0	58.8	1.50	0.65	0.19	37.3	23.7	0.0	0.97	0.10	0.52	0.00	0.00	0.02	0.02	0.21	0.00	0.32
	Eira, Eresfj. Moldefj.	1119	1119	1085	34.8	35.9	34.8	35.9	1.93	2.53	0.63	190.0	138.1	5.1	5.07	0.63	1.01	0.00	0.01	0.10	0.10	0.71	0.00	1.27
	Littledalse., Sunndalsfj.	359	330	330	41.0	47.9	41.0	47.9	0.99	0.50	0.25	33.9	10.5	2.0	1.99	0.15	0.20	0.00	0.00	0.01	0.01	0.24	0.00	0.50
	Driva, Sunnd.fj.Tingvollfj.	2487	2435	2435	27.9	32.1	27.9	32.1	2.94	4.93	1.23	554.6	332.8	0.0	7.39	1.97	2.22	0.00	0.02	0.20	0.20	1.53	0.00	2.46
	Ulvåa, Ålvundfj.	199	199	207	57.0	34.3	60.7	36.5	3.46	1.51	0.43	148.5	109.8	1.3	1.29	0.28	0.37	0.00	0.00	0.03	0.03	0.27	0.32	0.32
	Toåa, Todalsfj.	251	251	207	58.5	60.9	58.5		1.27	0.96	0.24	51.6	22.7	0.0	1.45	0.14	0.19	0.01	0.01	0.02	0.02	0.28	0.00	0.48
	Surna, Surnadalsfj.	1200	1200	1125	48.0	51.8	49.3		1.83	5.88	1.76	343.0	164.7	9.8	9.80	0.78	3.14	0.02	0.02	0.47	0.47	1.94	0.00	1.96
	Bøvra, Hamnesfj. Halsafj.	243	243	196	55.0	57.8	55.0		2.30	1.33	0.31	81.9	22.6	2.7	2.66	0.27	0.44	0.00	0.00	0.10	0.10	0.49	0.44	0.44
Sør-Trøndelag (8.)	Børse.,Gaulosen Tr.h.fj.	110	100		30.0	28.9	30.0		9.33	1.09	0.46	44.7	23.2	1.3	1.28	0.13	0.05	0.00	0.00	0.02	0.02	0.29	0.00	0.09
	Vigda, Gaulosen Tr.h.fj.	150	150		30.0	28.9	30.0		11.50	1.23	0.41	50.6	25.3	2.9	2.87	0.14	0.07	0.00	0.00	0.02	0.02	0.64	0.00	0.14
	Gaula, Gaulosen Tr.h.fj.	3659	3650	3062	26.4	25.4	26.4	25.4	6.75	20.47	8.77	511.6	438.6	35.1	35.08	5.56	12.28	0.00	0.03	6.61	6.61	19.59	0.00	2.92
	Nidelva, Trondheimsfj.	3110	3100	3049	35.5	34.9	35.5	34.9	3.40	31.05	3.41	798.4	184.2	17.1	17.06	2.73	2.05	0.00	0.03	0.20	0.20	6.86	0.00	3.41
	Homla, Stjørd.fj.Tr.h.fj.	157	157		30.0	29.5	30.0		4.97	0.73	0.13	35.1	6.0	2.3	2.34	0.31	0.53	0.00	0.00	0.02	0.02	0.16	0.22	0.22
Nord-Trøndelag (8.)	Stjørdalsv, " Tr.h.fj.	2117	2117	1863	38.5	38.1	38.5	38.1	2.95	10.17	5.09	470.6	139.9	12.7	12.72	8.39	10.17	0.00	0.03	0.28	0.28	7.40	3.82	3.82
	Gråe., " Tr.h.fj.	93	93		25.0	24.8	25.0		15.10	1.02	0.80	80.7	74.2	1.3	1.31	0.08	0.02	0.00	0.00	0.01	0.01	0.08	0.00	0.07
	Verdalsvassdr., Tr.h.fj.	1472	1472	898	40.0	39.9	44.5	44.8	5.04	7.41	1.85	416.7	166.7	14.8	14.82	1.67	8.33	0.00	0.02	0.22	0.22	3.96	1.85	1.85
	Figga/Leksdalse.,Tr.h.fj.	282	282	178	30.0	30.2	33.6		5.85	4.03	1.88	147.7	79.2	2.7	2.69	0.32	0.32	0.00	0.00	0.07	0.07	2.37	0.40	0.40
	Snåsavassdr., Trondh.fj.	2153	2125	2125	35.1	31.8	35.1	31.8	3.97	10.66	2.13	575.4	208.8	27.7	27.70	1.49	6.18	0.00	0.02	0.11	0.11	2.96	3.20	3.20
	Årgårdselva, Namsfj.	543	510	238	43.0	44.8	50.9	53.0	5.34	15.13	4.32	410.7	129.7	33.9	33.87	0.65	1.01	0.00	0.01	0.20	0.20	5.56	1.80	1.80
	Namsen, Namsfj. Ø	6277	6276	5718	43.4	51.2	43.4	51.2	29.50	30.40	9.12	1398.4	263.5	50.7	50.67	6.08	16.21	0.00	0.10	4.15	4.15	12.46	15.20	15.20
	Salsvatnelva, Follafj.	432	432	422	59.7	63.5	59.7	63.5	4.73	0.78	0.43	111.6	57.1	2.6	2.60	0.78	12.37	0.01	0.01	0.08	0.08	0.45	0.00	0.87

Table 9.1 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Runoff data							Parameters (mean values)															
		Drainage area			Discharge																			
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N		Cu	Zn	C d		P b		S.P.M.	H g	
					Normal	1997	Normal	1997						zero	limit			zero	limit	zero	limit		zero	limit
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes	kg	kg
Nordland	Åbjøra, Bindalsfj. S	526	520	384	80.2	75.5	80.2		1.34	1.24	0.74	74.3	12.4	3.7	3.71	0.12	0.62	0.00	0.01	0.07	0.07	0.59	0.00	1.24
(9.)	Skjerva, Vefsenfj. S	104	104	98	41.3	38.9	41.3		6.50	3.06	1.40	84.8	53.6	7.0	7.02	0.19	0.31	0.00	0.00	0.06	0.06	1.41	0.19	0.19
	Fusta, Vefsenfj. N	544	543	520	63.4	59.7	63.4	59.7	2.38	3.07	0.92	91.0	15.3	10.2	10.22	0.31	1.64	0.00	0.01	0.06	0.06	1.17	0.00	1.02
	Drevja, Vefsenfj. N	177	176	98	65.0	61.2	65.0		4.03	1.02	0.34	30.2	10.9	0.3	0.34	0.10	0.61	0.00	0.00	0.03	0.03	0.66	0.00	0.34
	Røssåga, Sørfj.	2092	2087	1880	45.4	54.5	45.4		3.56	7.17	1.79	319.2	114.8	32.3	32.28	1.79	19.37	0.00	0.04	0.25	0.25	2.26	0.00	3.59
	Bjerka, Sørfj.	385	385	273	55.4	49.9	55.4		2.92	0.61	0.30	35.7	10.3	3.0	3.03	0.24	0.73	0.00	0.01	0.03	0.03	0.24	0.00	0.61
	Dalselva, Ranafj. N	211	211	129	39.5	35.6	39.5		2.14	0.24	0.12	11.4	2.1	0.9	0.95	0.07	0.17	0.00	0.00	0.01	0.01	0.15	0.00	0.24
	Ranavassdraget, Ranafj. N	3847	3846	1892	44.9	40.4	44.9		1.99	9.80	4.90	308.7	147.0	24.5	24.50	0.98	6.37	0.00	0.05	0.39	0.39	7.11	0.00	4.90
	Fykanåga, Glomfjord	297	297	243	103.7	98.3	103.7		4.44	0.92	0.46	116.0	70.9	11.0	11.05	0.46	9.58	0.00	0.01	0.02	0.02	0.21	0.00	0.92
	Beiare., Beiarfj. Nordfj.	1064	875	797	45.1	45.1	45.1		7.14	6.22	3.73	66.0	59.7	6.2	6.22	0.62	5.97	0.00	0.01	0.15	0.15	8.40	0.00	1.24
	Saltdalsvassdr., Saltd.fj.S	1544	1543	1168	32.1	33.4	32.1		3.72	7.31	3.25	134.9	34.1	8.1	8.13	1.63	287.83	0.00	0.02	0.00	0.03	6.71	0.00	1.63
	Sulitjelmavassdr., Saltd.fj	1028	800	791	44.0	46.2	44.0		19.60	1.17	0.58	82.8	39.6	3.5	3.50	9.91	17.60	0.05	0.05	0.17	0.17	0.59	0.00	1.17
	Kobbe., Leirfj. Sørfolda N	405	405	386	66.9	64.8	66.9	64.8	1.54	0.83	0.41	49.7	21.5	3.3	3.31	0.17	0.99	0.00	0.01	0.04	0.04	0.58	0.00	0.83
	Skjoma, Ofotfj. S	845	840	797	36.3	34.5	36.3		1.02	3.66	1.83	37.5	11.9	3.7	3.66	0.46	2.38	0.00	0.01	0.17	0.17	2.84	0.00	0.91

