



**ENVIRONMENT  
AGENCY**

***Water Company Plans to Safeguard  
1997 Summer Water Supplies***

***Environment Agency Report to the Secretary of State  
For The Environment.***

***Fifth Report in a Series***

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**Bristol Head Office  
March 1997**

## **Acknowledgements**

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ENVIRONMENT AGENCY



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# **Water Company Plans to Safeguard 1997 Summer Water Supplies**

## **A REPORT TO THE SECRETARY OF STATE FOR THE ENVIRONMENT BY THE ENVIRONMENT AGENCY**

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# **Water Company Plans to Safeguard 1997 Summer Water Supplies**

## **A REPORT TO THE SECRETARY OF STATE FOR THE ENVIRONMENT BY THE ENVIRONMENT AGENCY**

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### **EXECUTIVE SUMMARY**

- 1 • Reservoir levels are generally satisfactory for the time of year.
- There is concern over depressed groundwater levels in the South East and East of England. In these areas, the following water companies are considering the need for local hosepipe bans and other restrictions or additional abstraction through the use of Drought Orders/Permits:

2      Anglian Water  
        Essex and Suffolk Water  
        Southern Water  
        Sutton & East Surrey Water  
        Thames Water  
        Three Valleys Water

- 3 • The Agency is satisfied that in general appropriate plans have been prepared by water companies. Further information on drought contingency plans is expected from Yorkshire Water and Thames Water by the end of March 1997.
- The Agency is pleased that with the exception of Essex & Suffolk Water and Three Valleys Water, companies have planned on the basis of measures to cope with drought without recourse to Drought Orders/Permits.
- The Agency looks to companies to closely monitor the situation as it develops and to take appropriate and timely action. Where this is not done the Agency will not hesitate to press for action to be taken, and if not taken the Agency will not support applications for Drought Orders/Permits impacting on the environment.
- 5 • The main environmental concerns will centre on the headwaters of groundwater fed catchments and wetlands. Low spring flows and riverflows will be experienced in many parts of Anglian, Thames and Southern Regions.
- 4 • Abstraction for spray irrigation may be restricted as river flows fall to levels specified in abstraction licences in order to protect the environment or other river users with prior rights. In addition there may be requests, particularly in the south and east of the country, for voluntary savings and formal restrictions if necessary. Those farmers taking water from winter storage will not be affected by any restrictions.

## **Water Company Plans to Safeguard 1997 Summer Water Supplies**

### **A REPORT TO THE SECRETARY OF STATE FOR THE ENVIRONMENT BY THE ENVIRONMENT AGENCY**

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#### **1. INTRODUCTION**

This report has been prepared in response to a request from the Secretary of State for the Environment for an assessment of the water resources position in England and Wales as at 28 February 1997. This request follows a sequence of low rainfall which started in April 1995 and generally continued up until February 1997 when well above average rainfall was recorded. With many rivers now flooding and most reservoirs at or approaching normal levels it may appear on the surface that the drought has broken. However, groundwater levels remain critically low, and experience of the droughts in 1990 and 1995 has shown how rapidly water supply prospects can deteriorate.

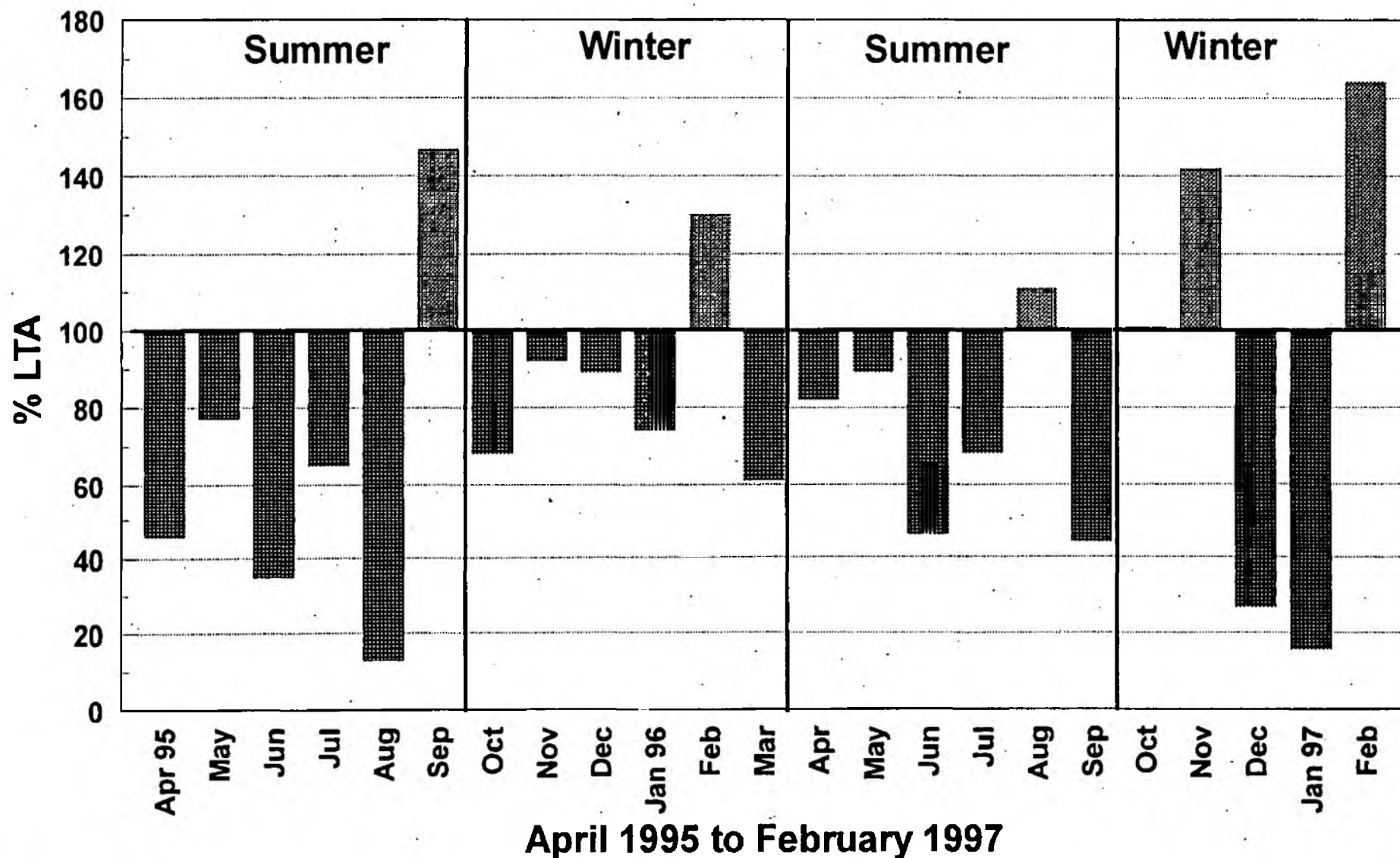
The report is in two sections; the first part gives an overview of the water resources situation over the past year and looks at the current situation as at the end of February. The second section outlines the Water Company plans to safeguard supply given another hot dry summer, and an assessment of their ability to maintain supply given a dry autumn and a early winter.



#### **2. WATER RESOURCES POSITION AT THE END OF FEBRUARY 1997**

##### **2.1 Rainfall**

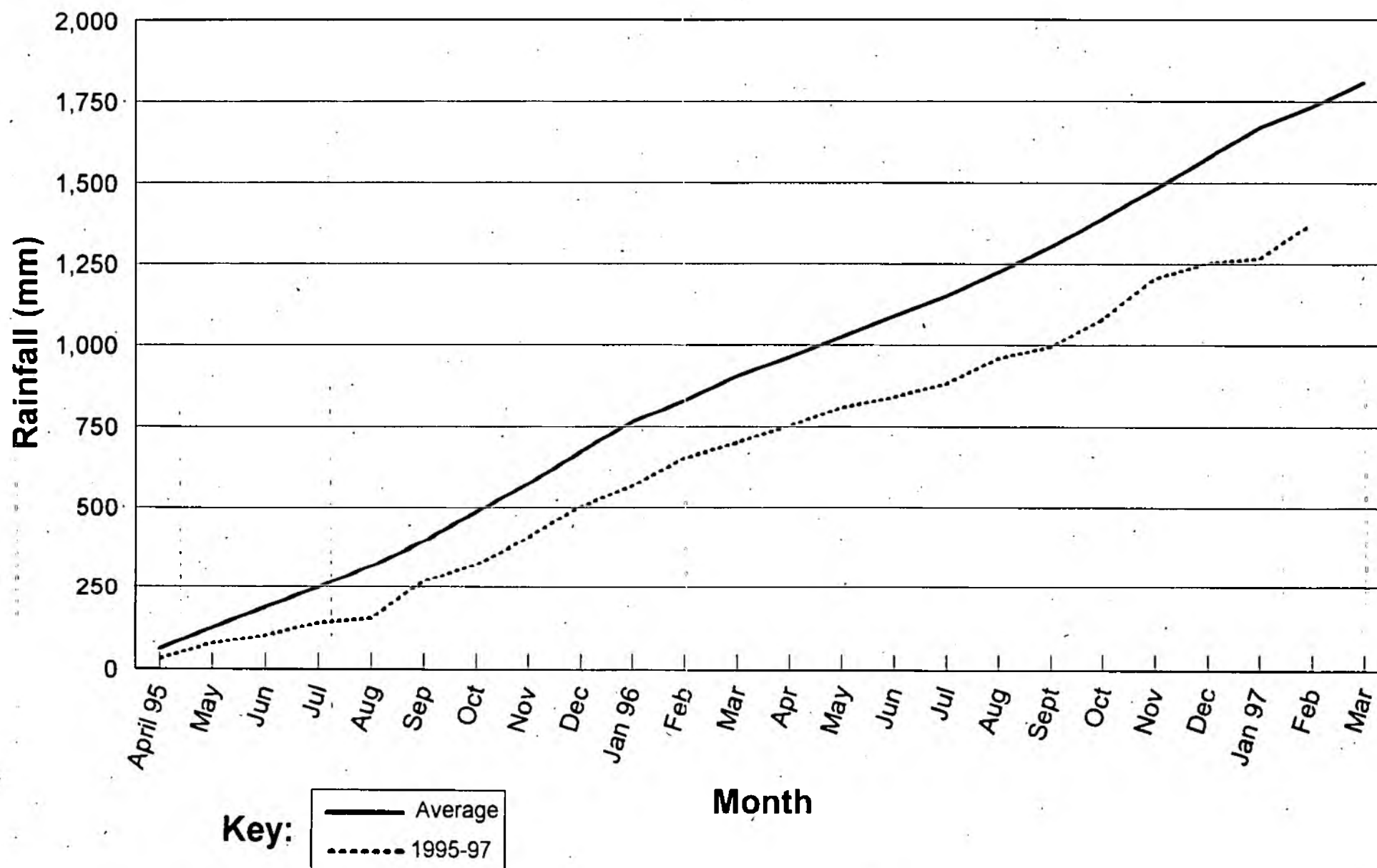
April 1995 was the date when reservoirs and groundwater sources were both last full. Since then rainfall totals over England and Wales have been significantly below average. Figure 2.1.1 shows that since April 1995 there have been only five months of above average rainfall and taking the period as a whole the total rainfall up to the end of January 1997 was the driest since the 1850's. Figure 2.1.2 shows the cumulative rainfall compared to the cumulative Long Term Average (LTA), which highlights the periods of significantly below average rainfall. The graph shows a deficit in England and Wales of 360mm, which is equivalent to 4 months winter rainfall. Also shown on figures 2.1.2(a) - (c) is the cumulative long term average over the same period on a regional basis.

**Figure 2.1.1 Average Rainfall Between April 1995 and February 1997  
Surplus and Deficits as a % of Long Term Average for England & Wales**

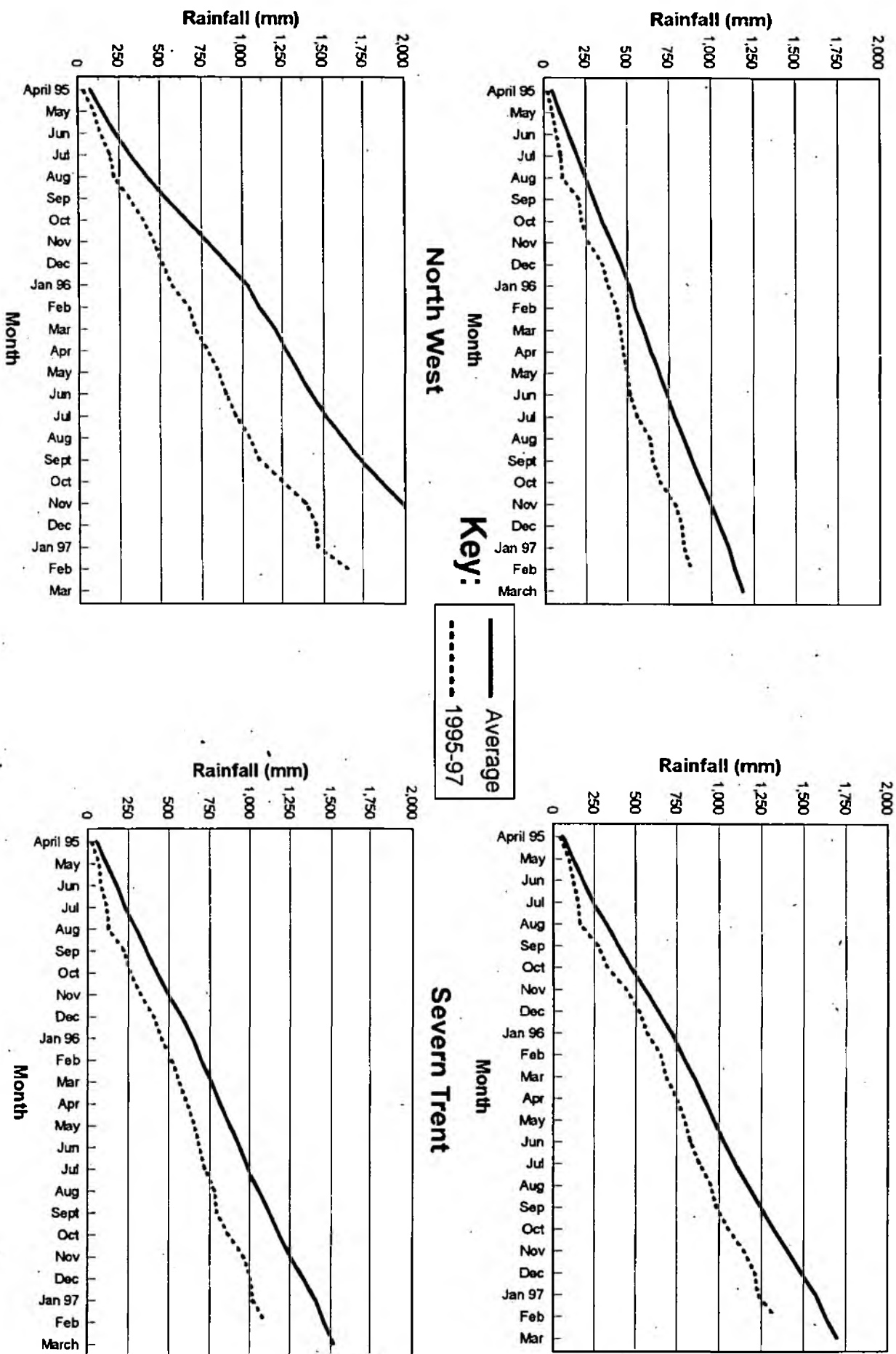


 Rainfall in excess of the Long Term Average  
 Rainfall deficits

**Figure 2.1.2 Cumulative Long Term Average and Actual Rainfall  
in England and Wales, April 1995 to February 1997**

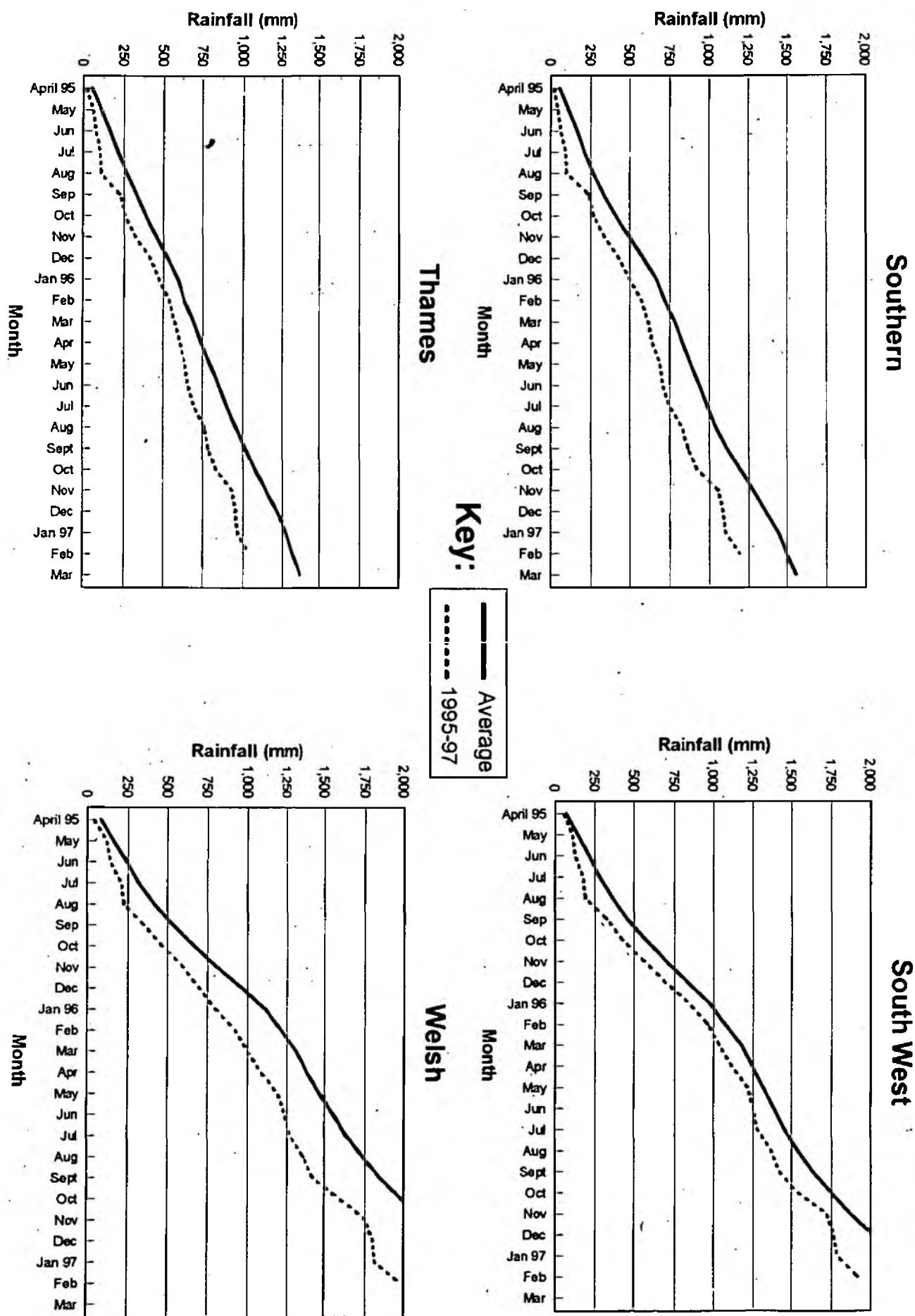


**Figure 2.1.2a Cumulative Long Term Average and Actual Rainfall  
April 1995 to February 1997 inclusive by Water Company Area**