Table 9.1 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Runoff data							Parameters (mean values)																	
		Drainage area			Discharge																					
		Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N		Cu	Zn	C d		P b		S.P.M.	H g	
					Normal	1997	Normal	1997						zero	limit			zero	limit	zero	limit		zero	limit
		sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes	kg	kg
Troms	Spanselva, Astafj. Vågsfj.	142	142	533	50.0	52.5	50.0		4.18	0.71	0.24	13.9	4.0	0.7	0.71	0.12	0.14	0.00	0.00	0.02	0.02	0.66	0.00	0.24
(9.)	Salangse., Astafj. Vågsfj.	539	539	533	40.9	42.9	40.9		6.04	1.46	0.51	47.4	19.7	2.9	2.92	0.22	0.15	0.00	0.01	0.03	0.03	0.67	0.00	0.73
	Rossfjorde., Malangen	196	190		39.5	39.5	39.5		7.60	0.95	0.17	31.2	0.9	4.5	4.50	0.09	0.07	0.00	0.00	0.01	0.01	0.23	0.00	0.24
	Målse., Målselvfj. "	3239	3200	3118	28.7	21.7	28.7	21.7	7.30	28.47	5.69	479.6	170.8	41.6	41.61	4.60	19.71	0.02	0.02	0.42	0.42	17.21	0.00	2.19
	Bardue., Målselva	2906	2906	2049	28.3	21.4	28.3		7.55	13.92	0.98	331.4	139.2	9.8	9.81	4.12	17.65	0.02	0.02	0.37	0.37	15.41	0.00	1.96
	Nordkjoselva, Balsfj.	191	191	415	27.7	19.4	27.7		2.96	0.23	0.09	5.6	2.0	0.4	0.35	0.11	0.06	0.00	0.00	0.01	0.01	0.17	0.00	0.12
	Signaldalselva, Lyngen V	473	467	415	27.7	19.4	27.7		2.46	0.57	0.29	16.0	4.9	1.7	1.71	0.57	0.97	0.00	0.00	0.03	0.03	0.68	0.00	0.29
	Skibotnelva, Lyngen	770	770	724	18.0	18.0	18.0	18.0	2.47	0.44	0.35	25.8	8.7	1.7	1.75	0.26	0.13	0.00	0.00	0.00	0.01	0.38	0.00	0.44
	Kåfjordelva, Lyngen Ø	358	358	348	20.0	14.0	20.0		3.20	0.16	0.08	19.0	12.5	0.8	0.79	0.17	0.11	0.00	0.00	0.00	0.00	0.06	0.00	0.16
	Reisa, Reisafj.	2702	2702		16.0	12.0	16.0		5.26	2.05	0.72	75.7	16.4	5.1	5.11	0.82	0.61	0.00	0.01	0.02	0.02	1.00	0.00	1.02
Finnmark	Mattiselva, Kåfj. Altafj.	325	325	319	26.5	26.9	26.5		2.31	0.83	0.14	19.9	1.9	1.4	1.38	0.36	0.44	0.00	0.00	0.07	0.07	0.18	0.00	0.28
(10.)	Tverrelva, Altafj.	234	233	233	15.1	15.3	15.1		3.78	0.45	0.11	16.4	3.6	1.6	1.57	0.17	0.10	0.00	0.00	0.01	0.01	0.09	0.00	0.11
	Repparfjordv., Repparfj.	1090	1089		25.0	22.5	25.0		2.89	0.77	0.39	68.8	10.8	6.2	6.18	0.77	0.62	0.01	0.01	0.18	0.18	0.74	0.00	0.77
	Stabburse., I. Porsangen V	1108	1102	870	18.3	16.5	18.3		4.41	1.72	0.29	44.2	35.6	2.9	2.87	0.11	0.46	0.00	0.01	0.02	0.02	0.32	0.00	0.57
	Lakse., Indre Porsangen S	1533	1532	941	15.9	14.3	15.9		3.68	2.76	0.69	72.5	4.8	11.1	11.05	0.41	0.62	0.00	0.01	0.02	0.02	1.24	0.00	0.69
	Børselva.Indre Porsangen Ø	883	883	863	29.8	26.8	29.8		2.81	0.75	0.37	48.5	4.5	15.7	15.67	0.22	0.90	0.00	0.01	0.04	0.04	0.39	0.00	0.75
	Mattusjåkka, I. Laksefj. V	101	101	101	22.8	21.7	22.8		7.32	0.07	0.03	4.1	0.1	0.2	0.21	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.28	0.28
	Storelva.Indre Laksefj. V	690	690	760	21.9	20.8	19.9		2.64	0.45	0.23	21.7	12.2	1.8	1.81	0.14	1.22	0.00	0.00	0.00	0.01	0.09	0.00	0.45
	Soussjåkka, I. Laksefj. V	92	92	102	25.3	23.9	22.8		4.20	0.06	0.03	4.1	1.2	0.3	0.28	0.01	0.07	0.00	0.00	0.00	0.00	0.02	0.00	0.07
	Adamselva, I. Laksefj. Ø	705	705	760	19.9	18.9	19.9		5.52	0.84	0.21	37.4	3.8	7.1	7.14	0.13	0.63	0.00	0.00	0.04	0.04	0.24	0.00	0.42
	Tanavassdraget, Tanafj. S	16389	15713	14169	11.5	10.9	11.5		5.13	77.24	28.09	999	226.9	32.4	32.41	11.34	76.70	0.16	0.16	3.13	3.13	1.67	5.40	5.40
	Vesterelva, Syltefj.	469	469	79	34.6	34.9	34.6		3.97	2.06	1.55	24.8	2.1	6.7	6.71	0.10	0.26	0.00	0.01	0.03	0.03	0.32	0.00	0.52
	V. Jakobse., Y.Varangerfj.	627	627	239	18.1	19.9	18.1		4.21	1.57	0.79	19.7	1.2	2.0	1.97	0.08	0.08	0.00	0.00	0.01	0.01	0.30	0.00	0.39
	Passvike., Bøkfj.Varang.fj.	18404	18400	18175	9.3	9.8	9.3		3.59	142.16	79.61	2843.3	17.1	1313.6	1313.60	7.39	14.79	0.17	0.17	0.28	0.28	17.63	5.69	5.69
	Neiden, Munkfj. Varang.fj.	2960	2960	2911	9.8	13.7	9.8	13.7	2.72	3.84	0.64	204.6	5.1	12.8	12.79	0.26	0.26	0.00	0.01	0.00	0.03	7.47	0.00	1.28
	Grense Jakobse.,Varang.fj.	234	234		18.0	18.9			4.36	0.42	0.10	18.0	1.1	4.3	4.32	0.29	0.26	0.00	0.00	0.01	0.01	0.11	0.00	0.14

Table 9.2 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Parameters (mean values)																							
			PCB (The folloving Congeners) IUPAC NOS																						
		Gamma HCH	28		52		101		118		138		153		180		Sum : PCB		TOC	SiO2	Cr- T		Ni		As	
		zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	t.tonne	t.tonne	zero tonnes	limit tonnes	zero tonnes	limit tonnes	zero tonnes	limit tons
Østfold	Tista, Iddefj.	0.398	0.000	0.020	0.000	0.020	0.000	0.020	0.000	0.020	0.000	0.020	0.000	0.020	0.000	0.020	0.000	0.139	4.45	1.66	1.13	1.13	0.33	0.33	0.19	0.19
(1.)	Mosselva, Mossesundet	0.189	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.066	2.49	0.09	0.00	0.16	0.32	0.32	0.16	0.16
Oslo &	Hølenelva, Drøbaksundet Ø	0.032	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.011	0.53	0.49	0.05	0.05	0.15	0.15	0.03	0.03
Akershus	Årungelva, I. Oslofj.	0.012	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.004	0.06	0.00	0.00	0.01	0.03	0.03	0.01	0.01
(1.)	Gjersjøelva, I. Oslofj.	0.023	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.008	0.23	0.12	0.00	0.02	0.08	0.08	0.01	0.01
	Ljanselva, I. Oslofj.	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.09	0.09	0.01	0.01	0.05	0.05	0.01	0.01
	Loelva/Alna, I. Oslofj.	0.012	0.008	0.008	0.004	0.004	0.008	0.008	0.002	0.002	0.005	0.005	0.005	0.005	0.003	0.003	0.034	0.034	0.27	0.31	0.03	0.03	0.02	0.02	0.01	0.01
	Akerselva, I. Oslofj.	0.074	0.005	0.005	0.006	0.006	0.005	0.005	0.003	0.003	0.005	0.005	0.005	0.005	0.000	0.003	0.027	0.031	0.45	0.41	0.00	0.06	0.03	0.03	0.03	0.03
	Frognerelva, I. Oslofj.	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.06	0.10	0.62	0.62	0.28	0.28	0.01	0.01
	Lysakerelva, I. Oslofj.	0.074	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.026	0.68	0.58	2.98	2.98	0.63	0.63	0.03	0.03
	Sandvikselva, I. Oslofj.	0.086	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.030	0.85	0.14	0.00	0.07	0.00	0.03	0.03	0.03
	Åroselva, I. Oslofj.	0.039	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.014	0.40	0.40	0.00	0.03	0.05	0.05	0.02	0.02
Buskerud	Lierelva, Drammensfj. Ø	0.148	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.062	1.74	2.13	0.47	0.47	0.44	0.44	0.17	0.17
(2.)																										
Vestfold	Sandeelva, Sandebukta	0.059	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.025	0.42	0.74	0.00	0.06	0.00	0.02	0.04	0.04
(3.)	Aulielva, Tønsbergfj.	0.100	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.042	1.02	1.99	0.00	0.10	0.36	0.36	0.07	0.07
	Farriselva, Larvikfj.	0.169	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.071	1.28	1.28	1.01	1.01	0.00	0.07	0.05	0.05
Telemark	Tokkeelva, Kragerø	0.908	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.238	6.24	2.84	0.00	0.57	0.34	0.34	0.20	0.20
(4.)																										
Aust-Agder	Gjerstadelva, Søndeledfj.	0.318	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.083	2.18	0.99	0.00	0.20	0.32	0.32	0.12	0.12
(5.)	Vegårdselva, Sandnesfj.	0.349	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.091	2.09	1.26	0.00	0.22	0.30	0.30	0.10	0.10
	Nidelva, Arendal	3.327	0.000	0.125	0.000	0.125	0.000	0.125	0.000	0.125	0.000	0.125	0.000	0.125	0.000	0.125	0.000	0.873	12.5	9.15	0.00	2.08	1.25	1.25	0.83	0.83

Table 9.2 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Parameters (mean values)																							
			PCB (The folloving Congeners) IUPAC NOS																						
		Gamma HCH	28		52		101		118		138		153		180		Sum : PCB		TOC	SiO2	Cr- T		Ni		As	
		zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	t.tonne	t.tonne	zero tonnes	limit tonnes	zero tonnes	limit tonnes	zero tonnes	limit tons
Vest-Agder	Tovdalselva, Topdalsfj.	1.712	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.449	9.63	4.07	0.00	1.07	0.64	0.64	0.47	0.47
(5.)	Søgneelva, Flekkerøy	0.193	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.051	0.92	0.87	0.00	0.12	0.14	0.14	0.07	0.07
	Mandalselva, Mannefj.	1.883	0.000	0.081	0.000	0.081	0.000	0.081	0.000	0.081	0.000	0.081	0.000	0.081	0.000	0.081	0.000	0.565	10.22	3.50	0.00	1.35	0.00	0.54	0.54	0.54
	Audna, Sniksfj.	0.304	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.128	1.76	1.46	0.00	0.30	0.00	0.12	0.14	0.14
(6.)	Lygna, Lyngdalsfj.	0.536	0.000	0.032	0.000	0.032	0.000	0.032	0.000	0.032	0.000	0.032	0.000	0.032	0.000	0.032	0.000	0.225	4.18	2.14	0.00	0.54	0.32	0.32	0.23	0.23
	Kvina, Fedafj.	1.140	0.000	0.068	0.000	0.068	0.000	0.068	0.000	0.068	0.000	0.068	0.000	0.068	0.000	0.068	0.000	0.479	9.35	4.10	0.00	1.14	0.91	0.91	0.62	0.62
	Sira, Åna-Sira	2.016	0.000	0.121	0.000	0.121	0.000	0.121	0.000	0.121	0.000	0.121	0.000	0.121	0.000	0.121	0.000	0.847	18.14	4.84	0.00	2.02	3.63	3.63	0.65	0.65
Rogaland	Sokndalselva, Sogndalsstr.	0.470	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.110	0.84	0.89	0.00	0.26	2.30	2.30	0.07	0.07
(6.)	Hellelandselva, Egersund	0.331	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.077	0.63	0.55	0.00	0.18	1.58	1.58	0.07	0.07
	Bjerkreimselva, Egersund	1.311	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.306	1.75	2.62	0.00	0.73	5.24	5.24	0.23	0.23
	Håelva, Håtangen	0.233	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.061	1.45	1.25	0.00	0.15	0.15	0.15	0.10	0.10
	Figgjo, Solavika	0.330	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.087	2.94	1.86	0.00	0.21	0.33	0.33	0.12	0.12
	Ims-Lutsi. Høgsfj.Boknafj.	0.149	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.039	0.63	0.28	0.00	0.09	0.00	0.04	0.02	0.02
	Oltedalse.,Høgsfj.Boknafj.	0.196	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.052	0.34	0.32	0.00	0.12	0.00	0.05	0.00	0.02
	Dirdalse., Høgsfj.Boknafj.	0.364	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.096	0.50	2.18	0.00	0.23	2.73	2.73	0.00	0.05
	Frafjorde.,Frafj. Boknafj.	0.348	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.122	0.58	0.75	0.00	0.29	1.22	1.22	0.00	0.06
	Espedalse.,Høgsfj.Boknafj.	0.215	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.090	0.31	0.82	0.00	0.22	0.00	0.09	0.00	0.04
	Lysee., Lysefj.Boknafj.	0.187	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.098	0.23	0.93	0.00	0.23	0.00	0.09	0.00	0.05
	Årdalse., Årdalsfj.Boknafj.	0.524	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.044	0.000	0.306	2.04	2.77	0.00	0.73	0.00	0.29	0.00	0.15
	Førree., Jøsenfj.Boknafj.	0.194	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.102	0.92	0.68	0.00	0.24	0.05	0.05	0.05	0.05
	Ulla, Jøsenfj.Boknafj.	0.455	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.239	4.43	2.27	0.00	0.57	0.00	0.23	0.15	0.15
(7.)	Saudae., Saudafj.Boknafj.	0.227	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.238	2.73	2.27	0.00	0.57	0.45	0.45	0.00	0.11
	Åbøelva, Saudafj.Boknafj.	0.053	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.055	0.24	0.58	0.00	0.13	0.00	0.05	0.00	0.03
	Vikedalse., Boknafj.	0.074	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.077	0.44	0.77	0.00	0.18	0.15	0.15	0.09	0.09

Table 9.2 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Parameters (mean values)																							
			PCB (The folloving Congeners) IUPAC NOS																						
		Gamma HCH	28		52		101		118		138		153		180		Sum : PCB		TOC	SiO2	Cr- T		Ni		As	
		zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	t.tonne	t.tonne	zero tonnes	limit tonnes	zero tonnes	limit tonnes	zero tonnes	limit tons
Hordaland	Etneelva, Etnefj. Bømlafj.	0.123	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.086	0.37	0.41	0.00	0.20	0.12	0.12	0.09	0.09
(7.)	Opo, Sørfj. Hardangerfj.	0.490	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.257	1.35	0.74	0.00	0.61	0.00	0.25	0.00	0.12
	Tysso, Sørfj. Hardangerfj.	0.393	0.000	0.030	0.000	0.030	0.000	0.030	0.000	0.030	0.000	0.030	0.000	0.030	0.000	0.030	0.000	0.207	1.18	1.28	0.00	0.49	0.00	0.20	0.00	0.10
	Kinso, Sørfj. Hardangerfj.	0.147	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.093	0.22	1.20	0.00	0.22	0.00	0.09	0.00	0.04
	Veig, Eidfjv. Hardangerfj.	0.141	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.129	0.67	0.55	0.00	0.31	2.15	2.15	0.00	0.06
	Bjoreia, " , Hardangerfj.	0.041	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.038	0.20	0.22	0.00	0.09	0.63	0.63	0.00	0.02
	Sima, Eidfj. Hardangerfj.	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.076	0.11	0.36	0.00	0.18	0.00	0.07	0.00	0.04
	Austdøla, Osafj. Eidfj.	0.070	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.074	0.07	0.77	0.00	0.18	0.14	0.14	0.00	0.04
	Norddøla, Osafj. Eidfj.	0.021	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.022	0.02	0.23	0.00	0.05	0.04	0.04	0.00	0.01
	Tysseelva, Fusafj.	0.142	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.149	1.27	0.42	0.00	0.35	0.21	0.21	0.00	0.07
	Oselva, Fusafj.	0.072	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.076	0.87	0.58	0.00	0.18	0.14	0.14	0.04	0.04
	Bergsdalse, Veafj.Herdlafj.	0.110	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.115	0.49	0.33	0.00	0.27	0.27	0.27	0.00	0.05
	Vosso, Veafj. Sørfj.	0.556	0.000	0.083	0.000	0.083	0.000	0.083	0.000	0.083	0.000	0.083	0.000	0.083	0.000	0.083	0.000	0.584	2.50	2.78	0.00	1.39	1.11	1.11	1.50	1.50
	Ekso, Osterfj.	0.228	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.034	0.000	0.240	1.37	1.14	0.00	0.57	0.00	0.23	0.00	0.11
	Modalselva, Osterfj.	0.243	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.255	0.97	1.09	0.00	0.61	0.00	0.24	0.00	0.12