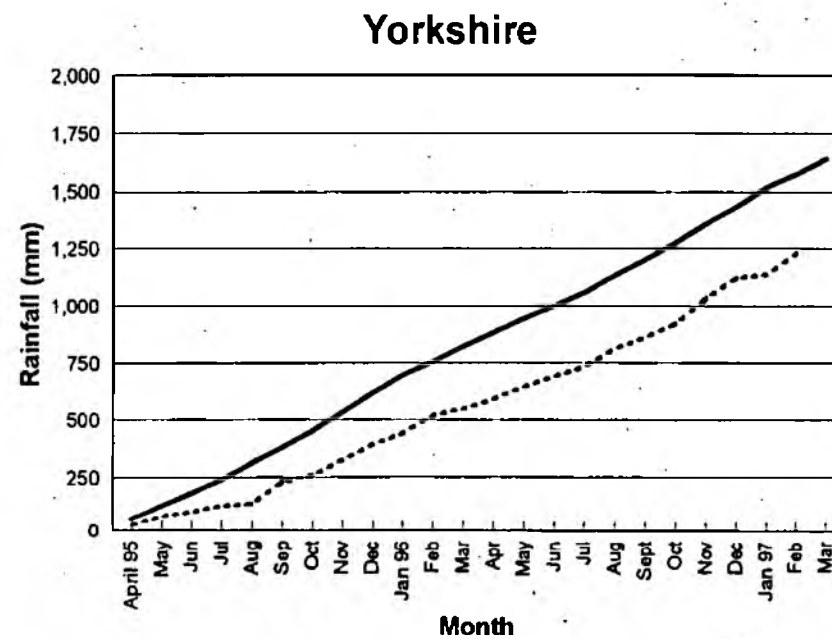
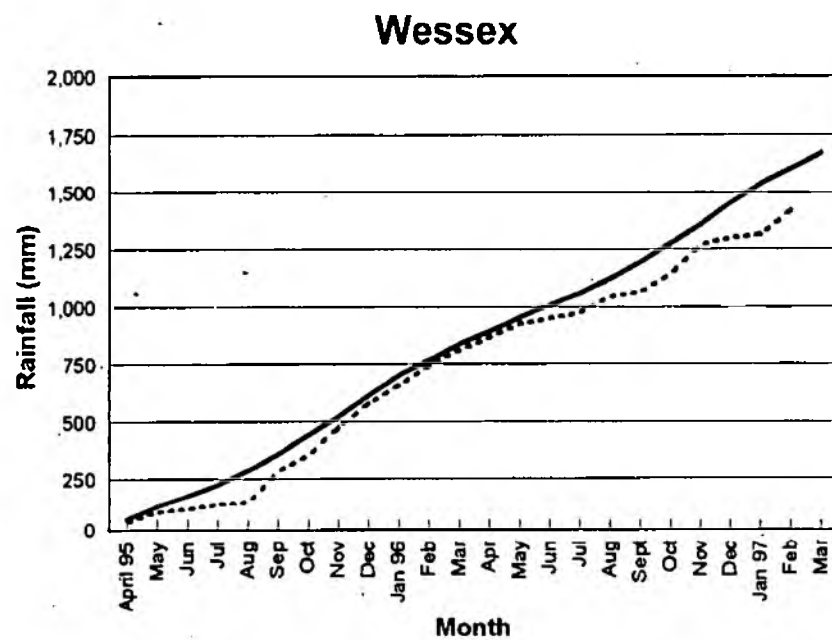




**Figure 2.1.2b Cumulative Long Term Average and Actual Rainfall  
April 1995 to February 1997 inclusive by Water Company Area**



**Figure 2.1.2c Cumulative Long Term Average and Actual Rainfall  
April 1995 to February 1997 inclusive by Water Company Area**



**Key:**

—	Average
.....	1995-97

The summer of 1996 was a period of almost unbroken below average rainfall, with the total rainfall for the summer being 73% of summer LTA. There was slightly above average rainfall in August, but this was caused by short-lived, intense thunderstorms in the southern parts of the country. During this period the drought was concentrated on the eastern side of the country, with Midlands, Thames and Anglian Regions experiencing the lowest rainfall in the country. Figure 2.1.3(a) and (b) show how the focus of the drought has shifted from the North West in 1995 to the South and South East since April 1996.

The 1996/97 winter recharge period began reasonably well, with average rainfall in October and significantly higher than average in November. December and January were very dry, however, with 49% and 16% of LTA for those months respectively. February has brought this period of extreme drought to a temporary conclusion, when gales and rainfall amounting to 164% of LTA swept the country.

## **2.2 Soil Moisture Deficit**

The Soil Moisture Deficit (SMD) is a measure of soil dryness and the timing of the return to 'saturated' conditions is important as this determines when aquifers are recharged as well as influencing the rate of run-off to the rivers. The SMD is influenced by many factors, including evapotranspiration, rainfall, temperature and wind. Figure 2.2.1 shows the date of the return to saturated conditions for each region, compared to the normal date for the return to saturation.

The SMD was generally 20-40mm higher than normal during the summer in most regions. Rainfall in October and November went some way to reducing the SMD, but the high starting point at the end of the summer and the poor winter rainfall has meant that a soil moisture deficit remained much later in the year than normal. In the North West, North East and South West Regions field capacity was delayed by 2-3 months whilst in all other Regions field capacity has not yet been reached, some 3-6 months after soil saturation would normally be expected. In Anglian, Thames and Southern Regions the SMD has remained above 20mm all winter.

## **2.3 River Flows**

River flows have been well below average in all regions during the past year, with rivers in both permeable and impermeable catchments being affected. Below average run-off totals in the winter of 1995/96 resulted in an early commencement of the summer recession. By April 1996 flows across the country were generally very low for the period. There were some thunderstorms in parts of the country in August that caused localised flooding, but in general the flows continued to recede to record minimum flows in September and, in many eastern and southern rivers, into October as well.

Figure 2.1.3a Spatial Rainfall Patterns in the 22 months from  
1st April 1995 to 31st January 1997  
(Shown as % of 1961-90 mean)

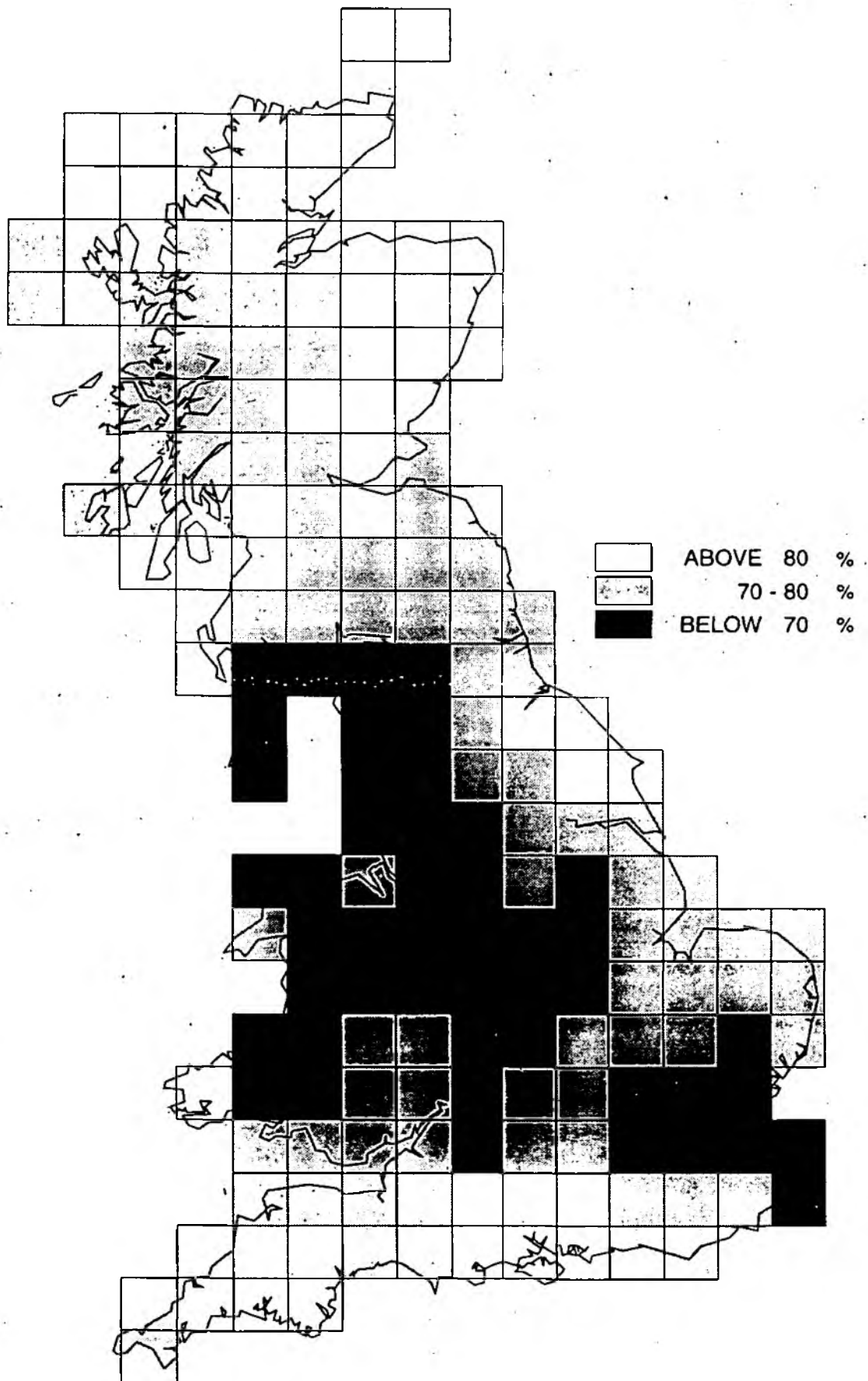
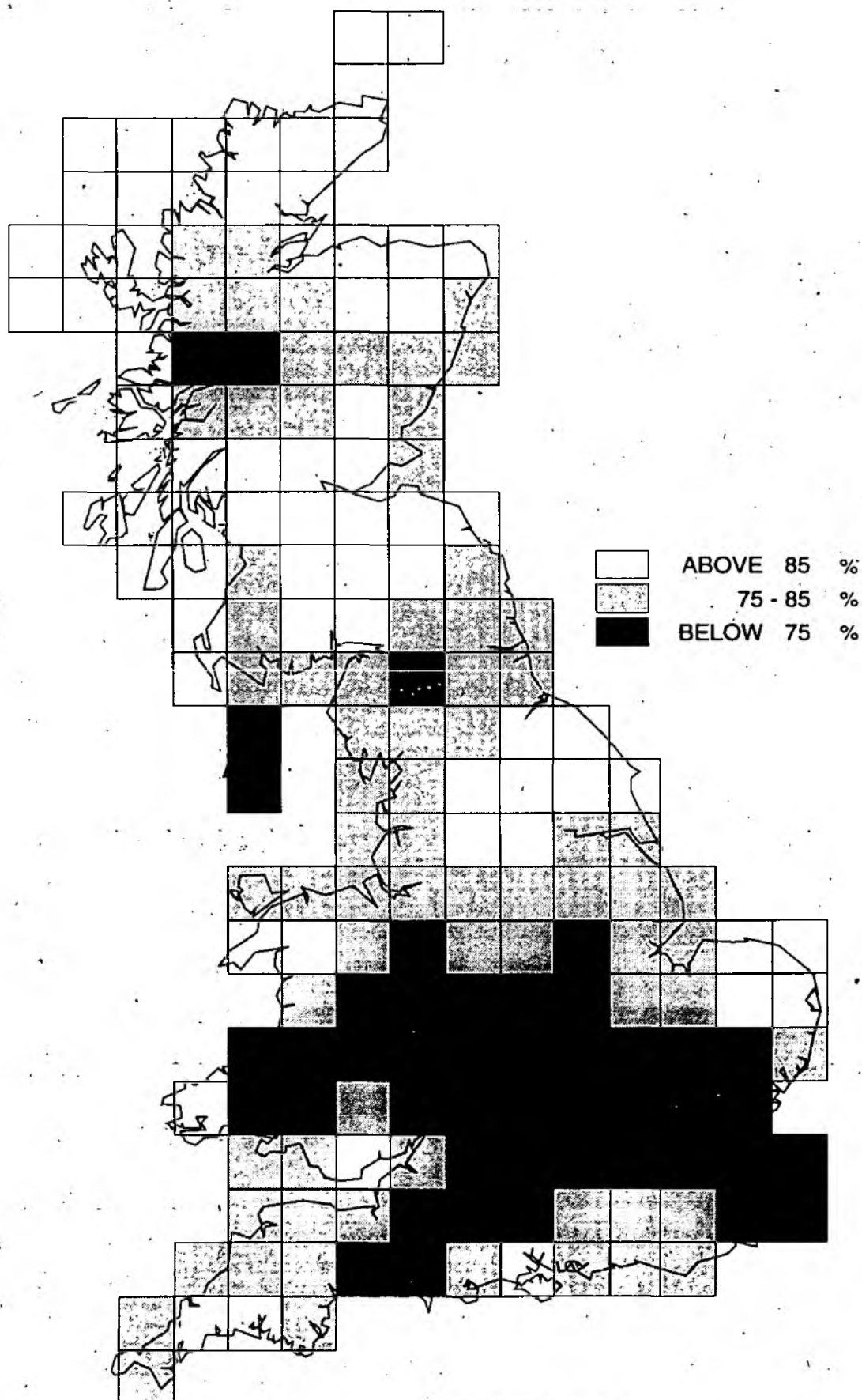


Figure 2.1.3b Spatial Rainfall Patterns in the 10 months from  
1st April 1996 to 31st January 1997

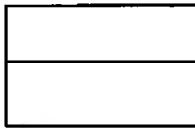
(Shown as % of 1961-90 mean)



## Figure 2.2.1 Soil Moisture Deficits in England & Wales at 28 February 1997

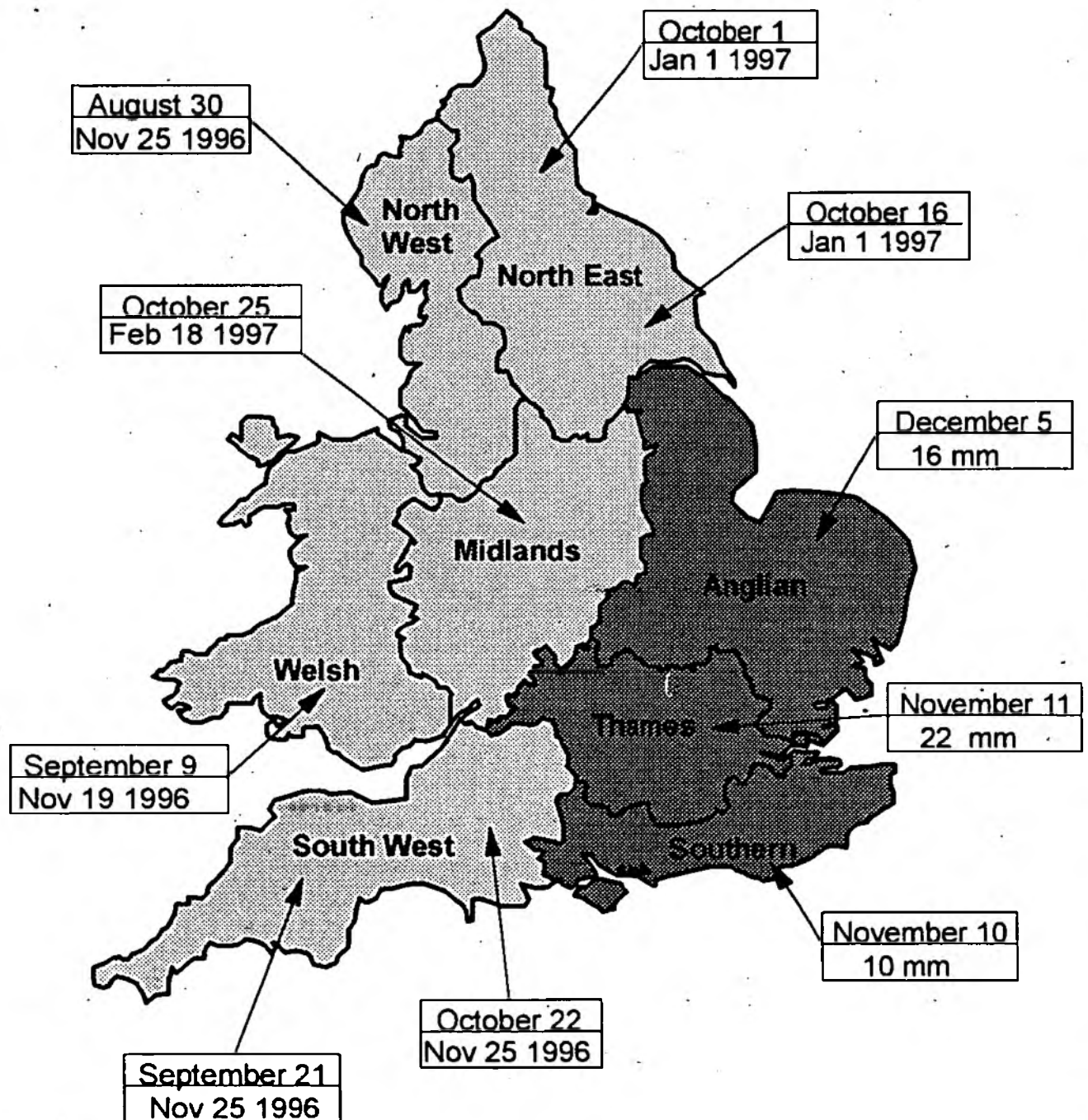
Based on the period 1941-70 for grass growing in soil with 125 mm soil availability

**Key:**



Median date of return to field capacity

Remaining deficit as at 28 February 1997 or date when soil saturation was reached



Average rainfall in October and heavy rainfall in November meant that by the end of November most rivers were beginning to pick up but the low rainfall in December and January caused many to begin to recede again, many to within the lowest range for December. Snowmelt in early January had a significant but short-lived effect on some rivers, but in general the recessions continued to establish new January minima in rivers across the country, most notably the Thames, the Severn, the Welsh Dee and the Tay. The heavy rainfall in February has increased flows in all the rivers, and many are now significantly higher than average for the time of year. Those rivers that are dependant on baseflows fed from groundwater are still low for the time of year but flow is increasing steadily. The increase in riverflow between January and February for all the index rivers is shown in Figure 2.3.

The low river flows this year have had an impact on many aspects of the river environment, from water quality, fisheries and other flora and fauna, to human impacts, such as restrictions on abstraction, navigation and fishing. In water resources terms, the low flows delayed the refill of reservoirs across the country.

## **2.4 Groundwater**

Following three years of above average water levels, there was very little recharge in the winter of 1995/96 and the recovery was only a brief interruption to the general recession. Figure 2.4 shows a selection of boreholes from various aquifers across the country.

In some areas the residual benefits of the previous wet years lasted into the 1996 summer months, but by July levels in the eastern Chalk (Yorkshire, East Anglia and Kent) and northern Permo-Triassic outcrops were reaching their long term minima for the time of year. The recessions continued into October and November with many levels falling below previous monthly minima.

The start of 1997 saw many of the aquifer levels beginning to fall again after only 1-2 months of recovery, the low rainfall in December and January having little impact on the high SMD in the eastern parts of the country. The heavy rainfall in February has caused levels to rise in the Permo-Triassic Sandstones in the north east and Wales and there are signs of an upturn in some Chalk boreholes, but levels in the Chalk in other areas are continuing to fall, albeit more slowly. In general the groundwater situation is not as critical as it was in 1992, but with only one or two months left of the recharge season there is concern about the ability of the aquifers to attain reasonable levels for the summer.

This is especially important in those areas where public water supply is heavily dependant on groundwater. The low aquifer levels will also have an impact on the stream flows in many rivers this year.



## Figure 2.3 River Flow Distribution

Distribution of river flow at the start of January and the end of February (as a percentage of the long term monthly average) in selected major rivers in England and Wales.

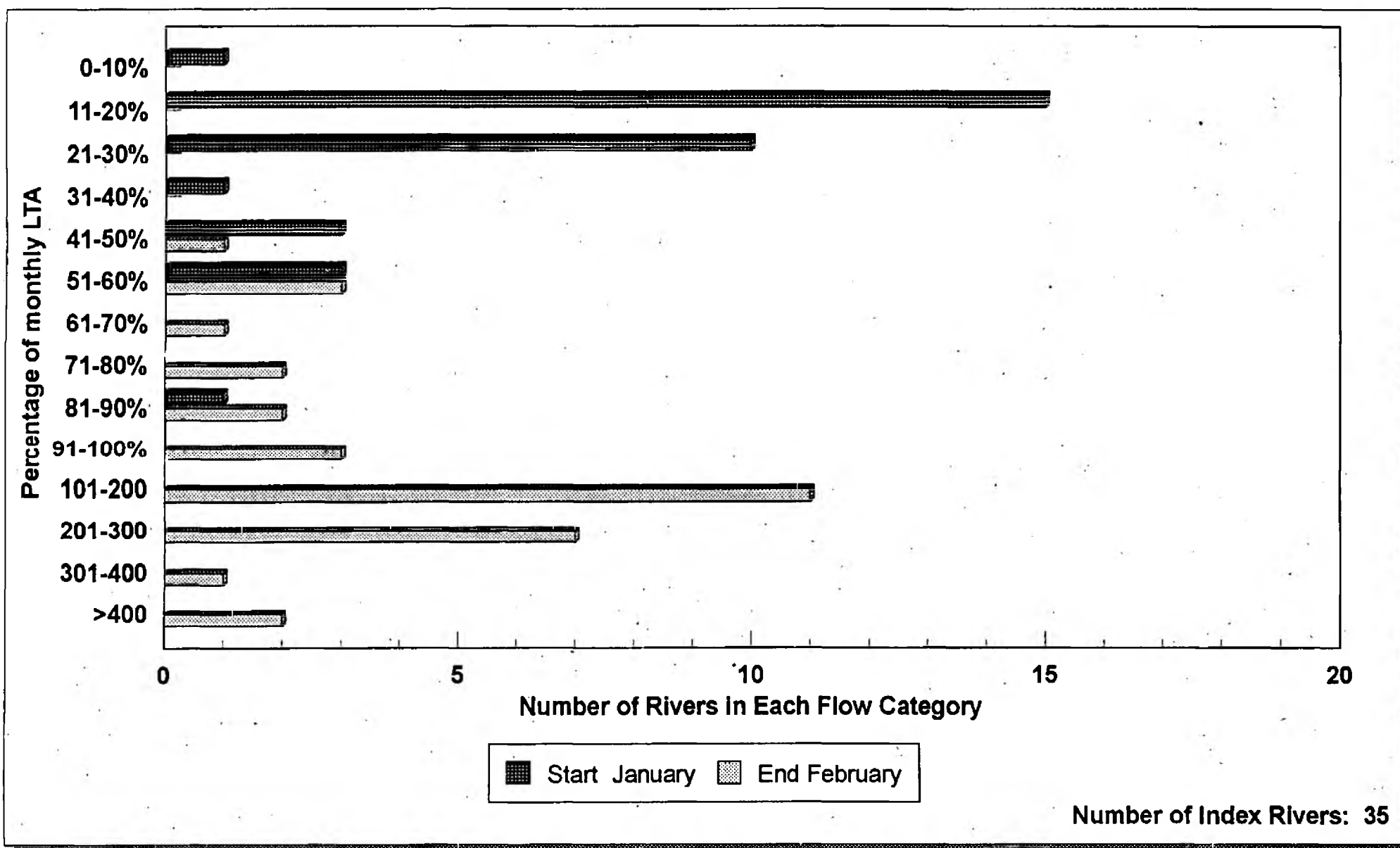




Figure 2.4 Groundwater levels in selected boreholes in England and Wales

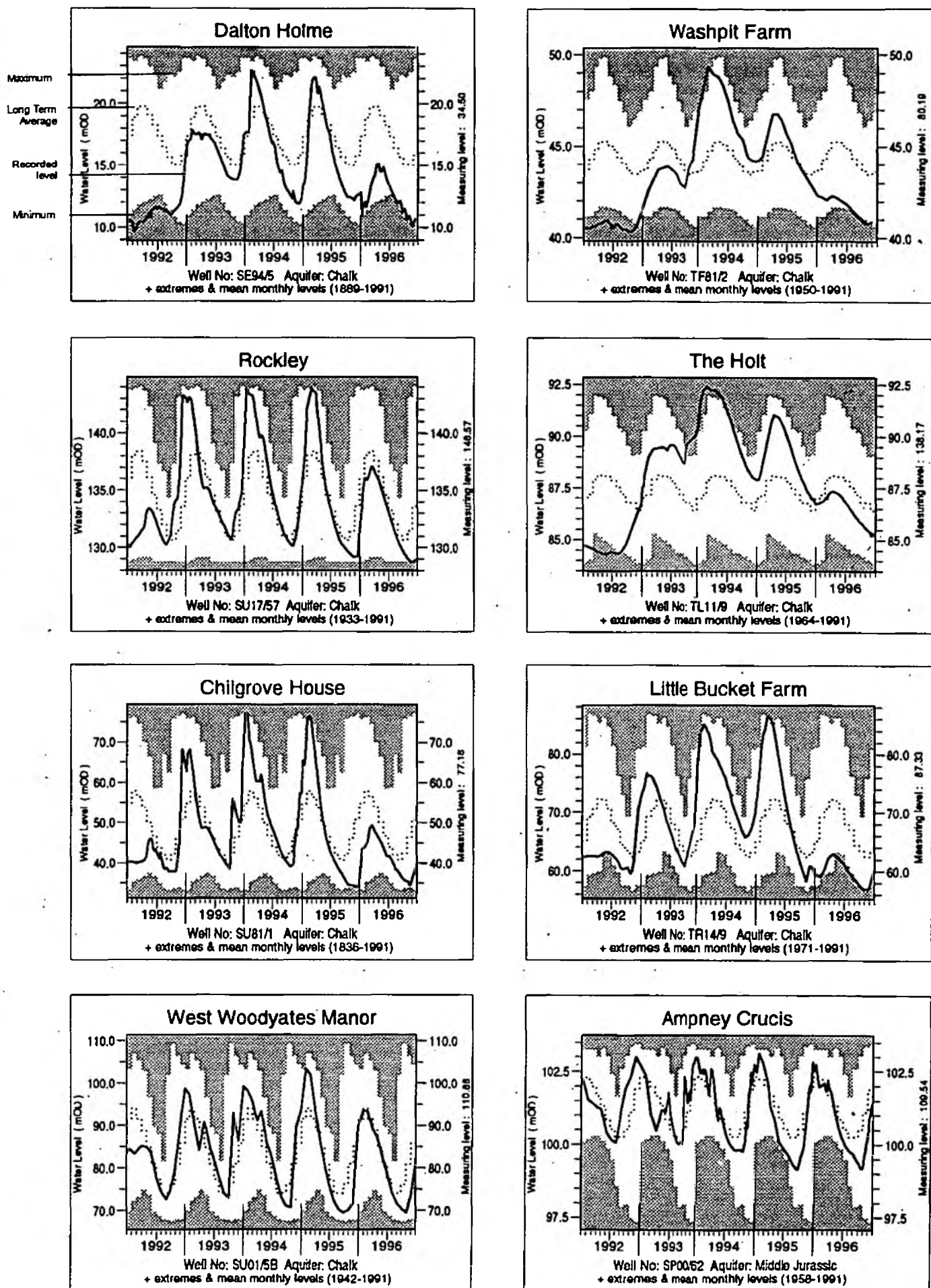
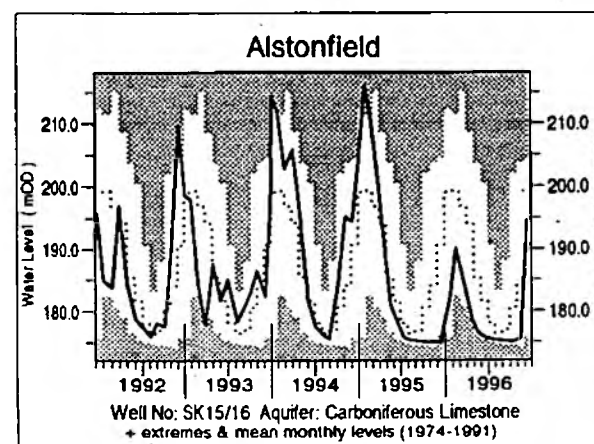
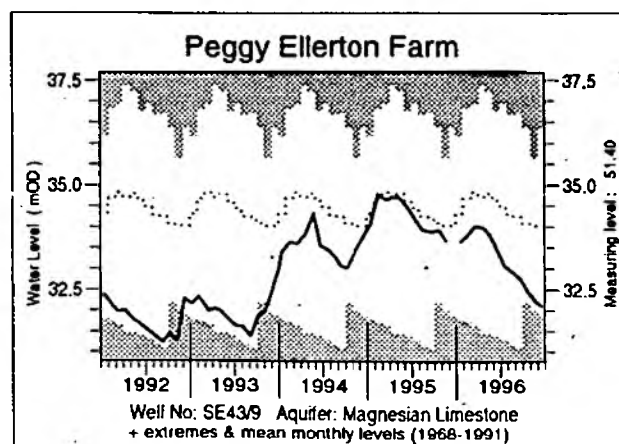
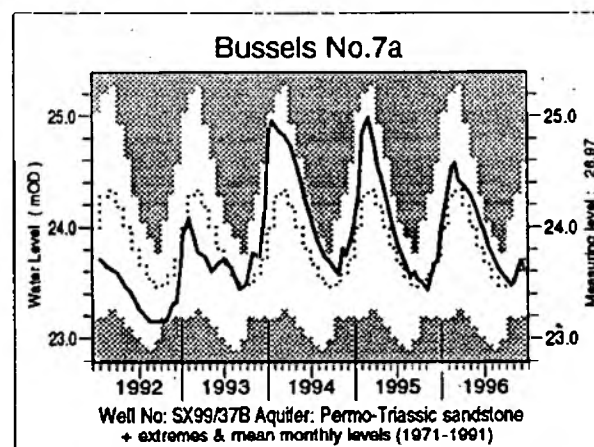
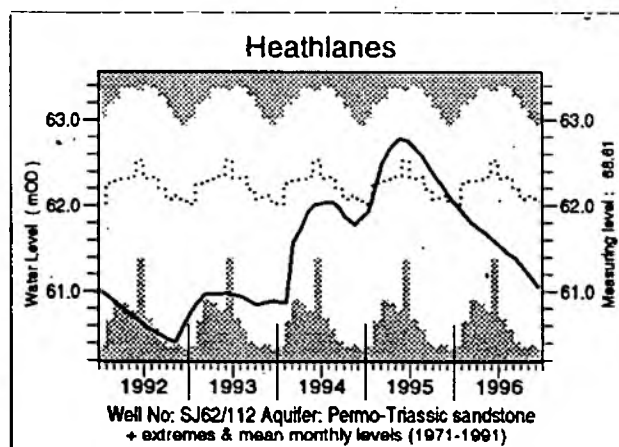
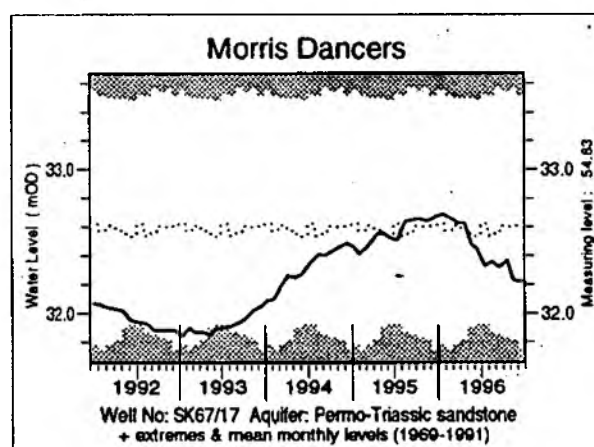
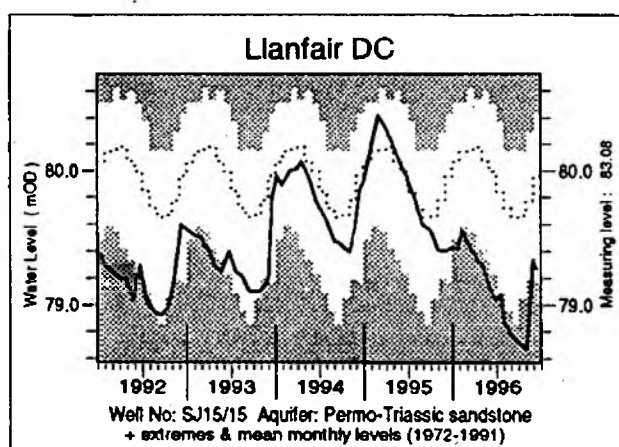
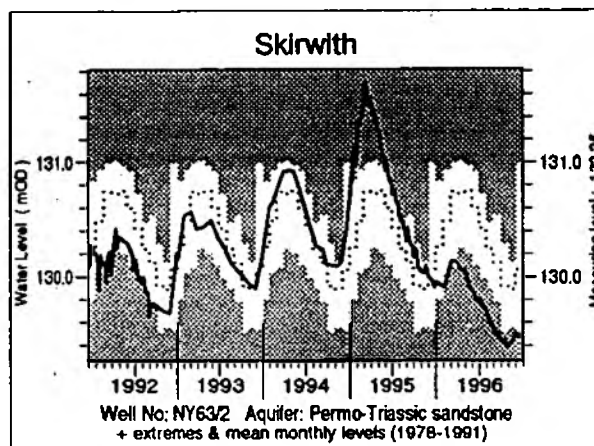
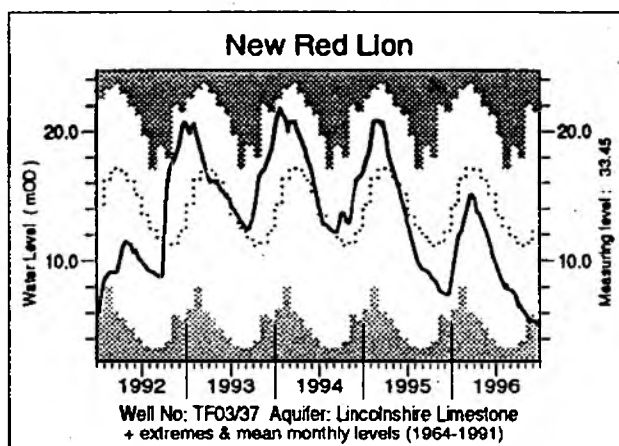