Table 9.2 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Parameters (mean values)																							
			PCB (The folloving Congeners) IUPAC NOS																						
		Gamma HCH	28		52		101		118		138		153		180		Sum : PCB		TOC	SiO2	Cr- T		Ni		As	
		zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	zero kg	limit kg	t.tonne	t.tonne	zero tonnes	limit tonnes	zero tonnes	limit tonnes	zero tonnes	limit tons
Sogn og Fjordane (7.)	Nærøye., Aurl.fj. Sognefj.	0.121	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.127	0.24	2.23	0.00	0.30	0.18	0.18	0.00	0.06
	Flåmse., Aurl.fj. Sognefj.	0.099	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.104	0.15	0.84	0.00	0.25	0.20	0.20	0.00	0.05
	Aurlandv. Aurl.fj. Sognefj.	0.154	0.000	0.039	0.000	0.039	0.000	0.039	0.000	0.039	0.000	0.039	0.000	0.039	0.000	0.039	0.000	0.270	0.51	1.16	0.00	0.64	0.26	0.26	0.00	0.13
	Erdalse., Lærd.fj. Sognefj.	0.021	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.029	0.12	0.29	0.00	0.07	0.03	0.03	0.00	0.01
	Lærdalsv. Lærd.fj. Sognefj.	0.161	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.169	0.71	1.77	0.00	0.40	0.24	0.24	0.00	0.08
	Årdalsv., Årdalsfj.Sognefj.	0.338	0.000	0.041	0.000	0.041	0.000	0.041	0.000	0.041	0.000	0.041	0.000	0.041	0.000	0.041	0.000	0.284	1.03	1.89	0.00	0.68	0.27	0.27	0.00	0.14
	Fortunv., Lusterfj.Sognefj.	0.224	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.024	0.000	0.168	0.24	1.28	0.00	0.40	0.24	0.24	0.68	0.68
	Mørkrisv., Lusterfj.Sognefj.	0.129	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.097	0.18	0.97	0.00	0.23	0.18	0.18	0.00	0.05
	Jostedøla, " Sognefj.	0.391	0.000	0.042	0.000	0.042	0.000	0.042	0.000	0.042	0.000	0.042	0.000	0.042	0.000	0.042	0.000	0.294	0.56	5.87	0.00	0.70	0.42	0.42	0.00	0.14
	Årøye., Sognd.fj. Sognefj.	0.289	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.217	0.62	1.44	0.00	0.52	0.21	0.21	0.00	0.10
	Sogndalse, " Sognefj.	0.098	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.074	1.02	0.74	0.00	0.18	0.07	0.07	0.00	0.04
	Gaular, Dalsfj. Bufj.	0.600	0.000	0.050	0.000	0.050	0.000	0.050	0.000	0.050	0.000	0.050	0.000	0.050	0.000	0.050	0.000	0.350	2.17	1.83	0.00	0.83	0.00	0.33	0.25	0.25
	Jølstra, Førdefj.	0.523	0.000	0.052	0.000	0.052	0.000	0.052	0.000	0.052	0.000	0.052	0.000	0.052	0.000	0.052	0.000	0.366	1.92	1.92	0.00	0.87	0.00	0.35	0.00	0.17
	Nausta, Førdefj.	0.222	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.155	1.18	1.18	0.00	0.37	0.00	0.15	0.00	0.07
	Oselva, Høydalsfj.	0.223	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.156	1.86	0.37	0.00	0.37	0.22	0.22	0.00	0.07
	Hopse., Hyefj. Nordfj.S	0.054	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.038	0.13	0.15	0.00	0.09	0.00	0.04	0.00	0.02
	Gjengedalse.," Nordfj.S	0.125	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.088	0.62	0.46	0.00	0.21	0.00	0.08	0.06	0.06
	Breimse., Gloppenfj. "	0.480	0.000	0.048	0.000	0.048	0.000	0.048	0.000	0.048	0.000	0.048	0.000	0.048	0.000	0.048	0.000	0.336	1.12	2.08	0.00	0.80	0.32	0.32	0.32	0.32
	Oldene., Indre Nordfj.	0.152	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.107	0.41	0.71	0.00	0.25	0.00	0.10	0.00	0.05
	Loenelva, Indre Nordfj.	0.163	0.163	0.163	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.000	0.016	0.163	0.261	0.27	0.98	0.00	0.27	0.00	0.11	0.08	0.08
	Strynee., Indre Nordfj.	0.285	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.199	0.47	1.23	0.00	0.47	0.00	0.19	0.00	0.09
	Hornindalse., Nordfj. N	0.298	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.157	0.90	1.04	0.00	0.37	0.15	0.15	0.00	0.07

Table 9.2 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Parameters (mean values)																							
			PCB (The folloving Congeners) IUPAC NOS																						
		Gamma HCH	28		52		101		118		138		153		180		Sum : PCB		TOC	SiO2	Cr- T		Ni		As	
			zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit			zero	limit	zero	limit	zero	limit
		kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	t.tonne	t.tonne	tonnes	tonnes	tonnes	tonnes	tonnes	tons
Møre og	Ørstae., Ørstafj.	0.018	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.011	0.000	0.075	0.49	0.93	0.00	0.18	0.25	0.25	0.00	0.04
Romsdal	Valldøla, Nordalfj.Storfj.	0.355	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.149	0.32	1.06	0.00	0.35	0.00	0.14	0.00	0.07
(8.)	Rauma, Romsdalsfj.Moldefj.	0.599	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.036	0.000	0.251	0.60	3.83	0.00	0.60	0.00	0.24	0.00	0.12
	Isa, Isfj. Moldefj.	0.130	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.068	0.21	0.58	0.00	0.16	0.00	0.06	0.00	0.03
	Eira, Eresfj. Moldefj.	0.393	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.266	0.63	1.90	0.00	0.63	0.00	0.25	0.00	0.13
	Littledalse., Sunndalsfj.	0.199	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.105	0.30	0.05	0.00	0.25	0.00	0.10	0.00	0.05
	Driva, Sunnd.fj.Tingvollfj.	0.493	0.000	0.074	0.000	0.074	0.000	0.074	0.000	0.074	0.000	0.074	0.000	0.074	0.000	0.074	0.000	0.518	3.08	6.41	0.0	1.2	0.0	0.5	0.00	0.25
	Ulvåa, Ålvundfj.	0.043	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.006	0.000	0.045	0.30	0.86	0.00	0.11	0.06	0.06	0.00	0.02
	Toåa, Todalsfj.	0.096	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.101	0.43	0.77	0.00	0.24	0.00	0.10	0.00	0.05
	Surna, Surnadalsfj.	0.980	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.412	3.33	2.35	0.00	0.98	0.39	0.39	0.00	0.20
	Bøvra, Hamnesfj. Halsafj.	0.310	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.093	0.78	0.49	0.00	0.22	0.09	0.09	0.00	0.04
Sør-	Børse.,Gaulosen Tr.h.fj.	0.082	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.019	0.32	0.07	0.05	0.05	0.14	0.14	0.03	0.03
Trøndelag	Vigda, Gaulosen Tr.h.fj.	0.109	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.029	0.52	0.14	0.00	0.07	0.12	0.12	0.06	0.06
(8.)	Gaula, Gaulosen Tr.h.fj.	2.047	0.000	0.088	0.000	0.088	0.000	0.088	0.000	0.088	0.000	0.088	0.000	0.088	0.000	0.088	0.000	0.614	10.1	8.77	2.05	2.05	5.26	5.26	1.78	1.78
	Nidelva, Trondheimsfj.	1.945	0.000	0.102	0.000	0.102	0.000	0.102	0.000	0.102	0.000	0.102	0.000	0.102	0.000	0.102	0.000	0.716	9.55	4.78	0.00	1.71	2.73	2.73	0.41	0.41
	Homla, Stjørd.fj.Tr.h.fj.	0.080	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.031	0.51	0.20	1.01	1.01	0.39	0.39	0.09	0.09
Nord-	Stjørdalsv, " Tr.h.fj.	1.399	0.000	0.076	0.000	0.076	0.000	0.076	0.000	0.076	0.000	0.076	0.000	0.076	0.000	0.076	0.000	0.534	7.5	2.29	0.00	1.27	1.53	1.53	0.41	0.41
Trøndelag	Gråe., " Tr.h.fj.	0.040	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.015	0.33	0.31	0.00	0.04	0.05	0.05	0.02	0.02
(8.)	Verdalsvassdr., Tr.h.fj.	1.019	0.000	0.056	0.000	0.056	0.000	0.056	0.000	0.056	0.000	0.056	0.000	0.056	0.000	0.056	0.000	0.389	5.74	2.22	21.49	21.49	7.59	7.59	0.52	0.52
	Figga/Leksdalse.,Tr.h.fj.	0.145	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.056	1.24	0.38	0.19	0.19	0.24	0.24	0.10	0.10
	Snåsavassdr., Trondh.fj.	1.066	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.064	0.000	0.448	7.35	2.34	16.41	16.41	5.97	5.97	0.47	0.47
	Årgårdselva, Namsfj.	0.144	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.151	3.24	1.59	0.00	0.36	0.43	0.43	0.19	0.19
	Namsen, Namsfj. Ø	2.432	0.000	0.304	0.000	0.304	0.000	0.304	0.000	0.304	0.000	0.304	0.000	0.304	0.000	0.304	0.000	2.128		8.11	0.0	5.1	4.1	4.1	0.00	1.01
	Salsvatnelva, Follafj.	0.260	0.000	0.026	0.000	0.026	0.000	0.026	0.000	0.026	0.000	0.026	0.000	0.026	0.000	0.026	0.000	0.182		0.87	40.14	40.14	12.20	12.20	0.24	0.24

Table 9.2 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Parameters (mean values)																							
			PCB (The folloving Congeners) IUPAC NOS																		TOC	SiO2	Cr- T		Ni		As	
		Gamma HCH	28		52		101		118		138		153		180		Sum : PCB											
			zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit			zero	limit	zero	limit	zero	limit
		kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	t.tonne	t.tonne	tonnes	tonnes	tonnes	tonnes	tonnes	tons
Nordland	Åbjøra, Bindalsfj. S	0.371	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.260		0.50	0.00	0.62	0.00	0.25	0.15	0.15
(9.)	Skjerva, Vefsenfj. S	0.051	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.027		0.17	0.09	0.09	0.18	0.18	0.04	0.04
	Fusta, Vefsenfj. N	0.409	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.215		0.41	0.00	0.51	0.20	0.20	0.15	0.15
	Drevja, Vefsenfj. N	0.136	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.010	0.000	0.071		0.14	0.00	0.17	0.14	0.14	0.06	0.06
	Røssåga, Sørfj.	1.076	0.000	0.108	0.000	0.108	0.000	0.108	0.000	0.108	0.000	0.108	0.000	0.108	0.000	0.108	0.000	0.753		1.79	58.47	58.47	19.73	19.73	0.57	0.57
	Bjerka, Sørfj.	0.182	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.018	0.000	0.127		0.30	0.00	0.30	0.24	0.24	0.07	0.07
	Dalselva, Ranafj. N	0.059	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.050		0.12	0.00	0.12	0.07	0.07	0.03	0.03
	Ranavassdraget, Ranafj. N	1.225	0.000	0.147	0.000	0.147	0.000	0.147	0.000	0.147	0.000	0.147	0.000	0.147	0.000	0.147	0.000	1.029		2.94	0.00	2.45	1.47	1.47	0.54	0.54
	Fykanåga, Glomfjord	0.230	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.028	0.000	0.193		0.64	0.55	0.55	0.46	0.46	0.00	0.09
	Beiare., Beiarfj. Nordfj.	0.622	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.037	0.000	0.261	1.99	5.48	0.00	0.62	0.50	0.50	0.22	0.22
	Saltdalsvassdr., Saltd.fj.S	1.138	0.000	0.049	0.000	0.049	0.000	0.049	0.000	0.049	0.000	0.049	0.000	0.049	0.000	0.049	0.000	0.341		1.30	24.05	24.05	6.50	6.50	0.00	0.16
	Sulitjelmavassdr., Saltd.fj	0.863	0.000	0.035	0.000	0.035	0.000	0.035	0.000	0.035	0.000	0.035	0.000	0.035	0.000	0.035	0.000	0.245		0.93	0.00	0.58	0.58	0.58	0.00	0.12
	Kobbe., Leirfj. Sørfolda N	0.414	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.174		0.66	0.00	0.41	0.00	0.17	0.00	0.08
	Skjoma, Ofotfj. S	0.366	0.000	0.027	0.000	0.027	0.000	0.027	0.000	0.027	0.000	0.027	0.000	0.027	0.000	0.027	0.000	0.192		0.64	10.05	10.05	3.38	3.38	0.27	0.27

Table 9.2 TRIBUTARY RIVERS. ANNUAL LOAD 1998.

County	Watercourse	Parameters (mean values)																							
			PCB (The folloving Congeners) IUPAC NOS																		TOC	SiO2	Cr- T		Ni		As	
		Gamma HCH	28		52		101		118		138		153		180		Sum : PCB											
			zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit	zero	limit			zero	limit	zero	limit	zero	limit		
		kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	t.tonne	t.tonne	tonnes	tonnes	tonnes	tonnes	tonnes	tons		
Troms	Spanselva, Astafj. Vågsfj.	0.082	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.049		0.14	0.00	0.12	0.12	0.12	0.00	0.02		
(9.)	Salangse., Astafj. Vågsfj.	0.255	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.153		0.44	0.00	0.36	0.29	0.29	0.09	0.09		
	Rossfjorde., Malangen	0.078	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.050		0.09	0.00	0.12	0.12	0.12	0.00	0.02		
	Målse., Målselvfj. "	0.438	0.000	0.066	0.000	0.066	0.000	0.066	0.000	0.066	0.000	0.066	0.000	0.066	0.000	0.066	0.000	0.460		2.19	115.41	115.41	50.59	50.59	0.96	0.96		
	Bardue., Målselva	0.392	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.059	0.000	0.412		1.96	103.35	103.35	45.30	45.30	0.86	0.86		
	Nordkjoselva, Balsfj.	0.012	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.025		0.15	0.00	0.06	0.06	0.06	0.02	0.02		
	Signaldalselva, Lyngen V	0.029	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.060		0.31	1.74	1.74	0.77	0.77	0.03	0.03		
	Skibotnelva, Lyngen	0.022	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.092		0.52	0.00	0.22	0.39	0.39	0.00	0.04		
	Kåfjordelva, Lyngen Ø	0.008	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.033		0.28	0.00	0.08	0.08	0.08	0.00	0.02		
	Reisa, Reisafj.	0.051	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.031	0.000	0.215	1.94	4.70	0.00	0.51	0.31	0.31	0.11	0.11		
Finnmark	Mattiselva, Kåfj. Altafj.	0.028	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.008	0.000	0.058		0.22	0.00	0.14	0.00	0.06	0.03	0.03		
(10.)	Tverrelva, Altafj.	0.017	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.003	0.000	0.024		0.11	0.00	0.06	0.04	0.04	0.02	0.02		
	Repparfjordv., Repparfj.	0.116	0.000	0.023	0.000	0.023	0.000	0.023	0.000	0.023	0.000	0.023	0.000	0.023	0.000	0.023	0.000	0.162		0.62	0.00	0.39	0.23	0.23	0.00	0.08		
	Stabburse., I. Porsangen V	0.086	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.017	0.000	0.120	1.38	2.41	0.00	0.29	0.00	0.11	0.00	0.06		
	Lakse., Indre Porsangen S	0.104	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.021	0.000	0.145		1.45	0.00	0.35	0.35	0.35	0.00	0.07		
	Børselva.Indre Porsangen Ø	0.112	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.022	0.000	0.157		1.57	0.00	0.37	0.22	0.22	0.07	0.07		
	Mattusjåkka, I. Laksefj. V	0.010	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.015		0.10	0.00	0.03	0.01	0.01	0.01	0.01		
	Storelva.Indre Laksefj. V	0.068	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.014	0.000	0.095		1.04	5.07	5.07	1.67	1.67	0.00	0.05		
	Soussjåkka, I. Laksefj. V	0.010	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.015		0.18	0.00	0.03	0.02	0.02	0.00	0.01		
	Adamselva, I. Laksefj. Ø	0.063	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.013	0.000	0.088		1.01	0.00	0.21	0.13	0.13	0.00	0.04		
	Tanavassdraget, Tanafj. S	0.594	0.000	0.162	0.000	0.162	0.000	0.162	0.000	0.162	0.000	0.162	0.000	0.162	0.000	0.162	0.000	1.134	16.7	37.8	5.94	5.94	4.86	4.86	0.54	0.54		
	Vesterelva, Syltefj.	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.015	0.000	0.108		2.17	0.00	0.26	0.10	0.10	0.16	0.16		
	V. Jakobse., Y.Varangerfj.	0.118	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.083		1.30	0.00	0.20	0.08	0.08	0.00	0.04		
	Passvike., Bøkfj.Varang.fj.	1.820	0.000	0.171	0.000	0.171	0.000	0.171	0.000	0.171	0.000	0.171	0.000	0.171	0.000	0.171	0.000	1.194	22.2	24.5	0.00	2.84	25.6	25.6	1.65	1.65		
	Neiden, Munkfj. Varang.fj.	0.448	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.038	0.000	0.269		2.69	0.00	0.64	0.00	0.26	0.35	0.35		
	Grense Jakobse.,Varang.fj.	0.049	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.029		0.46	0.00	0.07	0.99	0.99	0.03	0.03		

APPENDIX X : "MEAN" TOTAL DISCHARGES (Mean concentrations of main and tributary rivers multiplied with mean runoff 1961-90 (main rivers), 1931-60 (tributary rivers). **Page:**

* Measurements below detection limits are treated in two ways:
"Detection limit = Zero", and "Detection limit = limit". This concerns the substances Cd, Pb, Hg and PCBs. In Table 10.5A the "limit-values" are shown, in Table 10.5B the "zero-values" are presented.