Figure 2.4 Groundwater levels in selected boreholes in England and Wales



## **2.5 Reservoirs**

Figure 2.5 shows the combined reservoir stocks by Region for 1995 to 1997 compared to the 1988-94 average. Reservoir levels were below average in most regions at the beginning of 1996, with some as low as 20% of capacity. A combination of rainfall, Drought Orders and good management meant that most reservoirs were filled to an average level for the time of year by July and were able to support the summer demand. Heavy rainfall in November went a long way to filling reservoirs across the country and by December most region's stocks were at or above average for the month. The dry weather in December and January delayed the refill, and some reservoir levels began to fall, but the heavy rain in February has allowed most reservoirs to fill significantly, many to near capacity. The total reservoir stocks in England and Wales (using Index Reservoirs) stood at 91% full at the end of February.

There are concerns in the Essex and Suffolk Water area that the reservoirs at Abberton and Hanningfield will not be filled by the summer, but the Agency has been pumping water through the Ely Ouse-Essex Transfer at record levels to assist the refill. In Southern Region there is a Drought Order to assist the fill Bewl and Darwell Reservoirs and a Drought Permit to assist the filling of Ardingly Reservoir. In general, however, the Water Companies are confident with the ability of the reservoir stocks to be able to meet demand in a dry summer.

## **2.6 Drought Orders and Drought Permits**

Very few Drought Orders and Drought Permits were sought in 1996 compared with 1995. There were 9 Drought Orders and 5 Drought Permits issued in the summer that continued into the winter, and only one new Drought Order and 2 new Drought Permits issued this winter. This is in contrast to last winter when there were over 60 Drought Orders, or their extensions, in force.

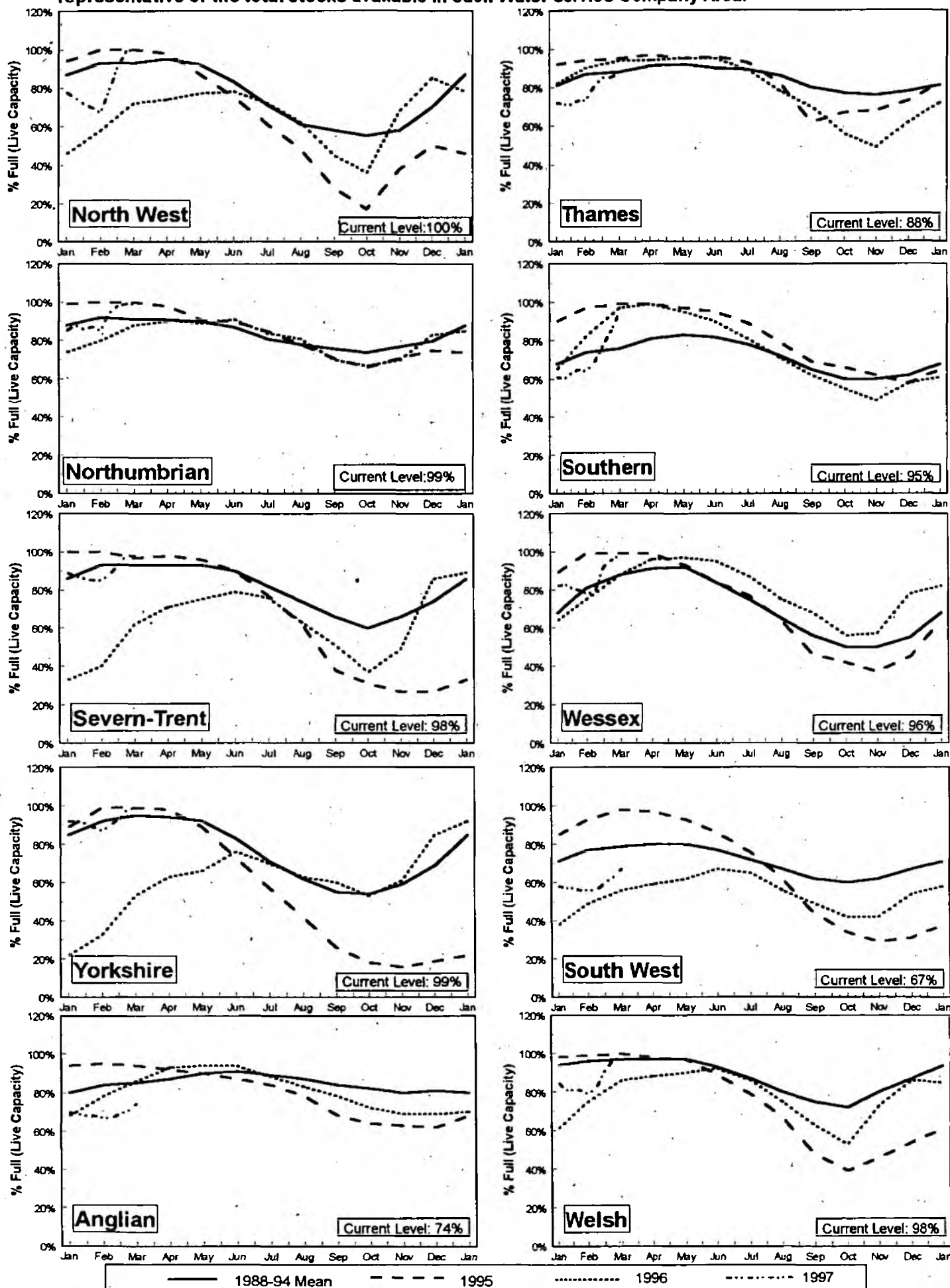
# **3. CONTINGENCY PLANS TO SAFEGUARD SUPPLIES**

## **3.1 General Resources Situation**

Heavy rainfall in February has meant that the surface water situation is normal for the time of year, with most reservoirs near to capacity and many rivers across the country in flood. However, groundwater levels remain well below average in many areas, and the areas that are worst affected are those which rely on groundwater for much of their supply, such as Anglian, Thames and Southern Regions.

**Figure 2.5 A Water Service Company Area Guide to Combined Reservoir Stocks for England and Wales in 1996 and 1997 compared with an Average Year and the 1995 Drought Year.**

Note: The regional plots are based on the Institute of Hydrology index reservoirs, and are not necessarily representative of the total stocks available in each Water Service Company Area.



The droughts of 1990 and 1995 have shown how quickly the resource situation can deteriorate in a hot dry summer as demand rises. The Agency maintains a regular contact with the Water Companies to ensure that their plans for safeguarding supply are adequate to cover the possibility of another hot dry summer.

Based upon the information obtained on each water company, where groundwater resources are particularly important, those companies contemplating the possibility of supply restrictions or requiring additional abstraction through Drought Orders/Permits are:

Anglian Water	Essex & Suffolk Water
Thames Water	Three Valleys Water
Southern Water	Sutton & Surrey Water

Table 3.1 outlines the possible restrictions by each company. Full details of water company plans to safeguard public water supplies are given in Appendix 1.

### **3.2 Measures to Safeguard Supplies**

Drought contingency plans exist for all water companies except for Cambridge, Tendring Hundred, Northumbrian, Hartlepool, York Waterworks, Portsmouth, Welsh and Dee Valley water companies. In these companies; the balance between supply and demand is not critical and the Agency accepts that formal plans are not needed for the present situation.

The remaining companies do however have contingency plans and these rely on a mix of measures including recommissioning of abandoned sources, engineering works, leakage reduction, inter-company bulk transfers, supply balancing and the use of alternative sources. Further information on drought contingency plans is expected from Yorkshire Water and Thames Water by the end of March 1997.

**Table 3.1 - Summary of Water Company Plans**

<b>Water Company</b>	<b>Satisfactory Drought Contingency Plan</b>	<b>Additional Drought Order/ Permits</b>	<b>Possible Bulk Transfers (additional)</b>	<b>Additional Appeals for Restraint</b>	<b>Hosepipe/ Sprinkler Bans a possibility</b>	<b>More Severe Restrictions a possibility</b>	<b>Drought Scenario Plan is based on:</b>	<b>Possible Environmental Problems</b>
Anglian	✓	x	x	✓	✓	x	60% RF	✓
Essex & Suffolk	✓	✓	x	✓	✓	x	Worst historic	✓
Cambridge	No drought plan considered necessary							
Tendring Hundred	No drought plan considered necessary at present *							
Northumbrian Water	No drought plan considered necessary							
Hartlepool Water	No drought plan considered necessary							
Yorkshire Water	N/A	x	x	x	x	x	Worst historic	✓
York Water Works	No drought plan considered necessary							
North West Water	✓	x	x	✓	✓	x	Worst historic	✓
Severn Trent Water	✓	x	x	x	x	x	Worst historic	
S. Staffordshire	No drought plan considered necessary							
Southern Water	✓	x	✓	✓	✓	x	Worst historic	
South East Water	✓	x	x	✓	x	x	Worst historic	
Mid Kent	✓	x	✓	✓	x	x	Worst historic	
Folkestone & Dover	✓	x	✓	✓	x	x		
Portsmouth	No drought plan considered necessary							
South West Water	✓	x	x	✓	✓	x	Worst historic	✓
Bournemouth & W. Hants	✓	x	✓	✓	x	x	Worst historic	✓
Bristol Water	✓	x	x	x	x	x	Worst historic	
Wessex Water	✓	x	✓	✓	x	x	Worst historic	✓
Thames Water	N/A	x	x	✓	✓	✓	50% RF	✓
Three Valleys	✓	✓	x	✓	✓	✓	Minimum historic	✓



*Water Company Plans to Safeguard 1997 Summer Water Supplies*

<b>Water Company</b>	<b>Satisfactory Drought Contingency Plan</b>	<b>Additional Drought Order/ Permits</b>	<b>Possible Bulk Transfers (additional)</b>	<b>Additional Appeals for Restraint</b>	<b>Hosepipe/ Sprinkler Bans a possibility</b>	<b>More Severe Restrictions a possibility</b>	<b>Drought Scenario Plan is based on:</b>	<b>Possible Environmental Problems</b>
North Surrey	✓	x	x	✓	✓	✓	Worst historic	✓
Sutton & Surrey	✓	x	✓	✓	✓	x	60% RF	✓
Mid Southern	✓	x	x	✓	x	x	Minimum historic	✓
Welsh Water	No drought plan considered necessary							
Dee Valley	No drought plan considered necessary							

N/A - Not Available

The Agency is pleased to note that new Drought Orders/Permits which may affect summer river flows are not generally relied upon for meeting supplies and that instead, steps have been taken by companies to make use of winter flows to assist the refill of reservoirs through winter Drought Orders/Permits eg, by Southern Water to refill Bewl Water and Darwell Reservoirs and South East Water for Ardingly Reservoir. Other companies, such as South West Water, have now completed engineering works to allow winter pumped refill of strategic sources should this be necessary next winter.

Leakage reduction is reported by most companies to be a key element of their plans to maintain a balance between supply and demand. The freezing conditions during January have however increased the number of bursts and companies are needing to increase leakage repair activity in order to recover the situation. Of particular concern is the situation in Thames Water, where nearly 40% of annual distribution input is reported to be lost through leakage.

The redistribution of available resources through bulk supplies between companies can be an economic alternative to the development of new sources and an important measure to safeguard supplies during periods of drought. It is therefore of concern to note that it has not yet been possible to conclude agreements between Southern and South East Water. Progress has however been made between Mid Kent and Folkestone and Dover Water Services for short and long term agreements. Discussions are also planned in respect of bulk supplies from Mid Kent to South East Water and between Mid Kent and Southern Water Services. The Agency and OFWAT will shortly be holding talks with Mid Kent, Folkestone and Dover and South East Water to progress the long term allocation of resources between these companies following the unsuccessful bid by these companies for Mid Kent.

Supply balancing and the use of alternative sources is also a feature of most contingency plans. This often involves water companies 'resting' groundwater sources to assist recovery and storage for summer use. In the case of Thames Water, artificial recharge of underground supplies is used to assist this process which is also under active consideration by other companies.

The Agency is pleased to note that most water companies now require their customers who choose to use garden sprinklers to have metered supplies. The Agency however would wish to ensure that companies are doing all they can to enforce this policy.



Hosepipe bans are not anticipated by most companies although they have not ruled at the possibility of imposing bans if the drought continues. Sprinkler metering is being considered by many companies to assist suppressing demand.

In general the Agency is satisfied with the drought contingency plans of the water companies and much has been achieved since the crisis in some parts of the country during the hot-dry summer of 1995. It does however remain of concern that Yorkshire Water report that planning is in place, but that the plan will not be released to the Agency until the end of March 1997. In these circumstances the Agency is unable to give a critical appraisal of the plan. Thames Water are also in the process of providing the Agency with a plan to satisfy the Agency's requirements and concerns by the same date.

### **3.3 Environmental Concerns**

Since the present drought is primarily affecting groundwater supplies, it is reasonable to expect that most environmental concerns will centre on groundwater fed catchments and wetlands, particularly in the Agency's Anglian region, with the possible exception of Norfolk. Discussions are also in progress with Yorkshire Water regarding their abstraction which may effect the Hull Headwater SSSI which is dependant on baseflow from the Chalk aquifer.

The low base flows from many groundwater units are affecting the habitat and amenity of a number of rivers and in some cases water companies are co-operating by reducing or ceasing abstraction from nearby sources in order to restore flows. For example, Bournemouth and West Hampshire Water has already decreased abstraction to assist flows in the River Allen and Wessex Water will implement a range of mitigation measures to safeguard a number of rivers and chalk streams. Thames Water and other companies have also improved the quality of effluent from key sewage works to mitigate the effect of the discharge on low flow rivers. The main concerns of low flows are fish stress and restriction of salmon runs, poor water quality due to reduced dilution and increased algal growth, and loss of habitat.

The Agency will continue to monitor and report on the health of rivers throughout the year and as in previous years will apply for environmental Drought Orders to protect flora and fauna. This monitoring includes river discharge, chemical characteristics and the biological condition of rivers. Where necessary fish rescue will be carried out to maintain stocks.

Where environmental problems are anticipated but where no water supply problems are expected, the Agency will be liaising with such water companies to discuss opportunities which may be actioned to help alleviate the environmental problems.

### **3.4 *Spray Irrigation***

If the period of less than average rainfall persists it is likely that spray irrigation will be restricted through cessation conditions on licences in many areas, including the Midlands, Thames and Anglian regions.

The majority of spray irrigation is carried out in the Anglian region where the initial forecasts of prospects is 'poor' ie widespread restrictions are probable. Further information on the extent of timing and restrictions will be available later in March. Where there are no built-in constraints requests for voluntary restrictions may be sought in the first instance, with Section 57 restrictions only being considered if severe low flows develop. These restrictions will not affect irrigators who abstract from winter storage as this does not impose a high demand on sources when the environment is most vulnerable. Spray irrigators with licence conditions to protect the environment would not normally be affected by restrictions specially imposed during a drought.

## **4. *CONCLUSIONS***

Water companies' contingency plans to safeguard supplies are generally satisfactory, though further details are awaited from Thames Water and Yorkshire Water Services. The Agency's proposals for powers to require companies to provide such information may be helpful in these circumstances. The measures reported from companies should be sufficient to maintain supplies during a hot dry summer, though the possibility of hosepipe bans cannot be ruled out.

Investment made by companies to redistribute supplies within their companies has helped to make best use of available resources and works to augment reservoir refill from winter flows assists the security of their systems. More needs to be done however to encourage bulk supplies between companies and the Agency and OFWAT will be progressing this with the companies concerned. The Agency is encouraged that most companies are now less reliant on summer Drought Order/Permits to maintain a balance between supply and demand.

Most companies now have policies in place which require their customers who choose to use garden sprinklers to have metered supplies. This reduces demand significantly, but the Agency is not convinced that companies are doing all they can to enforce this policy.

Leakage reduction is an important component of company plans and it seems that progress has been made in some companies such as North West Water who report savings of 150 MI/d. There is concern however that leakage remains at around 40% in Thames Water, which is one of the companies facing a difficult summer. More work needs to be done by companies to reduce high levels of leakage and to identify economic levels of leakage and to achieve these levels in practice.

If the dry weather continues into the summer, the main environmental impacts are likely to be in groundwater fed catchments and wetlands in eastern England. The Agency will actively monitor the state of the environment and will work with all abstractors to minimise the adverse effects of the drought.

The Agency is currently preparing detailed water resources planning guidelines to enable water companies to provide it with the information needed for the preparation of regional and national strategies on a consistent basis. Following consultation with the water industry in the next few months, companies will be asked to progress their plans in consultation with the Agency. The water company plans will also enable the Agency to assess the supply/demand balance and advise OFWAT on this issue during the Periodic Review of water company prices in 1999.

The Agency will continue to monitor the development of the water resources situation throughout the summer. This will include monitoring of the contingency plans of the water companies. The Agency urges water companies whose available resources are delicately balanced this year to take timely action to avoid escalation of the risk to public water supply and hence to ensure that unnecessary burdens are not sought on the environment through applications for Drought Orders or Drought Permits.

Where in the Agency's view, timely and appropriate measures are not taken by water companies, the Agency will make its views publicly known and will not support such applications for Drought Orders or Drought Permits.

## **APPENDIX 1**

### ***Summaries of Water Company Contingency Plans***

## **CONTINGENCY PLAN SEQUENCE**

- |                                       |   |
|---------------------------------------|---|
| Anglian Region Companies Included:    | <ul style="list-style-type: none"><li>• Anglian Water Services</li><li>• Essex &amp; Suffolk Water</li><li>• Cambridge Water Company</li><li>• Tendring Hundred Water</li></ul>                 |
| North East Region Companies Included: | <ul style="list-style-type: none"><li>• Northumbrian Water</li><li>• Hartlepool Water Company</li><li>• Yorkshire Water Plc</li><li>• York Water Works</li></ul>                                |
| North West Region Company             | <ul style="list-style-type: none"><li>• North West Water</li></ul>  |
| Midlands Region Companies Included:   | <ul style="list-style-type: none"><li>• Severn Trent Water</li><li>• South Staffordshire Water</li></ul>  |
| Southern Region Companies Included:   | <ul style="list-style-type: none"><li>• Southern Water</li><li>• South East Water</li><li>• Mid Kent Water</li><li>• Folkestone &amp; Dover Water</li><li>• Portsmouth Water</li></ul>          |
| South West Region Companies Included: | <ul style="list-style-type: none"><li>• South West Water</li><li>• Bournemouth &amp; West Hampshire Water</li><li>• Bristol Water</li><li>• Wessex Water</li></ul>                              |
| Thames Region Companies Included:     | <ul style="list-style-type: none"><li>• Thames Water</li><li>• Three Valleys Water</li><li>• North Surrey Water</li><li>• Sutton &amp; East Surrey Water</li><li>• Mid Southern Water</li></ul> |
| Welsh Region Companies Included:      | <ul style="list-style-type: none"><li>• Welsh Water</li><li>• Dee Valley Water</li></ul>  |

### ***ANGLIAN REGION***

#### ***Companies Included:***

- ***Anglian Water Services***
- ***Essex & Suffolk Water***
- ***Cambridge Water Company***
- ***Tendring Hundred Water Services***

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: ANGLIAN

NAME OF WATER UNDERTAKER: ANGLIAN WATER SERVICES

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		Yes
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		Yes
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	No
	Recommissioning of abandoned sources	No
	Engineering works	Yes. Advanced £34M of schemes
	Leakage reduction	Yes. Maintain target reductions
	Inter-company bulk transfers	No. Other than existing transfers
	Supply balancing and use of alternative sources	Yes. Territory based drought teams will manage local supply balance issues
	Appeals for restraint in the use of water	Yes. AWS will continue to urge for constraint through the media, magazines and in contact with others.
	Hosepipe bans	No. Not anticipated at present (although not ruled out)
	Restrictions on non-essential use	No. Very unlikely
	Rota cuts or standpipes	No. Very unlikely
Other (please specify)		N/A
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		The Agency believes that the Plan is satisfactory for the resources situation and that the company has a reasonably robust system able to cope with likely demands in most locations. The Agency is liaising on a regular basis with the company. In addition, through the Section 20 Operating Agreement in the Northern Lincolnshire Chalk, the Agency requires the company to abstract at the lower rate of 110 MI/d.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		On 60%, 80% and 100% rainfall using historical sequences and records of resource performance.
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST		N/A
a) Is the company intending to do one?		
b) When?		

5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	AWS recognise that low groundwater levels are likely again this summer. They continually plan for such events and have a rolling borehole rehabilitation and satellite borehole drilling programme. The £34M of additional spend was to address this by transferring water to increase security and flexibility of supplies.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	The Agency has provided the 'Initial Forecast of Prospects for Spray Irrigation' as 'poor' ie widespread restrictions are probable. Further information on the extent and timing of restrictions will be available later in March.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	With the possible exception of Norfolk, widespread problems are anticipated, particularly in the headwaters of groundwater fed catchments and wetlands.
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	Continued operation of transfer schemes.
9. Please specify any other relevant information.	



# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: ANGLIAN

NAME OF WATER UNDERTAKER: ESSEX AND SUFFOLK

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			Yes
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			Yes
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction	Yes. i) at Denver - see 3b (a possibility) ii) Chelmsford effluent - in preparation	
	Recommissioning of abandoned sources	Yes	
	Engineering works	Yes	
	Leakage reduction	Yes	
	Inter-company bulk transfers	No. Other than existing transfers	
	Supply balancing and use of alternative sources	Yes	
	Appeals for restraint in the use of water	Yes. PR targeted at water conservation	
	Hosepipe bans	Yes. A possibility	
	Restrictions on non-essential use	No	
	Rota cuts or standpipes	No	
	Other (please specify)	N/A	
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		In general, the Agency is satisfied with the Plan. The Agency and company are liaising on matters of detail. ESW are currently proposing a variation to the Agency's abstraction licence at Denver. This is for a temporary 5 year variation to the hands off flow and will assist with the refill of Hanningfield and Abberton Reservoirs, particularly during the 1997/98 refill season. If any objections are received, the application is likely to result in a hearing. The Agency has asked the DoE to schedule the hearing to enable refill to take place should the application be successful.	
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		Looks at rainfall, forecasts, reservoir patterns based on historic events. The Agency also undertakes predictive modelling work.	
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST		N/A	
a) Is the company intending to do one?			
b) When?			

5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	Groundwater levels are close to their historical minima for the time of year. Significant rainfall is required before recharge will start. .
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	See response on Anglian Water Services sheet
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	See response on Anglian Water Services sheet
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	A drought permit application is likely to enable the spider pits at Redgrave and Lopham to be augmented.
9. Please specify any other relevant information.	

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: ANGLIAN

NAME OF WATER UNDERTAKER: CAMBRIDGE WATER COMPANY

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			No
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			No
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction		
	Recommissioning of abandoned sources		
	Engineering works		
	Leakage reduction		
	Inter-company bulk transfers		
	Supply balancing and use of alternative sources		
	Appeals for restraint in the use of water		
	Hosepipe bans		
	Restrictions on non-essential use		
	Rota cuts or standpipes		
	Other (please specify)		
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.			
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)			
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST			
a) Is the company intending to do one?			
b) When?			
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.			
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.			See response on Anglian Water Services sheet

7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	See response on Anglian Water Services sheet
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	
9. Please specify any other relevant information.	

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: ANGLIAN

NAME OF WATER UNDERTAKER: TENDRING HUNDRED WATER SERVICES

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			No
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			At present no. The Agency will however recommend to the company soon that a preliminary contingency plan will be required should dry weather continue.
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction		
	Recommissioning of abandoned sources		
	Engineering works		
	Leakage reduction		
	Inter-company bulk transfers		
	Supply balancing and use of alternative sources		
	Appeals for restraint in the use of water		
	Hosepipe bans		
	Restrictions on non-essential use		
	Rota cuts or standpipes		
Other (please specify)			
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.			
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)			
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST			
a) Is the company intending to do one?			
b) When?			
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.			

6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	See response on Anglian Water Services sheet
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	See response on Anglian Water Services sheet
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	
9. Please specify any other relevant information.	

***NORTH EAST REGION***

***Companies Included:***

- ***Northumbrian Water***
- ***Hartlepool Water***
- ***Yorkshire Water***
- ***York Water Works***

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: NORTH EAST

NAME OF WATER UNDERTAKER: NORTHUMBRIAN WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		No
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		No
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	
	Recommissioning of abandoned sources	
	Engineering works	
	Leakage reduction	
	Inter-company bulk transfers	
	Supply balancing and use of alternative sources	
	Appeals for restraint in the use of water	
	Hosepipe bans	
	Restrictions on non-essential use	
	Rota cuts or standpipes	
	Other (please specify)	
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?		
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		Additional boreholes being constructed in north Northumberland to cope with drought summer demand and to provide additional security of supply. These new boreholes will spread the abstraction over a larger area of aquifer and avoid excessive drawdown and achieve sustainable yields.



6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	The total volume used for spray irrigation is small and most is from rivers supported by Kielder. Unlikely to be any problems in the event of a drought year.	
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	None	
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	None	
9. Please specify any other relevant information.	None	

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: NORTH EAST

NAME OF WATER UNDERTAKER: HARTLEPOOL WATER COMPANY

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			No
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			No
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction		
	Recommissioning of abandoned sources		
	Engineering works		
	Leakage reduction		
	Inter-company bulk transfers		
	Supply balancing and use of alternative sources		
	Appeals for restraint in the use of water		
	Hosepipe bans		
	Restrictions on non-essential use		
	Rota cuts or standpipes		
		Other (please specify)	
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.			
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)			
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST			
a) Is the company intending to do one?			
b) When?			
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		No problems expected even in 1995/1996 drought occurs.	

6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	No spray irrigation licences in Hartlepool Water Company supply area.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	None
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	None
9. Please specify any other relevant information.	None

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: NORTH EAST

NAME OF WATER UNDERTAKER: YORKSHIRE WATER PLC

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		Yorkshire Water report that planning is in place and that the plan will be released to the Agency at the end of March 1997. The comments indicated in italics are based entirely on information provided by Yorkshire Water
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		Yes
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	<i>None planned during the summer of 1997, a situation worse than 1995/96 might require winter refill drought permits in autumn 1997</i>
	Recommissioning of abandoned sources	<i>No</i>
	Engineering works	<i>Schemes to protect the River Hull</i>
	Leakage reduction	<i>OFWAT target being met</i>
	Inter-company bulk transfers	<i>None</i>
	Supply balancing and use of alternative sources	<i>Incorporated in the weekly Water Resources Allocation Plan</i>
	Appeals for restraint in the use of water	<i>As for drought permits above</i>
	Hosepipe bans	<i>No</i>
	Restrictions on non-essential use	<i>No</i>
	Rota cuts or standpipes	<i>No</i>
	Other (please specify)	-
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		The Agency is unable to give a critical appraisal of the plan. <i>The plan utilises the Water Resource Allocation Planning (WRAP) family of computer models to forecast and trigger key management options. Reservoirs are standing at 98% full, rivers are all above the prescribed abstraction flows, demand is consistently 7 - 10 % lower than for the same period in 1995/96 and licences and grid flexibility has increased by (a minimum of) 10% since 1995/96. Minimum 25% reduction in abstraction from Hull and Wolds groundwater sources has been introduced to preserve groundwater stocks for the summer of '97.</i>
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		<i>The worst historic ie 1995/96.</i>

<p>4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST</p> <p>a) Is the company intending to do one?</p> <p>b) When?</p>	<p>The Agency is given to understand that a plan exists</p> <p>This will be released to the Agency at the end of March 1997.</p>
<p>5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.</p>	<p>Groundwater levels in the Chalk are near historic low levels. This could have led to difficulties in maintaining supply to the Hull area, particularly if there is below average rainfall over the next few months. However, potential problems should be alleviated as <i>the grid from Barmby on the Derwent is being supplied into the Hull demand zones to allow groundwater sources to be rested/reduced. Further increases in grid transfers are planned for the period up to December 1997 to allow for an early fall and late recovery of the chalk fed River Hull. Planned engineering works are ongoing to enable further grid water to be supplied to Hull.</i> Additionally, there may be problems in the Corallian. These are difficult to predict at this stage because of the nature of the aquifer: the situation is being closely monitored. Spring sources in the minor aquifers, which supply for example Wharfedale and Wensleydale, may suffer as a result of low winter rainfall: local sources may have to be supported by other means.</p>
<p>6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.</p>	<p>If an extended period of less than average rainfall persists, it is probable that spray irrigation in many of the Dales catchments will be restricted through cessation conditions on licences. Spray irrigation may also be restricted in the Hull catchment later on in the season.</p>
<p>7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate</p>	<p>During an extended period of below average rainfall, river flows will become naturally depleted and groundwater dependant wetlands may also naturally suffer. Environmental concerns about the potential impact of low flows in the River Hull (chalk supported river) may be alleviated by improvement of the effluent quality at Beverley and Bransholme STWs. Also on the Hull, discussions are ongoing with the water company regarding the use of the West Beck intake when flows are low; this is to prevent problems occurring in the Hull Headwater SSSI.</p>
<p>8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.</p>	<p>The Agency will not consider favourably applications for drought restrictions which impact on the environment prior to the full range of appropriate demand management measures being in place (appeals for restraint in water use, hosepipe bans, bans on non essential use, etc).</p>
<p>9. Please specify any other relevant information.</p>	<p>The control rules for the operation of the Chalk sources need to be reviewed as a matter of urgency: this process has now been initiated. This may result in a revision of the yield of these sources. The Agency maintains regular contact with the water company.</p>

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: NORTH EAST

NAME OF WATER UNDERTAKER: YORK WATER WORKS

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			No
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			No
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction		
	Recommissioning of abandoned sources		
	Engineering works		
	Leakage reduction		
	Inter-company bulk transfers		
	Supply balancing and use of alternative sources		
	Appeals for restraint in the use of water		
	Hosepipe bans		
	Restrictions on non-essential use		
	Rota cuts or standpipes		
Other (please specify)			
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.			
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)			
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST			
a) Is the company intending to do one?			
b) When?			
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		Company area is supplied by surface water only.	

6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	Extended periods of low rainfall leading to a depleted river flow are likely to cause restrictions for some spray irrigators as a result of flow related cessation conditions on their abstraction licences.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	None
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	None
9. Please specify any other relevant information.	None

c) On what scenario(s) is the plan based (eg, % rainfall, historic events)	The plan is based on a repeat of the 1995/96 drought which was the worst historic even for the North West.
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?	N/A
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	Groundwater levels are still low though not at historical minima. NWW are planning to rest their groundwater sources as much as possible by increasing pumping from surface water.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	The region does not expect to have to restrict spray irrigation.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	Salmon runs may be restricted on the Rivers Lune and Leven. Reeds may dry out on the River Eamont. Water quality problems may result in the River Douglas if flows are unavailable to dilute effluent from the Horwich Effluent Treatment Works. Coarse fish in Teggs Nose reservoir may be stressed if water levels fall too low from this compensation only reservoir (ie it is not used for abstraction and was the subject of an Agency Drought Order last year).
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	The Agency has reviewed those sites affected by Drought Orders or Drought Permits to find out what indicator species would need to be monitored if such unexpected environmental change were to recur. Such monitoring will help to illustrate a drought generally while providing background data were a Drought Order application to be received for that catchment. The monitoring is complicated by issues of frequency and seasonality. In light of uncertainty over staffing the whole package will be combined as a project for a consultant to advise on the overall programme. Achieving such a programme will depend on a review of existing monitoring to secure synergies but there is a risk that shortfalls will occur resulting in a lack of knowledge should the Agency be challenged for information in future events. This shortfall could affect both general Public Relations requests for examples of changes as well as the more serious undermining of our reputation should information be required for a Drought hearing.
9. Please specify any other relevant information.	Regular meetings through the summer and autumn have already been timetabled with the water company to ensure that any developing water situation is managed properly, and that promises of improved company infrastructure are fulfilled.