Table X "MEAN" TOTAL DISCHARGES from MAINLAND NORWAY to convention waters (Mean runoff 1961 - 90, main rivers, 1931 - 60, tributary rivers (Fig. I)).

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		1.2	1.6	*	4.4	*	7.2	tonnes
Cadmium			2.3	**	4.4	**	7.9	tonnes
Mercury		116	80	*	3064	*	3260	kg
Mercury			158	**	3084	**	3358	kg
Copper		60	117		133		311	tonnes
Zinc		136	780		356		1272	tonnes
Lead		6.4	35.1	*	89.4	*	130.9	tonnes
Lead			35.1	**	89.4	**	131.0	tonnes
Arsenic		0.6	20.1	*	9.0	*	29.8	tonnes
Arsenic			25.5	**	10.2	**	36.3	tonnes
Cr-T		4.9	472.4	*	4.6	*	481.9	tonnes
Cr-T			527.5	**	30.2	**	562.6	tonnes
Ni		14.4	267.2	*	52.1	*	333.7	tonnes
Ni			273.1	**	52.1	**	339.6	tonnes
PCBs ***			0.2	*	0.2	*	0.4	kg
PCBs			29.3	**	12.7	**	42.0	kg
gamma-HCH			53		26		79	kg
NH4-N	1374	9925	2843	*	1268	*	15410	tonnes
NH4-N			2856	**	1268	**	15423	tonnes
NO3-N	15295	65	18337		15511		49208	tonnes
PO4-P	190	644	273	*	192	*	1299	tonnes
PO4-P			285	**	192	**	1311	tonnes
Total N	24066	16492	36028		26909		103495	tonnes
Total P	778	1300	897		475		3449	tonnes
SiO2			263930		152023		415953	tonnes
S.P.M.		3482987	251702		196531		3931220	tonnes
TOC		22320	233403		220876		476600	tonnes
COD		188709					188709	tonnes
BOD		44459					44459	tonnes

Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

*** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180

Table 10.1 "MEAN" TOTAL DISCHARGES to The Skagerrak Region (Mean runoff 1961 - 90, main rivers, 1931 - 60, tributary rivers (Fig. I.I)).

The Skagerrak Region with main rivers (1) Glomma, (2) Drammenselva, (3) Numedalslågen (4) Skienselva, (5) Otra

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		0.11	0.4	*	4.1	*	4.6	tonnes
Cadmium			0.4	**	4.1	**	4.6	tonnes
Mercury		54.50	13	*	3054	*	3121	kg
Mercury			17	**	3071	**	3143	kg
Copper		24.87	8		93		126	tonnes
Zinc		19.75	71		249		340	tonnes
Lead		0.71	6.2	*	85.0	*	91.9	tonnes
Lead			6.2	**	85.0	**	91.9	tonnes
Arsenic		0.20	3.0	*	6.9	*	10.1	tonnes
Arsenic			3.0	**	7.8	**	11.0	tonnes
Cr-T		2.60	5.1	*	4.6	*	12.3	tonnes
Cr-T			11.1	**	23.6	**	37.3	tonnes
Ni		5.22	5.0	*	45.4	*	55.6	tonnes
Ni			5.7	**	45.4	**	56.4	tonnes
PCBs ***			0.1	*	0.0	*	0.1	kg
PCBs			2.8	**	9.9	**	12.7	kg
gamma-HCH			10		25		35	kg
NH4-N	164	3907	356	*	1124	*	5551	tonnes
NH4-N	164	3907	356	**	1124	**	5551	tonnes
NO3-N	1793	25	3890		13960		19668	tonnes
PO4-P	18	84	36	*	153	*	290	tonnes
PO4-P			36	**	153	**	290	tonnes
Total N	2777	6280	6761		22316		38134	tonnes
Total P	73	217	125		392		807	tonnes
SiO2			31163		123683		154846	tonnes
S.P.M.		10016	34037		166343		210395	tonnes
TOC		7398	55950		183471		246820	tonnes
COD		114896					114896	tonnes
BOD		15033					15033	tonnes

Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

*** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180

Table 10.2 "MEAN" TOTAL DISCHARGES to The Remaining North Sea (Mean runoff 1961 - 90, main rivers, 1931 - 60, tributary rivers (Fig. I.II)).

The North Sea Region with main rivers : (6) Orreelva, (7) Suldalslågen

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		0.99	0.7	*	0.0	*	1.7	tonnes
Cadmium			0.9	**	0.0	**	1.9	tonnes
Mercury		39.74	30	*	0	*	70	kg
Mercury			54	**	3	**	96	kg
Copper		8.5	23		1		32	tonnes
Zinc		54.1	135		5		194	tonnes
Lead		4.8	9.5	*	0.3	*	14.5	tonnes
Lead			9.5	**	0.3	**	14.6	tonnes
Arsenic		0.0	5.1	*	0.0	*	5.2	tonnes
Arsenic			7.8	**	0.3	**	8.1	tonnes
Cr-T		1.17	0.0	*	0.0	*	1.2	tonnes
Cr-T			23.1	**	1.4	**	25.7	tonnes
Ni		6.6	28.0	*	0.7	*	35.3	tonnes
Ni			31.1	**	0.7	**	38.4	tonnes
PCBs ***			0.2	*	0.0	*	0.2	kg
PCBs			9.9	**	0.6	**	10.4	kg
gamma-HCH			17		0		17	kg
NH4-N	517	2736	690	*	14	*	3957	tonnes
NH4-N			690	**	14	**	3957	tonnes
NO3-N	5835	18	10151		605		16610	tonnes
PO4-P	51	223	53	*	4	*	331	tonnes
PO4-P			59	**	4	**	337	tonnes
Total N	9281	5059	15395		849		30584	tonnes
Total P	197	446	269		9		922	tonnes
SiO2			74231		1958		76190	tonnes
S.P.M.		1554425	37539		2435		1593922	tonnes
TOC		6938	75041		2024		84003	tonnes
COD		40832					40832	tonnes
BOD		13518					13518	tonnes

Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

*** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180

Table 10.3 "MEAN" TOTAL DISCHARGES to The Norwegian Sea (Mean runoff 1961 - 90, main rivers, 1931 - 60, tributary rivers (Fig. I.III)).

The Norwegian Sea Region with main rivers (8) Orkla, (9) Vefsna

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		0.10	0.1	*	0.2	*	0.5	tonnes
Cadmium			0.7	**	0.2	**	1.0	tonnes
Mercury		21.27	26	*	8	*	55	kg
Mercury			70	**	8	**	99	kg
Copper		26.65	64		36		127	tonnes
Zinc		61.30	472		102		635	tonnes
Lead		0.93	15.4	*	4.0	*	20.3	tonnes
Lead			15.4	**	4.0	**	20.3	tonnes
Arsenic		0.40	9.3	*	0.8	*	10.5	tonnes
Arsenic			11.6	**	0.8	**	12.8	tonnes
Cr-T		1.08	455.7	*	0.0	*	456.7	tonnes
Cr-T			476.0	**	3.8	**	480.9	tonnes
Ni		2.50	200.8	*	5.2	*	208.5	tonnes
Ni			202.5	**	5.2	**	210.2	tonnes
PCBs ***			0.0	*	0.2	*	0.2	kg
PCBs			13.0	**	1.6	**	14.6	kg
gamma-HCH			23		1		24	kg
NH4-N	607	3024	442	*	111	*	4184	tonnes
NH4-N			454	**	111	**	4197	tonnes
NO3-N	6652	20	3947		776		11395	tonnes
PO4-P	103	310	76	*	20	*	509	tonnes
PO4-P			79	**	20	**	512	tonnes
Total N	10327	4807	9547		3212		27893	tonnes
Total P	419	592	270		45		1326	tonnes
SiO2			80260		14044		94304	tonnes
S.P.M.		1539978	151958		25176		1717112	tonnes
TOC		7621	62173		25786		95581	tonnes
COD		31751					31751	tonnes
BOD		15181					15181	tonnes

Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

*** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180

Table 10.4 "MEAN" TOTAL DISCHARGES to The Barents Sea (Mean runoff 1961 - 90, main rivers, 1931 - 60, tributary rivers (Fig. I.IV)).