***MIDLANDS REGION***

***Companies Included:***

- ***Severn Trent Water***
- ***South Staffordshire Water***

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: MIDLANDS

NAME OF WATER UNDERTAKER: SEVERN TRENT WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			Yes. The plan is a carry forward from the 1996/97 plan of action
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction	Not permits but new licences eg R Trent scheme	
	Recommissioning of abandoned sources	No. Earlier plans to recommission have largely been completed	
	Engineering works	Ongoing work for infrastructure improvement	
	Leakage reduction	Yes. Published targets are still being progressed	
	Inter-company bulk transfers	No	
	Supply balancing and use of alternative sources	Yes. Storage in Draycote Reservoir is an area of concern as low river flows have reduced the pump fill. Supplies for this area are being supplemented from elsewhere to assist refill. Similarly at Tittesworth Reservoir (see later)	
	Appeals for restraint in the use of water	Non other than in the published 'Efficiency Plans'. Additional activity not justified at present	
	Hosepipe bans	No	
	Restrictions on non-essential use	No	
	Rota cuts or standpipes	No	
Other (please specify)		None	
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.			
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		Assumed on the basis of flows likely to be 1995 or marginally less and peak demands managed at 1995 levels as maximum	

4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?	N/A
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	Groundwater levels are approaching lowest since 1976. Unlikely however to affect source yields. No specific actions proposed except at the local level in management of conjunctive use with Tittesworth Reservoir
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	Prospect will depend on rainfall from now. It is anticipated a dry spring would result in a rapid recession in river flows due to the low groundwater levels. Early, staged, implementation of restrictions could therefore follow. Likely to be region wide.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	Too early to be specific
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	Prospects letter to spray irrigators plus leaflet. Accelerated deployment of Shropshire groundwater scheme if necessary to support R. Severn flow and associated abstractions. Early consideration of contingent licence for R Trent scheme
9. Please specify any other relevant information.	

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: MIDLANDS

NAME OF WATER UNDERTAKER: SOUTH STAFFORDSHIRE WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		Not yet determined
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		No
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	
	Recommissioning of abandoned sources	
	Engineering works	
	Leakage reduction	
	Inter-company bulk transfers	
	Supply balancing and use of alternative sources	
	Appeals for restraint in the use of water	
	Hosepipe bans	
	Restrictions on non-essential use	
	Rota cuts or standpipes	
	Other (please specify)	
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST	To be reviewed with the company shortly. The need is not currently pressing	
a) Is the company intending to do one? b) When?		
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		

6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	
9. Please specify any other relevant information.	There is a heavy company dependency on reliability of the R. Severn support system. Until the extent or otherwise of groundwater recharge is known it is not possible to predict the level of support that will be required. The Agency is taking steps to ensure this is at a maximum.

***SOUTHERN REGION***

***Companies Included:***

- ***Southern Water***
- ***South East Water***
- ***Mid Kent Water***
- ***Folkestone & Dover Water***
- ***Portsmouth Water***

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTHERN

NAME OF WATER UNDERTAKER: SOUTHERN WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			Yes
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			Yes
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction	The winter Drought Order to assist with the re-filling of Bewl Water and Darwell has been approved by the DoE and came into effect on 7 February 1997.	
	Recommissioning of abandoned sources	Several small sources in Sussex North have been refurbished, also Windmill Hill in Kent. A new programme of drought alleviation measures includes reviewing the potential for re-commissioning abandoned sources.	
	Engineering works	Commissioning of the Hardham to Worthing trunk main has commenced. The rate at which initial transfers will be made will depend upon water quality. Augmentation of the North Kent main is under investigation. Process loss recovery work is in hand at Hardham treatment works. A new main is being laid to connect Turners Hill and Buchan Hill reservoirs to allow more flexible use of Weir Wood Reservoir.	
	Leakage reduction	The long term programme continues. The interim leakage target is 5.6 l/prop/hr by Spring 1997. The Company's drought programme includes £ 0.5M of additional investment in leakage control.	
	Inter-company bulk transfers	The Company are discussing possible transfers to Folkestone & Dover at Aylesham and to Mid Kent. Existing agreements with South East and Mid Kent are maintained. A new bulk transfer from Mid Kent is also being negotiated.	
	Supply balancing and use of alternative sources	General policy is to draw on the Medway scheme and cut back on groundwater in Kent, and to rest Sussex coastal sources by greater use of Hardham. The new main between Turners Hill and Buchan Hill reservoirs will increase the areas that can be supplied from Weir Wood during peak periods thereby reducing load on Hardham.	

	Appeals for restraint in the use of water	Gardening leaflets are being prepared for Spring 1997. The publicity campaign has been stepped up following recent dry December and January. A document focusing on the drought situation and on what customers can do to help is to be issued with water bills.
	Hosepipe bans	Sprinkler bans remain in force in Sussex East and North, and further restrictions are anticipated in early summer if the weather remains dry.
	Restrictions on non-essential use	As above
	Rota cuts or standpipes	None anticipated
	Other (please specify)	Consideration is being given to metering of sprinklers from April 1997. A permanent licence variation for Darwell/Powdermill has been applied for. The extension of time for the determination requested by the Agency to 8 April 1997 has been agreed. New models are being developed for the River Test and River Rother (Western). A Hippo bag trial is being considered for the Hastings area. A drought programme of 52 measures is focusing attention on:  Implementing operational improvements; pushing forward demand management; advancing studies for Drought Orders; re-assessing source yields; improving monitoring capability; advancing resources capability; raising PR profile.
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		The Company has set one of the lowest leakage targets within the region (5.15 l/prop/hr by 1997/98) and this is welcomed by the Agency. The Company have also improved their ability to transfer supplies between areas and to switch between surface and groundwater sources. The Agency also supports the policy of metering sprinklers and other high non-essential uses. Actions taken by the Company are adequate and no further measures are needed at this time. The Agency would like to see further progress made in agreeing the use of further bulk supplies to other companies within the region, and in this context is disappointed that it has not been possible to reach agreement over future supplies from Weir Wood reservoir.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		Historic events
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?		N/A
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		Rainfall in February has been well above average and the Company expects to see recovery of groundwater levels through March. The extent of recovery will depend on March and April rainfall. The Company plans are conservative as they have been made on the assumption that no further recovery in groundwater levels will occur.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.		N/A



7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	N/A
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	N/A
9. Please specify any other relevant information.	

## **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTHERN

NAME OF WATER UNDERTAKER: SOUTH EAST WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98? Yes		
2. IS ONE NEEDED IN THE AGENCY'S VIEW? Yes		
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	The Drought Permit to modify abstractions from the River Ouse to assist with the re-filling of Ardingly Reservoir was approved by the Agency on 16 January 1997, subject to a number of conditions. The Permit came into effect on 1 February 1997 and will remain in force until 30 April 1997. Results recorded to date show that river quality levels are well within the permitted maximum levels stated by the Agency.
	Recommissioning of abandoned sources	Work continues to keep Hampstead and Tangiers (1.8 MI/d) operational. Recommissioning of Cowbeech is under investigation (2.0 MI/d). Forest Row treatment works has been refurbished and work is nearing completion. An average output of 2.5 MI/d (4 MI/d peak) is anticipated and this should be available from February 1997. Certain boreholes are under investigation. Refurbishment work could return these sources to their licensed outputs (increases in the order of 1.5 MI/d are anticipated).
	Engineering works	Work to reinforce supplies to Seddlescombe area is in hand. Reinforcement of mains serving East Grinstead and Bexhill has been completed.
	Leakage reduction	A telemetry system for data collection is to be extended over the whole Company in the next 18 months. Current total leakage is estimated at 7.0 l/prop/hr.
	Inter-company bulk transfers	A request for an increase in bulk supplies from Southern Water at Weir Wood has been refused.
	Supply balancing and use of alternative sources	Ardingly and Arlington reservoirs have been used to rest groundwater in Seaford and Eastbourne. The Barcombe-Arlington link has been used in both directions.

	Appeals for restraint in the use of water	The Company will continue to increase public awareness for the need for water conservation through the local media, and liaison with garden centres. Information concerning the water resources situation was issued to all customers and MP's in February 1997.
	Hosepipe bans	The Company wide hosepipe ban was lifted on 3/3/97. There are no plans to reintroduce the ban, but the option has not been ruled out.
	Restrictions on non-essential use	As above
	Rota cuts or standpipes	None anticipated
	Other (please specify)	During the coming months the Company intends to meter customers with swimming pools and sprinklers. The Company is currently appealing against the Agency's refusal of 2 applications at Crowhurst Bridge and Postern Lane.
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		The Agency endorses the increased leakage control efforts being made by the Company. However, total leakage remains 2 Ml/d higher than in 1992/93 and priority needs to be given to attaining the leakage target (6.9 l/prop/hr by 1997/98). The Agency supports the policy of metering sprinklers and other high non-essential uses. Actions taken by the Company are adequate and no further measures are needed at this time. However, the Agency would like to see further progress made in negotiating further bulk supplies from neighbouring companies and is disappointed to learn that it has not been possible to reach agreement at Weir Wood.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		Historic events
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?		N/A
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		With the rainfall during February and early March groundwater levels are showing reasonable recovery levels and generally will be above last year's levels but below average for the time of year. Where possible the Company will continue to support groundwater sources with surface water for as long as possible until releases from surface water storage are required to achieve this.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.		N/A
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate.		N/A
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.		N/A
9. Please specify any other relevant information.		

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTHERN

NAME OF WATER UNDERTAKER: MID KENT WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98? Yes		
2. IS ONE NEEDED IN THE AGENCY'S VIEW? Yes		
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	No Drought Orders or Permits are anticipated
	Recommissioning of abandoned sources	All recommissioning works for 1997 have now taken place
	Engineering works	A new main is to be laid from Boxley No. 2 borehole to Hockers Lane, to allow increased use of the existing source. On site works at Goudhurst will enhance plant throughput. The Company will be advertising Wicking No.5 shortly with a view to spreading abstraction load to support the declared PDO.
	Leakage reduction	The Company target is 6.0 l/prop/hr by 1997/98. The District Metering programme was scheduled for completion by the end of 1996 across the Company area. The reservoir outlet metering programme is now complete, and pressure management is reported to be ahead of programme. The cold weather in early January has led to an increase in demand as a result of higher leakage. Increased leakage control activity is in hand.
	Inter-company bulk transfers	Bulk supplies have been made available to FDWS (2 MI/d for 6 months) and a longer term agreement is being finalised. Discussions are planned in respect of bulk supplies to SEW. Discussions are being held with SWS in respect of both imports to Mid Kent and exports to SWS.
	Supply balancing and use of alternative sources	Demand patterns and reliable yields have been analysed to produce a 1996/97 supply/demand balance operating plan.
	Appeals for restraint in the use of water	The next edition of the Company magazine 'Aquifer' is about to be circulated to all customers. It includes information on leakage, free leakline, meters, water conservation, a sticker for placing near taps 'Water is Precious - Please Use it Carefully', garden watering advice, a water butt offer, and an article by the Agency on saving water.

	Hosepipe bans	None anticipated at present but restrictions may be implemented if required.
	Restrictions on non-essential use	As above
	Rota cuts or standpipes	None anticipated
	Other (please specify)	Customers with sprinklers and/or new swimming pools are now metered. The Company will be submitting a licence variation to incorporate a new borehole (Wichling No.5) at the Wichling Pumping Station. Licence variation documents are now being prepared. No change in the annual or daily licence quantities will be sought.
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		The Company has set a leakage target of 6.0 l/prop/hr by 1997/98 which if achieved will result in a reduction of 12.9 Ml/d below the 1994/95 level. The Agency supports the policy of metering sprinklers and other high non-essential uses. The actions taken by the Company are adequate in view of the below average recharge this winter. No further measures are required in the short term.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		Historic events 1992 and 1995
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?		N/A
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		Recharge at the end of February was approximately 50 % of what would normally be expected at this time of year. Water levels are low especially in the east. 210% of long term average rainfall would be needed to generate average recharge. Source yield evaluations have been completed and are considered robust for virtually all sources. Load spreading at Wichling is deemed necessary to safeguard PDO values.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.		N/A
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate		N/A
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.		N/A
9. Please specify any other relevant information.		Licences will be required for all sprinklers and new swimming pools and the water supplied must be drawn through a meter. The Company applies strict enforcement measures. Network models will again be used to predict short term (weekend) demands.

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTHERN

NAME OF WATER UNDERTAKER: FOLKESTONE & DOVER WATER SERVICES

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98? Yes		
2. IS ONE NEEDED IN THE AGENCY'S VIEW? Yes		
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	None anticipated
	Recommissioning of abandoned sources	Saltwood source (up to 0.4 MI/d) has been test pumped and implications for treatment being investigated.
	Engineering works	Refurbishment at Dover Priory (ex BR source) in progress. The Dover spine main (400 mm) is now complete and commissioning is in progress.
	Leakage reduction	The Company target is 6.0 l/prop/hr by March 1997. Leak detection and repair effort has been increased and galvanised communications pipes are being replaced in the Chalksole zone.
	Inter-company bulk transfers	The 2 MI/d supply from Mid Kent was stopped at the end of October 1996 so that approximately 4 months of availability could be reserved for the summer of 1997. However the supply had to be reinstated in December 1996 due to water quality problems at Lye Oak. FDWS are awaiting completion of interconnection works at Aylesham by SWS in order to be able to take a bulk supply of 1 MI/d.
	Supply balancing and use of alternative sources	Desalination and the transfer of bulk supplies through the Channel Tunnel will be kept under review but it is unlikely that either option will be implemented during 1997.
	Appeals for restraint in the use of water	A leaflet summarising the Company's Water Efficiency Plan, commended by OFWAT, will be sent to all customers in March with their water bills.
	Hosepipe bans	Following early winter recharge and recovery of groundwater levels to average for the time of year, FDWS lifted its hosepipe ban in December 1996. Hosepipe bans are not considered likely in 1997.
	Restrictions on non-essential use	As above

	Rota cuts or standpipes	Not considered likely in 1997
	Other (please specify)	FDWS expect to announce the metering of sprinklers in March as soon as it is satisfied that NO restrictions will be required in 1997. Work is in hand to meter all remaining swimming pools. Permanent Licence variations at Kingsdown, Holmestone and Dover Priory are currently being progressed with the Agency.
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		The Company has set a leakage target of 6.0 l/prop/hr by March 1997 which is an improvement over that declared in the OFWAT report 'Leakage of Water in England and Wales'. If achieved it will result in a reduction of 3.8 Ml/d below the 1994/5 level. The Agency supports the policy of metering sprinklers and other high non-essential uses. Actions taken to date by the Company are adequate and no further measures are needed at the present time.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)	Historic events	
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?	N/A	
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	Aquifer water levels are just below average and significantly above 1996 levels for the time of year, and tending to rise following above average February rainfall. Rainfall from August 1996 to February 1997 was around 20% above average.	
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	N/A	
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	N/A	
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	N/A	
9. Please specify any other relevant information.	FDWS's position is much better than in 1996 and with additional drought output arising from the three licence variations currently being progressed with the Agency the Company is confident of avoiding difficulties in 1997. In addition the Company's demand management policies, which include the metering of sprinklers, are expected to continue to reduce demand.	

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTHERN

NAME OF WATER UNDERTAKER: PORTSMOUTH WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		No
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		In view of the general state of groundwater in Hants and West Sussex the company is unlikely to encounter any difficulties and no specific measures are necessary.
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	
	Recommissioning of abandoned sources	
	Engineering works	
	Leakage reduction	
	Inter-company bulk transfers	
	Supply balancing and use of alternative	
	Appeals for restraint in the use of water	
	Hosepipe bans	
	Restrictions on non-essential use	
	Rota cuts or standpipes	
Other (please specify)		
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		Plan not required
c) On what scenario(s) is the plan based (eg, % rainfall, historic events).	Plan not required	
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST		Plan not required
a) Is the company intending to do one? b) When?		



5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	Groundwater levels are 80% of the 30 year average and 90% of levels recorded at this time last year (using sea level as datum). However recovery is stronger than last year and there is good evidence of chalk percolation. Proposals for the spring and early summer (at least) look satisfactory.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	N/A
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	N/A
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	N/A
9. Please specify any other relevant information.	