The Barents Sea Region with main river (10) Alta

Substance:	Area runoff	Direct Discharges	Tributary Inputs		Main Riverine Inputs		Grand Total	
Cadmium		0.00	0.3	*	0.03	*	0.4	tonnes
Cadmium			0.4	**	0.03	**	0.4	tonnes
Mercury		0.00	11	*	2.74	*	14	kg
Mercury			18	**	2.74	**	21	kg
Copper		0.37	22		2.47		25	tonnes
Zinc		0.43	101		1.10		103	tonnes
Lead		0.01	4.0	*	0.14	*	4.2	tonnes
Lead			4.1	**	0.14	**	4.2	tonnes
Arsenic		0.00	2.7	*	1.37	*	4.1	tonnes
Arsenic			3.1	**	1.37	**	4.4	tonnes
Cr-T		0.04	11.6	*	0.00	*	11.6	tonnes
Cr-T			17.3	**	1.37	**	18.7	tonnes
Ni		0.12	33.4	*	0.82	*	34.3	tonnes
Ni			33.8	**	0.82	**	34.7	tonnes
PCBs ***			0.0	*	0.00	*	0.0	kg
PCBs			3.7	**	0.58	**	4.3	kg
gamma-HCH			4		0.11		4	kg
NH4-N	85	258	1355	*	19	*	1718	tonnes
NH4-N			1355	**	19	**	1718	tonnes
NO3-N	1015	1.7	349		170		1535	tonnes
PO4-P	18	27	108	*	16	*	169	tonnes
PO4-P			111	**	16	**	172	tonnes
Total N	1681	346	4325		532		6884	tonnes
Total P	88	45	232		28		394	tonnes
SiO2			78277		12336		90613	tonnes
S.P.M.		378568	28169		2577		409314	tonnes
TOC		363	40238		9595		50196	tonnes
COD		1230					1230	tonnes
BOD		726					726	tonnes

Measurements below detection limits are treated in two ways :
*) Detection limit = Zero
**) Detection limit = Limit

*** the following congeners: IUPAC Nos. 28,52,101,118,153,138,180

Table 10.5 A Main rivers. "Mean" load (Mean concentrations multiplied with mean runoff 1961-90) (Limit-values=limits).

Watercourse	Runoff data							Parameters (mean values)										
	Drainage area			Discharge														
	Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd limit	Pb limit	S.P.M.
				Normal	1997	Normal	1997											
	sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes
Glomma, Hvaler-Singlefj.	41918	41218	40221	16.5	18.1	16.9	18.5	4.51	272.38	113.67	12847	8236	686.32	68.63	147.99	3.43	78.93	123.97
Drammensvassdr, Dr.fj. V	17034	17028	16020	17.1	19.0	18.2	20.2	3.34	40.40	11.02	3949	2433	146.92	7.35	27.55	0.18	1.19	13.87
Numedalslågen, Larvikfj.	5577	5513	5197	21.2	21.4	21.2	21.4	2.85	37.96	15.48	1618	877	114.26	9.21	35.01	0.15	1.95	15.89
Skiensvassdr, Grenlandsfj.	10772	10348	10348	25.3	29.5	25.3	29.5	2.09	28.07	8.26	2667	1759	115.59	5.78	20.64	0.17	1.57	7.10
Otra, Kr.Sandsfj.	3738	3730	3668	39.8	38.3	39.8	38.3	1.63	13.58	4.21	1236	655	60.86	2.34	17.79	0.14	1.40	5.52
Orreelva, Orresanden	105	105	54	36.7	36.8	40.7	40.8	17.7	4.90	1.49	190	109	5.71	0.26	0.26	0.00	0.04	0.54
Suldalsl.,Sandsfj.Boknafj.	1457	1457	1457	59.0	34.4	59.0	34.4	1.62	4.07	2.17	659	496	8.13	0.81	4.34	0.03	0.24	1.90
Orkla, Orkdalsfj.Tr.h.fj.	3053	2872	2247	21.7	22.3	21.7	22.3	5.90	8.06	2.56	564	314	13.76	12.58	34.39	0.12	0.16	2.46
Vefsna, Vefsenfj. S	4122	4113	3323	43.9	43.7	43.9	43.7	6.02	37.01	17.08	2648	461	96.80	23.92	67.19	0.11	3.82	22.72
Altaelva, Altafj.	7373	7367	6257	11.8	12.7	11.8	12.7	13.3	28.24	16.45	532	170	19.19	2.47	1.10	0.03	0.14	2.58

Watercourse	Parameters (mean values)													
			PCB (The folloving Congeners) IUPAC NOS								TOC	Cr-T	Ni	As
	Hg limit	Gamma HCH	28 limit	52 limit	101 limit	118 limit	138 limit	153 limit	180 limit	SUM : limit				
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	t.tonnes	tonnes	tonnes	tonnes
Glomma, Hvaler-Singlefj.	3041.26	10.94	0.64	0.64	0.64	0.64	0.64	0.64	0.64	4.504	109.38	10.72	32.17	4.08
Drammensvassdr, Dr.fj. V	9.18	4.22	0.28	0.28	0.28	0.28	0.28	0.28	0.28	1.928	31.22	4.59	4.59	0.92
Numedalslågen, Larvikfj.	7.74	1.51	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.774	12.53	1.84	1.47	0.52
Skiensvassdr, Grenlandsfj.	8.26	6.19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.734	18.16	4.13	2.48	1.57
Otra, Kr.Sandsfj.	4.68	2.01	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.983	12.17	2.34	4.68	0.70
Orreelva, Orresanden	0.12	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.026	0.67	0.06	0.15	0.04
Suldalsl.,Sandsfj.Boknafj.	2.71	0.33	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.569	1.36	1.36	0.54	0.27
Orkla, Orkdalsfj.Tr.h.fj.	1.97	0.29	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.413	5.86	0.98	1.77	0.20
Vefsna, Vefsenfj. S	5.69	0.68	0.17	0.17	0.17	0.17	0.17	0.17	0.17	1.196	19.93	2.85	3.42	0.57
Altaelva, Altafj.	2.74	0.11	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.576	9.60	1.37	0.82	1.37

Table 10.5B Main rivers. "Mean" load (Mean concentrations multiplied with mean runoff 1961-90) (Limit-values=Zero).

Watercourse	Runoff data							Parameters (mean values)										
	Drainage area			Discharge														
	Outlet	Sampl. station	Disch. gaug. station	Sampling station		gauging station		Cond	Tot-P	PO4-P	Tot-N	NO3-N	NH4-N	Cu	Zn	Cd zero	Pb zero	S.P.M.
				Normal	1997	Normal	1997											
	sq.km	sq.km	sq.km	l/s sq.km		l/s sq.km		mS/m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	t.tonnes
Glomma, Hvaler-Singlefj.	41918	41218	40221	16.5	18.1	16.9	18.5	4.51	272.38	113.67	12847	8236	686.32	68.63	147.99	3.43	78.93	123.97
Drammensvassdr, Dr.fj. V	17034	17028	16020	17.1	19.0	18.2	20.2	3.34	40.40	11.02	3949	2433	146.92	7.35	27.55	0.18	1.19	13.87
Numedalslågen, Larvikfj.	5577	5513	5197	21.2	21.4	21.2	21.4	2.85	37.96	15.48	1618	877	114.26	9.21	35.01	0.15	1.95	15.89
Skiensvassdr, Grenlandsfj.	10772	10348	10348	25.3	29.5	25.3	29.5	2.09	28.07	8.26	2667	1759	115.59	5.78	20.64	0.17	1.57	7.10
Otra, Kr.Sandsfj.	3738	3730	3668	39.8	38.3	39.8	38.3	1.63	13.58	4.21	1236	655	60.86	2.34	17.79	0.14	1.40	5.52
Orreelva, Orresanden	105	105	54	36.7	36.8	40.7	40.8	17.7	4.90	1.49	190	109	5.71	0.26	0.26	0.00	0.04	0.54
Suldalsl.,Sandsfj.Boknafj.	1457	1457	1457	59.0	34.4	59.0	34.4	1.62	4.07	2.17	659	496	8.13	0.81	4.34	0.03	0.24	1.90
Orkla, Orkdalsfj.Tr.h.fj.	3053	2872	2247	21.7	22.3	21.7	22.3	5.90	8.06	2.56	564	314	13.76	12.58	34.39	0.12	0.16	2.46
Vefsna, Vefsenfj. S	4122	4113	3323	43.9	43.7	43.9	43.7	6.02	37.01	17.08	2648	461	96.80	23.92	67.19	0.11	3.82	22.72
Altaelva, Altafj.	7373	7367	6257	11.8	12.7	11.8	12.7	13.3	28.24	16.45	532	170	19.19	2.47	1.10	0.03	0.14	2.58

Watercourse	Parameters (mean values)													
			PCB (The folloving Congeners) IUPAC NOS											
	Hg zero	Gamma HCH	28 zero	52 zero	101 zero	118 zero	138 zero	153 zero	180 zero	SUM : zero	TOC	Cr-T zero	Ni zero	As zero
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	t.tonnes	tonnes	tonnes	tonnes
Glomma, Hvaler-Singlefj.	3041.26	10.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	109.38	0.00	32.17	4.08
Drammensvassdr, Dr.fj. V	0.00	4.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	31.22	4.59	4.59	0.00
Numedalslågen, Larvikfj.	7.74	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	12.53	0.00	1.47	0.52
Skiensvassdr, Grenlandsfj.	0.00	6.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	18.16	0.00	2.48	1.57
Otra, Kr.Sandsfj.	4.68	2.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	12.17	0.00	4.68	0.70
Orreelva, Orresanden	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.67	0.00	0.15	0.04
Suldalsl.,Sandsfj.Boknafj.	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	1.36	0.00	0.54	0.00
Orkla, Orkdalsfj.Tr.h.fj.	1.97	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	5.86	0.00	1.77	0.20
Vefsna, Vefsenfj. S	5.69	0.68	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.171	19.93	0.00	3.42	0.57
Altaelva, Altafj.	2.74	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	9.60	0.00	0.82	1.37

Table 10.6 The Skagerrak Region. "Mean" inputs from tributary rivers in The Sub-areas (1 - 5)
(Mean concentrations 1998 multiplied with mean runoff, 1931-60)

The Skagerrak Region with sub-areas: (1A) Glomma, (1B) Inner Oslofj., (2) Drammenselva, (3) Numedalslågen, (4) Skienselva, (5) Otra

Total quantity of substance discharged per year:								Were 70 % of measurements above the detection limit ?		Precision of the estimate of the load
Sub-areas :	1A	1B	2	3	4	5				
Substance:										
Cd *	0.04	0.02	0.00	0.03	0.03	0.30	tonnes	YES		%
Cd **	0.04	0.02	0.00	0.03	0.03	0.30	tonnes			%
Hg *	0.91	0.88	0.31	0.67	1.01	8.90	kg	YES		%
Hg **	1.22	0.92	0.31	0.78	1.01	12.67	kg			%
Cu	1.3	1.9	0.3	0.5	0.3	4.0	tonnes	YES		%
Zn	2.4	3.3	1.1	8.6	5.1	50.4	tonnes	YES		%
Pb *	0.20	0.28	0.17	0.35	0.27	4.90	tonnes	YES		%
Pb **	0.20	0.28	0.17	0.35	0.27	4.90	tonnes			%
Arsenic *	0.39	0.12	0.09	0.14	0.18	2.10	tonnes	YES		%
Arsenic **	0.39	0.12	0.09	0.14	0.18	2.10	tonnes			%
Cr-T *	1.27	2.61	0.25	1.00	0.00	0.00	tonnes	NO		%
Cr-T **	1.43	2.78	0.25	1.14	0.51	4.96	tonnes			%
Ni *	0.82	0.90	0.23	0.31	0.30	2.43	tonnes	YES		%
Ni **	0.82	0.93	0.23	0.39	0.30	3.06	tonnes			%
PCBs *	0.00	0.05	0.00	0.00	0.00	0.00	kg	NO		%
PCBs **	0.23	0.13	0.03	0.13	0.21	2.08	kg			%
gamma-HCH	0.65	0.29	0.08	0.30	0.81	7.50	kg	YES		%
NH4-N *	38.9	16.1	1.2	29.6	24.2	246.4	tonnes	YES		%
NH4-N **	38.9	16.1	1.2	29.6	24.2	246.4	tonnes			%
NO3-N	694	396	157	678	124	1841	tonnes	YES		%
PO4-P *	6.1	4.2	4.2	6.5	0.6	14.0	tonnes	YES		%
PO4-P **	6.1	4.2	4.2	6.5	0.6	14.0	tonnes			%
Total N	1259	566	220	810	273	3633	tonnes	YES		%
Total P	20	15	6	28	4	51	tonnes	YES		%
SiO2	2377	1847	1123	3597	2526	19693	tonnes	YES		%
S.P.M.	3022	4095	2871	7696	1394	14959	tonnes	YES		%
TOC	7831	2599	921	2505	5557	36537	tonnes	YES		%

Measurements below detection limits are treated in two ways :

*) Detection limit = Zero

**) Detection limit = Limit

Table 10.7 The remaining North Sea. "Mean" inputs from tributary rivers in The Subareas (6-7). (Mean concentrations 1998 multiplied with mean runoff, 1931-60)

The remaining North Sea Region with sub-areas: (6) Orreelva, (7) Suldalslågen

Total quantity of substance discharged per year:				Were 70 % of measurements above the detection limit ?		Precision of the estimate of the load
Sub-areas :	6	7				
Substance:						
Cd *	0.26	0.44	tonnes	NO	_____	%
Cd **	0.28	0.58	tonnes		_____	%
Hg *	17.82	12.15	kg	NO	_____	%
Hg **	20.33	33.27	kg		_____	%
Cu	5.4	17.1	tonnes	YES	_____	%
Zn	48.5	87.0	tonnes	YES	_____	%
Pb *	6.21	3.29	tonnes	YES	_____	%
Pb **	6.21	3.32	tonnes		_____	%
Arsenic *	2.13	2.99	tonnes	NO	_____	%
Arsenic **	2.46	5.30	tonnes		_____	%
Cr-T *	0.00	0.00	tonnes	NO	_____	%
Cr-T **	7.36	15.76	tonnes		_____	%
Ni *	18.47	9.56	tonnes	NO	_____	%
Ni **	19.18	11.93	tonnes		_____	%
PCBs *	0.00	0.16	kg	NO	_____	%
PCBs **	3.09	6.76	kg		_____	%
gamma-HCH	8.49	8.25	kg	YES	_____	%
NH4-N *	196.54	493.47	tonnes	YES	_____	%
NH4-N **	196.54	493.47	tonnes		_____	%
NO3-N	4208	5944	tonnes	YES	_____	%
PO4-P *	25.9	27.2	tonnes	NO	_____	%
PO4-P **	26.1	33.0	tonnes		_____	%
Total N	6384	9012	tonnes	YES	_____	%
Total P	163	107	tonnes	YES	_____	%
SiO2	27027	47204	tonnes	YES	_____	%
S.P.M.	13823	23716	tonnes	YES	_____	%
TOC	44355	30686	tonnes	YES	_____	%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 10.8 The Norwegian Sea. "Mean" inputs from tributary rivers in The Subareas (8-9). (Mean concentrations 1998 multiplied with mean runoff, 1931-60)

The Norwegian Sea Region with sub-areas: (8) Orkla, (9) Vefsna

Total quantity of substance discharged per year:				Were 70 % of measurements above the detection limit ?		Precision of the estimate of the load
Sub-areas :	8	9				
Substance:						
Cd *	0.05	0.10	tonnes	NO	_____	%
Cd **	0.34	0.32	tonnes		_____	%
Hg *	25.78	0.20	kg	NO	_____	%
Hg **	41.71	28.28	kg		_____	%
Cu	33.1	31.0	tonnes	YES	_____	%
Zn	79.4	392.9	tonnes	YES	_____	%
Pb *	12.68	2.68	tonnes	YES	_____	%
Pb **	12.68	2.72	tonnes		_____	%
Arsenic *	4.44	4.85	tonnes	NO	_____	%
Arsenic **	6.24	5.41	tonnes		_____	%
Cr-T *	80.78	374.88	tonnes	NO	_____	%
Cr-T **	93.25	382.73	tonnes		_____	%
Ni *	41.06	159.73	tonnes	YES	_____	%
Ni **	42.36	160.17	tonnes		_____	%
PCBs *	0.00	0.00	kg	NO	_____	%
PCBs **	7.04	5.93	kg		_____	%
gamma-HCH	14.07	8.80	kg	YES	_____	%
NH4-N *	235.73	206.02	tonnes	YES	_____	
NH4-N **	248.18	206.02	tonnes		_____	%
NO3-N	2845	1102	tonnes	YES	_____	%
PO4-P *	45.8	30.0	tonnes	YES	_____	%
PO4-P **	46.2	32.9	tonnes		_____	%
Total N	6754	2793	tonnes	YES	_____	%
Total P	160	110	tonnes	YES	_____	%
SiO2	50096	30164	tonnes	YES	_____	%
S.P.M.	70788	81170	tonnes	YES	_____	%
TOC	57592	4582	tonnes	YES	_____	%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**

Table 10.9 The Barents Sea. "Mean" inputs from tributary rivers in The Sub-area (10). (Mean concentrations 1998 multiplied with mean runoff, 1931-60)

The Barents Sea Region with sub-area: (10) Alta

Total quantity of substance discharged per year:			Were 70 % of measurements above the detection limit ?		Precision of the estimate of the load
Sub-area :	**10**				
Substance:					
Cd *	0.34	tonnes	NO		%
Cd **	0.40	tonnes			%
Hg *	11.39	kg	NO		%
Hg **	17.77	kg			%
Cu	22.1	tonnes	YES		%
Zn	101.2	tonnes	YES		%
Pb *	4.04	tonnes	YES		%
Pb **	4.07	tonnes			%
Arsenic *	2.71	tonnes	NO		%
Arsenic **	3.07	tonnes			%
Cr-T *	11.61	tonnes	NO		%
Cr-T **	17.29	tonnes			%
Ni *	33.40	tonnes	YES		%
Ni **	33.76	tonnes			%
PCBs *	0.00	kg	NO		%
PCBs **	3.69	kg			%
gamma-HCH	3.51	kg	YES		%
NH4-N *	1355.1	tonnes			%
NH4-N **	1355.1	tonnes			%
NO3-N	349	tonnes	YES		%
PO4-P *	108.4	tonnes	NO		%
PO4-P **	110.7	tonnes			%
Total N	4325	tonnes	YES		%
Total P	232	tonnes	YES		%
SiO2	78277	tonnes	YES		%
S.P.M.	28169	tonnes	YES		%
TOC	40238	tonnes	YES		%

Measurements below detection limits are treated in two ways :

***) Detection limit = Zero**

****) Detection limit = Limit**