***SOUTH WEST REGION***

***Companies Included:***

- ***South West Water***
- ***Bournemouth and West Hampshire Water***
- ***Bristol Water***
- ***Wessex Water***

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTH WEST

NAME OF WATER UNDERTAKER: SOUTH WEST WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			Yes
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			Yes
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction	Contingency plan for Lyd/Thrushel Pumped Storage for Roadford if required in winter 1997/98 via a temporary licence.	
	Recommissioning of abandoned sources	Brampford Speke and Stoke Canon boreholes (near Exeter) and Torrington WTW refurbished as standby sources.	
	Engineering works	Pynes-Tottiford Stage 1, Pynes-Crediton main and Pynes WTW uprating essentially in place, enhancing transfer flexibility between Wimbleball and Roadford Zones.	
	Leakage reduction	Work is focusing on critical target areas identified by system monitoring. These are situated across the region as the increase in leakage following the frosts was not concentrated in any one part thereof. Resources are being focused to drive leakage down in those parts of the region supported by Colliford.	
	Inter-company bulk transfers	Raw water supply to Wessex Water from Wimbleball under existing licence continues. Other long standing minor transfers between peripheral supply zones continue.	
	Supply balancing and use of alternative sources	SWW routinely operate on the basis of three conjunctive use zones. Wimbleball Pumped Storage Scheme is in use to assist Wimbleball recovery. A renewal of licence is being sought to continue using Exe-Taw Scheme to supply part of North Devon, further enhancing Wimbleball/Roadford Zone resources transfer options this summer.	
	Appeals for restraint in the use of water	Yes. If and when situation requires	
	Hosepipe bans	Yes. But only in exceptional drought (ie worse than 1995)	
	Restrictions on non-essential use	No	
	Rota cuts or standpipes	No	
Other (please specify)	No		

b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.	SWW and the Agency have agreed arrangements for completing Drought Management Plans for all three strategic supply zones by May 1997. All three will cover the stated drought scenario. Those for Wimbleball and Roadford are essentially complete. Wimbleball Pumped Storage Scheme is now available for winter use and is currently in use. Roadford plan includes contingency re-use of the existing Lyd/Thrushel Emergency Scheme, subject to necessary authorisations later in the year. Colliford Plan is yet to be finalised but the infrastructure for re-use of the Hawks Tor Augmentation Scheme remains available for possible winter 1997/98 use, subject to necessary authorisations.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)	Worst historic drought and historic demands (ie 1976 inflows with 1995 demands)
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?	Drafting the Colliford plan is in hand for completion by the May 1997 deadline. This will identify any contingency measures which are deemed appropriate.
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	Groundwater storage, though lower than average is sufficient to have minimal impact on summer reliable yields. Supply system integration enables support to be made to the East Devon supply zone from Wimbleball/Exe resources if necessary.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	The areas affected in 1995 remain the ones most likely to be affected by a summer drought in 1997. Significant restrictions are only likely if a dry spring and early summer materialises, but none are anticipated to be necessary to secure public water resources availability.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	Hot dry summers and resulting low flows in those rivers in Devon and Cornwall which are unsupported and flashy, increases the risk of macropyte and algal growths, deterioration in water quality, together with stress on fish life. Such natural events can be exacerbated through local pollution events. (See also comments in next section.)
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	Early consultation and preplanning in conjunction with South West Water should ensure effective management of resources, with considered and timely applications for any drought measures which prove necessary. Area Agency staff have been asked to identify sites where environmental damage occurred in 1995 and this information will be reviewed with South West Water. This will enable contingency plans to be formulated to minimise any future impact without jeopardising water supplies and public health. Possible Agency use of drought powers for protection of flora and fauna will be one of the options considered.
9. Please specify any other relevant information.	Following the major increase in leakage due to the cold period in January, the Company has been successful in reducing demand more quickly than in previous years. Demand had returned to similar levels as pre-Christmas by February and is now well below demand at the same time last year (6% lower for week 8). This has been achieved by a combination of factors: the on-going active leakage control programme which has been progressed since 1992, commitment of an additional 20 contract leakage detection staff during the period January to March to help locate the additional leaks caused by the severe frosts, coupled with concerted efforts to repair identified bursts and leaks as quickly as possible.

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTH WEST

NAME OF WATER UNDERTAKER: BOURNEMOUTH AND WEST HAMPSHIRE WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		Yes currently being updated and will be a formal internal policy
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		Yes a worst case contingency plan
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	Not anticipated at this time
	Recommissioning of abandoned sources	Investigated possible use of Wimbourne source on an emergency basis but do not yet have sufficient data to establish the viability eg water quality data.
	Engineering works	None
	Leakage reduction	Ongoing at economic level but does not have significant impact as problems will be in meeting peak demand.
	Inter-company bulk transfers	In discussion with Wessex Water regarding mutual assistance in the event of drought conditions. It is not yet known how secure any arrangements would be.
	Supply balancing and use of alternative sources	Company has taken what limited steps are available to it to conserve existing groundwater resources by maximising the use of surface water (direct abstractions).
	Appeals for restraint in the use of water	Company does as a matter of routine urge prudent use, notably in the garden - by press campaign and newsletter.
	Hosepipe bans	Decisions on such matters do not need to be made yet because of the nature of our resources with 3/4 of the supply being taken from direct surface abstractions
	Restrictions on non-essential use	See comment above
	Rota cuts or standpipes	See comment above
Other (please specify)		

<p>b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.</p>	<p>The Company does not anticipate any severe yield limitations restrictions and are conscious of potential environmental issues that could occur eg low flows in the River Allen. As the Company's expectation is that any problems will be in meeting peak demands, the Agency anticipate that the Company's final plan will give appropriate attention to demand management for that scenario.</p>
<p>c) On what scenario(s) is the plan based (eg, % rainfall, historic events)</p>	<p>Planning is based on historic events (eg, 1975/76)</p>
<p>4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?</p>	<p>The plan is currently being updated.</p>
<p>5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.</p>	<p>Groundwater is being conserved where possible by preferential use of surface water. Groundwater levels are being monitored.</p>
<p>6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.</p>	<p>The extent to which spray irrigation would be affected depends on the extent to which base flows respond to the recent wetter period and any further rainfall between now and April. Assuming lower than average levels continue, prescribed flow or similar licence conditions may be activated this summer.</p>
<p>7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate</p>	<p>It is inevitable that concerns will increase regarding the River Allen if flows are exceptionally low. The Company has already decreased abstraction from its Stanbridge Mill source and it will minimise this as far as possible. This may not be the case during peak demand periods. The Company has also stopped using another small groundwater sources at Ampress in EA Southern Region.</p>
<p>8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.</p>	<p>The Agency will be reviewing whether there are any particular measures which it could take if low flows in the River Allen precipitated particular difficulties. Any contingency plan will be formulated in discussion with the Company.</p>
<p>9. Please specify any other relevant information.</p>	<p>None.</p>

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTH WEST

NAME OF WATER UNDERTAKER: BRISTOL WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		Yes, but it relies on Agency Midlands Region Severn Operations
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		Yes a worst case contingency plan
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	No
	Recommissioning of abandoned sources	No
	Engineering works	No. Substantial infrastructure work completed
	Leakage reduction	Yes. Efforts continue to keep current low levels of leakage which are above the economic level.
	Inter-company bulk transfers	There is a long term agreement to supply Wessex Water at Bath up to 11 Ml/d. The full transfer would normally be available under drought conditions.
	Supply balancing and use of alternative sources	Yes. Company's sources are integrated and operated conjunctively as a single supply zone.
	Appeals for restraint in the use of water	A normal campaign will be undertaken to encourage the responsible use of water.
	Hosepipe bans	Company actions will be staged to deal with events of increasing severity, including the introduction of hosepipe bans in extreme circumstances. (Company policy of hosepipe bans in a second dry year).
	Restrictions on non-essential use	No
	Rota cuts or standpipes	No
Other (please specify)	A full reservoir recovery is expected & normal control & monitoring will be used to manage resources	

<p>b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.</p>	<p>Short term failures can be accommodated by redistributing sources. If the River Severn presents a limit to abstraction then any contingency plan (such as further Shropshire groundwater development or changes to the management of Clywedog and Vyrnwy Reservoirs) would be managed by the Midland Region of the Environment Agency.</p>
<p>c) On what scenario(s) is the plan based (eg, % rainfall, historic events)</p>	<p>Based on 1993/94 and 1921 events.</p>
<p>4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?</p>	<p>The company has well established procedures to manage the key stocks of water to ensure that stocks do not fall below secure levels. The planning period covers two operation.</p>
<p>5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.</p>	<p>With current groundwater levels no problems are expected.</p>
<p>6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.</p>	<p>The extent to which spray irrigation would be affected depends on the extent to which base flows respond to the recent wetter period and any further rainfall between now and April. Assuming lower than average levels continue, prescribed flow or similar licence conditions may be activated this summer.</p>
<p>7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate</p>	<p>No problems will arise from Company abstractions assuming compensation flows are maintained and no drought orders/permits are envisaged in 1997/98 by Bristol Water.</p>
<p>8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.</p>	<p>The Agency will be reviewing whether there are any particular measures which it could take if low flows in the Bristol (Malmesbury) Avon precipitated particular difficulties. Any contingency plan will be formulated in discussion with relevant water companies.</p>
<p>9. Please specify any other relevant information.</p>	



# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: SOUTH WEST

NAME OF WATER UNDERTAKER: WESSEX WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98? Yes		
2. IS ONE NEEDED IN THE AGENCY'S VIEW? Yes		
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	No
	Recommissioning of abandoned sources	Schemes to recommission two sources being appraised
	Engineering works	Reinforcement of spine main to remove constraints on water transfers and reduce leakage from it. Company appraisal of various other schemes to enhance resource flexibility continues.
	Leakage reduction	Reinforcement of spine main to remove constraints on water transfers and reduce leakage from it. Company appraisal of various other schemes to enhance resource flexibility continues.
	Inter-company bulk transfers	11.3 MI/d from Bristol Water, plus contingency being made with Bournemouth & W. Hampshire Water to permit inter-company transfers this summer in the event of dry conditions. Discussions are also taking place with SAW and the Agency over a possible winter increase in the Wimbleball licence in time for next winter.
	Supply balancing and use of alternative sources	Use of pumped storage augmentation is being maximised and reservoir storage is now reasonably healthy. Reintroduction of river and raw water storage sources close to Bath will provide additional resource flexibility later in the year.
	Appeals for restraint in the use of water	A PR campaign is planned linking environmental benefits with wise use of water by customers
	Hosepipe bans	Not anticipated to be necessary
	Restrictions on non-essential use	As above
	Rota cuts or standpipes	As above
Other (please specify)	As above	

b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.	The wet February has already significantly improved the situation compared to the resource/demand balance under the worst case scenario provided by the Company. (See below). The Agency welcome the Company's commitment to mitigation measures as part of their drought management plan and will be continuing its dialogue with the Company to discuss the details of particular aspects of the Company's plan. The focus will be on progress with leakage reduction, detailed arrangements for implementing environmental impact mitigation schemes in low flow catchments, and the Company's operational arrangements for ensuring conservation of essential resources.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)	1976 minimum yields and demand scenario of 1995 +2%
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?	Wessex Water is willing to develop its plan to try and meet Agency concerns. A meeting will be arranged if necessary following Agency assessment of recently submitted information on particular aspects of the Company's plan..
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	Even with the worst case scenario groundwater levels are not expected to fall much below those experienced in 1990 and 1995 (and not to 1976 levels). Groundwater source reliable yields are unlikely to be affected and the Company's plans for mitigating their impacts in relevant "low flow" catchments have already been discussed with the Agency. (See comments in Sections 7, 8 and 9 below.)
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	The extent to which spray irrigation would be affected depends on the extent to which base flows respond to the recent wetter period and any further rainfall between now and April. If lower than average levels occur this summer, prescribed flow or similar licence conditions may be activated, though the number of irrigators affected is not predicted to be greater than for recent summers.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	If impacts of Wessex Water groundwater sources on flows in particular catchments become significant, its planned mitigation arrangements will be implemented. Catchments involved include the Bristol (Malmsbury) Avon, some winterbournes and Chalk streams of the Hampshire Avon (R.Bourne, Nine Mile River, R.Wylfe), Devils Brook, R.Piddle and R.Tarrant. The arrangements should ensure these rivers are no more vulnerable to risks of eutrophication, fish kills and reduced production in drought conditions than are other rivers.
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	The Agency expects the Company's mitigation arrangements to provide the necessary degree of environmental protection in the relevant catchments and the Agency will review if other sites exist where Agency contingency plans are needed for Drought Orders to secure effective protection of flora and fauna under drought conditions.

9. Please specify any other relevant information.

Mitigation schemes being considered by Wessex Water:

Bristol Avon - earlier mitigation pumping and possibility of additional stream support downstream of Malmsbury

River Piddle - completion of Briantspuddle stream support by May 1997 and re-appraisal of transfer of stream support from Piddlehinton to Alton Pancras.

River Tarrant - discussions with Bournemouth Water on voluntary summer reduction of Stubbhampton take

Wylve Valley - accelerate and enhance stream support proposals for R.Till and Chitterne Brooke and assess capacity for some stream support from Codford.

Other previously agreed measures include voluntary reduction of the take from the Briantspuddle and Cowbridge sources.

***THAMES REGION***

**Companies Included:**

- ***Thames Water***
- ***Three Valleys Water***
- ***North Surrey Water***
- ***Sutton & East Surrey Water***
- ***Mid Southern Water***

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: THAMES

NAME OF WATER UNDERTAKER: THAMES WATER UTILITIES LTD

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		Plan under discussion with Agency (see 3b)
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		Yes
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	No
	Recommissioning of abandoned sources	Under utilised sources (mainly London area) are being brought on-line
	Engineering works	As above
	Leakage reduction	The company advise us that this is key element of their plan (3b)
	Inter-company bulk transfers	Restriction of exports to other companies
	Supply balancing and use of alternative sources	Conjunctive use is already carried out by the company
	Appeals for restraint in the use of water	Ongoing development of current PR activity. Water efficiency package and offer of free Hippo bags through billing. Targeting key Province areas for water efficiency promotion during June.
	Hosepipe bans	Will be used if necessary but may be avoidable if alternative demand saving targets can be identified and met.
	Restrictions on non-essential use	Will be used if necessary but may be avoidable if alternative demand saving targets can be identified and met.
	Rota cuts or standpipes	No
Other (please specify)	Use of North London Artificial Recharge scheme and W. Berks Groundwater scheme (Agency), possibly desalination for non-potable use, development of new groundwater source in south London (temporary licence), redirecting Deephams effluent.	

<p>b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.</p>	<p>The Agency accepts that the Company is making increased efforts in leakage control, but remains concerned that the measurement of losses in the distribution system is significantly incomplete and will remain so for at least another year. The evidence of effectiveness in reducing the very high levels of leakage (40% of distribution input estimated in July 1996) across the Company as a whole is therefore not yet fully convincing. With regard to setting a contingency plan for 1997/98 the Company has agreed to provide a plan by the end of March to satisfy the Agency's requirements and concerns. Discussions are held with the Company at officer level on a weekly basis to review the situation and agree immediate actions. There are also discussions monthly at director level to address policy and broader strategy.</p>
<p>c) On what scenario(s) is the plan based (eg, % rainfall, historic events)</p>	<p>50%, 75% and 100% of average rainfall coupled with leakage performance.</p>
<p>4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?</p>	<p>See above  End of March 1997</p>
<p>5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.</p>	<p>At the present time the key areas of concern are to the east of the region (TWUL London, Three Valleys and Sutton &amp; East Surrey supply areas). However, groundwater levels are generally low across the region and we expect that to affect baseflows to rivers during the summer and autumn which, in turn, will affect surface water resources and, therefore, the main resource to TWUL London. The N London Artificial Recharge scheme and W Berks Groundwater scheme (Agency) are in a state of readiness for use as and when required.</p>
<p>6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.</p>	<p>Licences linked to flow conditions or public supply restrictions (on recent licences for recreational purposes) are likely to be affected given prolonged low flows. The key area of concern at this stage is the NE Area of Thames Region. Where licences do not have built in constraints, requests for voluntary reductions in use will be sought in the first instance. Section 57 restrictions will be considered if severe low flows develop.</p>
<p>7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate</p>	<p>Prolonged periods of reduced low flows causing particular concern for headwater streams across the region, particular low flow problems and environmental stress in those catchments draining the NE and SE areas of the Region, and the effects of prolonged low flows and late summer storms on the quality of the Lower Thames/Tideway. TWUL have improved the quality of effluent from key STWs (Mogden, Mole) and offered to consider mitigation of extreme low river flows where customer supplies would not be prejudiced.</p>
<p>8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.</p>	<p>Enhanced monitoring of sites and general surveillance across the region is currently being co-ordinated and regular reporting being established. Possible amelioration opportunities are being identified for discussion with water companies, where appropriate. Co-ordination with British Waterways, English Nature and others is also being established.</p>
<p>9. Please specify any other relevant information.</p>	<p>Companies meet regularly with the Agency through its Drought Management Group. A co-ordinated PR strategy is being developed with all companies leading to initial statements by the Agency and worst-affected companies in early spring and collective statement from Agency and all companies with ensuing actions into the summer, if required. All companies are contributing positively to this. There are also meetings at Director level with TWUL. Further co-ordination with other interest / user groups (such as British Waterways) is being developed.</p>

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: THAMES

NAME OF WATER UNDERTAKER: THREE VALLEYS WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			Yes. Has been in place since summer 1996
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			Yes
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction	Potential permits to suspend restrictions on licences, though limited to 0.5% of total distribution input	
	Recommissioning of abandoned sources	Ongoing since last winter	
	Engineering works	Works brought forward to secure vulnerable sources, Misbourne Valley, Netherwild - Bricket Wood, Hempstead & Stanstead zones. New booster to enhance security of isolated sources, Weston Hills, Stanstead and Hempstead.	
	Leakage reduction	The company state this is an ongoing high priority and that additional resources have been deployed during 1996 to meet new targets. However, because of the January freeze, levels of losses are expected to remain unchanged from those reported to OFWAT in 1996.	
	Inter-company bulk transfers	Existing arrangements from Grafham to continue	
	Supply balancing and use of alternative sources	Surface water use has been increased since autumn 1996 to allow vulnerable groundwater sources to be rested.	
	Appeals for restraint in the use of water	Media campaign commenced summer 1996. A progressive campaign developing on this has been prepared including: adverts on radio & in local papers, press releases, interviews, and water conservation leaflets. Expansion of sprinkler metering programme. Launch of Best Practice for Sports Turf Managers. Liaison with Local Authorities	
	Hosepipe bans	Plans are being prepared in case measures to balance supply/ demand prove inadequate (key decision point end April 1997).	
	Restrictions on non-essential use	Plans being prepared to follow hosepipe ban later in summer, if required, to balance supply and demand.	
	Rota cuts or standpipes	Not anticipated	

	Other (please specify)	Schools education programme. Liaison with local environmental groups. Contact with key customers and opinion formers.
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.	The company has put forward a comprehensive plan together with approximate timescales, triggers and/or key decision point. The groundwater situation in this area is currently at a similar status as at the end of the 1989/92 drought and is, therefore a major concern to the company and the Agency.	
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)	Historic minimum conditions (1988/92)	
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?		
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	At the present time the key areas of concern are to the east of the region (TWUL London, Three Valleys and Sutton & East Surrey supply areas). However, groundwater levels are generally low across the region and we expect that to affect baseflows to rivers during the summer and autumn which, in turn, will affect surface water resources and, therefore, the main resource to TWUL London. The N London Artificial Recharge scheme and W Berks Groundwater scheme ( <b>Agency</b> ) are in a state of readiness for use as and when required.	
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	Licences linked to flow conditions or public supply restrictions (on recent licences for recreational purposes) are likely to be affected given prolonged low flows. The key area of concern at this stage is the NE Area of Thames Region. Where licences do not have built in constraints, requests for voluntary reductions in use will be sought in the first instance. Section 57 restrictions will be considered if severe low flows develop.	
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	Prolonged periods of reduced low flows causing particular concern for headwater streams across the region, particular low flow problems and environmental stress in those catchments draining the NE and SE areas of the Region, and the effects of prolonged low flows and late summer storms on the quality of the Lower Thames/Tideway. TWUL have improved the quality of effluent from key STWs (Mogden, Mole) and offered to consider mitigation of extreme low river flows where customer supplies would not be prejudiced.	
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	Enhanced monitoring of sites and general surveillance across the region is currently being co-ordinated and regular reporting being established. Possible amelioration opportunities are being identified for discussion with water companies, where appropriate. Co-ordination with British Waterways, English Nature and others is also being established.	
9. Please specify any other relevant information.	Companies meet regularly with the Agency through its Drought Management Group. A co-ordinated PR strategy is being developed with all companies leading to initial statements by the Agency and worst-affected companies in early spring and collective statement from Agency and all companies with ensuing actions into the summer, if required. All companies are contributing positively to this. There are also meetings at Director level with TWUL. Further co-ordination with other interest / user groups (such as British Waterways) is being developed.	



# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: THAMES

NAME OF WATER UNDERTAKER: NORTH SURREY WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98? Yes		
2. IS ONE NEEDED IN THE AGENCY'S VIEW? Yes		
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	None planned
	Recommissioning of abandoned sources	None available for recommissioning
	Engineering works	Investing improvements to Chertsey gravel wells. Enhancements to main SW supplies undertaken during 1996.
	Leakage reduction	Ongoing priority for the company supported by use of external contractors. On-track to meet OFWAT target. Significant reduction over past 6 months, partly offset by winter bursts. Priority 1 in the company's plan. Much of the company area is already subject to pressure control. Further pressure regulation planned as Priority 3.
	Inter-company bulk transfers	Existing supplies from TWUL Kempton, to Three Valleys and Mid-Southern.
	Supply balancing and use of alternative sources	Limited scope
	Appeals for restraint in the use of water	Appeals for restraint would be carried out through publicity and leaflets through all local media routes. Planned as Priority 2.
	Hosepipe bans	Priority 4. Sprinkler users are metered.
	Restrictions on non-essential use	Orders would be sought under the most serious conditions. Priority 5.
	Rota cuts or standpipes	None planned
Other (please specify)	The company has a regular local radio slot and publishes a regular customer newsletter which focuses on various current issues including wise use and garden watering. Plan to offer Hippo bags to customers. Ongoing PR campaign following winter publicity.	

<p>b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.</p>	<p>The company is dependent largely on supplies from the River Thames. In the unlikely event that flows in the Thames are severely affected by drought, the company may need to consider stepping up its plan. It is, however, sufficient at the current time.</p>
<p>c) On what scenario(s) is the plan based (eg, % rainfall, historic events)</p>	<p>Worst historic</p>
<p>4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?</p>	
<p>5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.</p>	<p>At the present time the key areas of concern are to the east of the region (TWUL London, Three Valleys and Sutton &amp; East Surrey supply areas). However, groundwater levels are generally low across the region and we expect that to affect baseflows to rivers during the summer and autumn which, in turn, will affect surface water resources and, therefore, the main resource to TWUL London. The N London Artificial Recharge scheme and W Berks Groundwater scheme (<b>Agency</b>) are in a state of readiness for use as and when required.</p>
<p>6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.</p>	<p>Licences linked to flow conditions or public supply restrictions (on recent licences for recreational purposes) are likely to be affected given prolonged low flows. The key area of concern at this stage is the NE Area of Thames Region. Where licences do not have built in constraints, requests for voluntary reductions in use will be sought in the first instance. Section 57 restrictions will be considered if severe low flows develop.</p>
<p>7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate</p>	<p>Prolonged periods of reduced low flows causing particular concern for headwater streams across the region, particular low flow problems and environmental stress in those catchments draining the NE and SE areas of the Region, and the effects of prolonged low flows and late summer storms on the quality of the Lower Thames/Tideway. TWUL have improved the quality of effluent from key STWs (Mogden, Mole) and offered to consider mitigation of extreme low river flows where customer supplies would not be prejudiced.</p>
<p>8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.</p>	<p>Enhanced monitoring of sites and general surveillance across the region is currently being co-ordinated and regular reporting being established. Possible amelioration opportunities are being identified for discussion with water companies, where appropriate. Co-ordination with British Waterways, English Nature and others is also being established.</p>
<p>9. Please specify any other relevant information.</p>	<p>Companies meet regularly with the Agency through its Drought Management Group. A co-ordinated PR strategy is being developed with all companies leading to initial statements by the Agency and worst-affected companies in early spring and collective statement from Agency and all companies with ensuing actions into the summer, if required. All companies are contributing positively to this. There are also meetings at Director level with TWUL. Further co-ordination with other interest / user groups (such as British Waterways) is being developed.</p>

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: THAMES

NAME OF WATER UNDERTAKER: SUTTON AND EAST SURREY WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			Yes
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			Yes
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction	Formal licence applications have been made to vary the Bough Beech licence for which Orders have been granted during recent winters and for new sources in the Sutton supply area. No Permits/Orders are envisaged necessary at this stage.	
	Recommissioning of abandoned sources	Non available	
	Engineering works	New boreholes and mains in the Sutton supply area subject to current licence application. Extension of telemetry and DMAs into Sutton area. Ongoing mains renewals.	
	Leakage reduction	The company already operate a comprehensive leakage control and pressure management policy in former East Surrey area. Pressure management is currently being extended into the Sutton area. Leakage levels have been halved over recent years.	
	Inter-company bulk transfers	Discussions ongoing with neighbouring companies.	
	Supply balancing and use of alternative sources	Ongoing. Further opportunities being discussed with Agency in conjunction with possible new/varied licences.	
	Appeals for restraint in the use of water	Plans to mount public awareness campaign in the near future and ongoing into summer.	
	Hosepipe bans	Anticipated ban on use of garden sprinklers from 1 April if abnormal weather continues. Hosepipe ban will be required if sprinkler bans do not suppress demand sufficiently.	
	Restrictions on non-essential use	None envisaged at this stage	
	Rota cuts or standpipes	None envisaged at this stage	
Other (please specify)			

b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.	Despite the company's excellent achievements in leakage control, groundwater levels are severely depleted and there is serious cause for concern for the forthcoming summer. The company's plan quite rightly includes early communication with its customers and the possible imposition of restrictions. Although the key problem is in the Sutton supply area, the company is planning actions across its supply areas. In the Agency's view, calls for further voluntary restraint and possible restrictions on non-essential use may be required in the event of a hot dry summer being followed by a dry autumn. The company has recognised this in its discussions with the Agency.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)	Groundwater forecasting (Agency) based on 60%, 75% and 100% average rainfall. Other plans based on company experience of worst groundwater conditions.
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?	
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	At the present time the key areas of concern are to the east of the region (TWUL London, Three Valleys and Sutton & East Surrey supply areas). However, groundwater levels are generally low across the region and we expect that to affect baseflows to rivers during the summer and autumn which, in turn, will affect surface water resources and, therefore, the main resource to TWUL London. The N London Artificial Recharge scheme and W Berks Groundwater scheme ( <b>Agency</b> ) are in a state of readiness for use as and when required.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	Licences linked to flow conditions or public supply restrictions (on recent licences for recreational purposes) are likely to be affected given prolonged low flows. The key area of concern at this stage is the NE Area of Thames Region. Where licences do not have built in constraints, requests for voluntary reductions in use will be sought in the first instance. Section 57 restrictions will be considered if severe low flows develop.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	Prolonged periods of reduced low flows causing particular concern for headwater streams across the region, particular low flow problems and environmental stress in those catchments draining the NE and SE areas of the Region, and the effects of prolonged low flows and late summer storms on the quality of the Lower Thames/Tideway. TWUL have improved the quality of effluent from key STWs (Mogden, Mole) and offered to consider mitigation of extreme low river flows where customer supplies would not be prejudiced.
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	Enhanced monitoring of sites and general surveillance across the region is currently being co-ordinated and regular reporting being established. Possible amelioration opportunities are being identified for discussion with water companies, where appropriate. Co-ordination with British Waterways, English Nature and others is also being established.
9. Please specify any other relevant information.	Companies meet regularly with the Agency through its Drought Management Group. A co-ordinated PR strategy is being developed with all companies leading to initial statements by the Agency and worst-affected companies in early spring and collective statement from Agency and all companies with ensuing actions into the summer, if required. All companies are contributing positively to this. There are also meetings at Director level with TWUL. Further co-ordination with other interest / user groups (such as British Waterways) is being developed.

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: THAMES

NAME OF WATER UNDERTAKER: MID SOUTHERN WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98? Yes		
2. IS ONE NEEDED IN THE AGENCY'S VIEW? Yes		
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	No
	Recommissioning of abandoned sources	No
	Engineering works	Yes. Ongoing includes refurbishment of boreholes, new boreholes and infrastructure enhancements from the new Bray SW source (1996). The company have allocated £1.9M to this, £1M already spent during winter 1996.
	Leakage reduction	Accounts for approximately 25% of the company's CAPEX. Target to 2001 is 14%. Key works over the last 12 months include the establishment of DMAs, telemetry and rezoning.
	Inter-company bulk transfers	Ongoing transfer from N Surrey Water
	Supply balancing and use of alternative sources	Company is already operated on this basis
	Appeals for restraint in the use of water	New water awareness scheme to encourage efficient use. The company has a policy of no formal restraints on use.
	Hosepipe bans	None anticipated
	Restrictions on non-essential use	None anticipated
	Rota cuts or standpipes	None anticipated
Other (please specify)	Water efficiency promotion includes the provision of money-off vouchers to purchase water efficient devices (particularly targeted at gardeners) and the promotion of WC flush reduction devices.	

b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.	At this stage, the company would appear to be in a reasonable resource position. Key stress points are likely to be groundwater sources in the southern part of the company distribution system. The company metering policy is being extended and targeted to key areas - the company offer a free meter package to all its customers and subsidised, low cost repairs of supply pipe leaks. In the unlikely event of flows in the Thames being severely restricted, the company would have to step up its plans. Otherwise its plans would appear to be sufficient at this stage.
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)	Experience of 1988 - 1992 and 1995 and 1996
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST a) Is the company intending to do one? b) When?	
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.	At the present time the key areas of concern are to the east of the region (TWUL London, Three Valleys and Sutton & East Surrey supply areas). However, groundwater levels are generally low across the region and we expect that to affect baseflows to rivers during the summer and autumn which, in turn, will affect surface water resources and, therefore, the main resource to TWUL London. The N London Artificial Recharge scheme and W Berks Groundwater scheme ( <b>Agency</b> ) are in a state of readiness for use as and when required.
6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	Licences linked to flow conditions or public supply restrictions (on recent licences for recreational purposes) are likely to be affected given prolonged low flows. The key area of concern at this stage is the NE Area of Thames Region. Where licences do not have built in constraints, requests for voluntary reductions in use will be sought in the first instance. Section 57 restrictions will be considered if severe low flows develop.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	Prolonged periods of reduced low flows causing particular concern for headwater streams across the region, particular low flow problems and environmental stress in those catchments draining the NE and SE areas of the Region, and the effects of prolonged low flows and late summer storms on the quality of the Lower Thames/Tideway. TWUL have improved the quality of effluent from key STWs (Mogden, Mole) and offered to consider mitigation of extreme low river flows where customer supplies would not be prejudiced.
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	Enhanced monitoring of sites and general surveillance across the region is currently being co-ordinated and regular reporting being established. Possible amelioration opportunities are being identified for discussion with water companies, where appropriate. Co-ordination with British Waterways, English Nature and others is also being established.
9. Please specify any other relevant information.	Companies meet regularly with the Agency through its Drought Management Group. A co-ordinated PR strategy is being developed with all companies leading to initial statements by the Agency and worst-affected companies in early spring and collective statement from Agency and all companies with ensuing actions into the summer, if required. All companies are contributing positively to this. There are also meetings at Director level with TWUL. Further co-ordination with other interest / user groups (such as British Waterways) is being developed.

***WELSH REGION***

***Companies Included:***

- ***Welsh Water***
- ***Dee Valley Water***

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: WELSH

NAME OF WATER UNDERTAKER: WELSH WATER

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?		Not specifically
2. IS ONE NEEDED IN THE AGENCY'S VIEW?		No
3. IF A PLAN EXISTS:		
a) does it rely on:	New Drought Orders/Permits for additional abstraction	
	Recommissioning of abandoned sources	
	Engineering works	
	Leakage reduction	
	Inter-company bulk transfers	
	Supply balancing and use of alternative sources	
	Appeals for restraint in the use of water	
	Hosepipe bans	
	Restrictions on non-essential use	
	Rota cuts or standpipes	
	Other (please specify)	
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.		
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)		
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST		
a) Is the company intending to do one?		
b) When?		
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		Below average groundwater levels in all aquifers. Some recovery expected. No difficulties anticipated for public water supplies, but some small private supplies may become unreliable.



6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	Most irrigation is from surface waters -primarily flashy rivers which respond rapidly to rainfall. It is impossible to predict at this stage what the likelihood of restrictions might be.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	If there is a prolonged hot, dry spell then dissolved oxygen problems and algal blooms might occur in the lower reaches of some rivers.
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	Through the mechanism of the six Section 20 Agreements with Dwr Cymru, the Agency is able to make releases for the benefit of the environment and water users. The need for these releases is kept under constant review through regular liaison.
9. Please specify any other relevant information.	

# **DROUGHT CONTINGENCY PLANS TO SAFEGUARD PUBLIC WATER SUPPLIES 1997/98**

REGION: WELSH

NAME OF WATER UNDERTAKER: DEE VALLEY WATER (formerly Chester Waterworks & Wrexham & East Denbighshire Water Company)

1. DOES A DROUGHT CONTINGENCY PLAN EXIST FOR 1997/98?			Not specifically
2. IS ONE NEEDED IN THE AGENCY'S VIEW?			No
3. IF A PLAN EXISTS:			
a) does it rely on:	New Drought Orders/Permits for additional abstraction		
	Recommissioning of abandoned sources		
	Engineering works		
	Leakage reduction		
	Inter-company bulk transfers		
	Supply balancing and use of alternative sources		
	Appeals for restraint in the use of water		
	Hosepipe bans		
	Restrictions on non-essential use		
	Rota cuts or standpipes		
Other (please specify)			
b) Please give a critical appraisal of the Plan, highlighting in particular any matters on which, in the Agency's view, Companies would need to take timely action in order to avert difficulties if dry weather continues. Does the Plan adequately cover the possibility of another hot dry summer (eg 1995) and of this being followed by a dry autumn and early winter. If not, please specify what further measures would be needed to meet such an event.			
c) On what scenario(s) is the plan based (eg, % rainfall, historic events)			
4. IF A PLAN IS NEEDED AND ONE DOES NOT EXIST			
a) Is the company intending to do one?			
b) When?			
5. Please provide any additional comments on the state and prospects for groundwater and any specific measures proposed or needed to be taken in respect of groundwater supplies.		Below average groundwater levels in all aquifers. Some recovery expected. No difficulties anticipated for public water supplies, but some small private supplies may become unreliable.	

6. Please provide an outlook for spray irrigation based on the predicted resource availability, the likelihood of restrictions and the areas most likely to be affected.	Most irrigation is from surface waters -primarily flashy rivers which respond rapidly to rainfall. It is impossible to predict at this stage what the likelihood of restrictions might be.
7. Please give details of anticipated environmental problems should dry weather continue into the autumn, giving examples of specific sites and named locations where appropriate	If there is a prolonged hot, dry spell then dissolved oxygen problems and algal blooms might occur in the lower reaches of some rivers.
8. Please give details of actions intended to be taken by the Agency to protect the environment and/or increase the security of supplies.	Through the mechanism of the six Section 20 Agreements with Dwr Cymru, the Agency is able to make releases for the benefit of the environment and water users. The need for these releases is kept under constant review through regular liaison.
9. Please specify any other relevant information.	