Hydrological data UK

1993 YEARBOOK

INSTITUTE OF HYDROLOGY • BRITISH GEOLOGICAL SURVEY

HYDROLOGICAL DATA
UNITED KINGDOM

1993
YEARBOOK

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The acquisition, archiving and validation of the bulk of the hydrological data featured in this Yearbook is undertaken as part of the National Water Archive (NWA) project at the Institute of Hydrology. Under the leadership of M L Lees (NWA Manager) a team of regional representatives is responsible for liaison with the measuring authorities (see page 170). In addition to the Project Leader and editorial staff, this team currently includes:-

A R Black, J D Dixon, I G Littlewood, S C Loader, D G Morris and F J Sanderson.

The style and contents of the Yearbook, and the scope of the data retrieval service which complements it, reflect a decade of archive system development supervised by D G Morris. Recent enhancements to the retrieval and data presentation facilities have largely been undertaken by O Swain and R W Flavin.

The British Geological Survey is responsible for the acquisition and archiving of the featured groundwater level data. The Groundwater Level Archive is managed by A McKenzie, data acquisition and measuring authority liaison duties are undertaken by P Doorgakant.

Mrs S Black was responsible for the preparation of the text and supervises the sale and distribution of the Hydrological data UK publications through the National Water Archive Office at the Institute of Hydrology.

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The materials used in the production of this volume are made from the pulp of softwood trees in managed Scandinavian forests, in which every tree cut down is replaced by at least one more, thus replenishing the Earth's resources.

Cover: Receding flood waters, Marshall Place, Perth, 18/1/93.
Photograph: Andrew Black

HYDROLOGICAL DATA UNITED KINGDOM

1993 YEARBOOK

An account of
rainfall, river flows, groundwater
levels and river water quality
January to December 1993

Institute of Hydrology **British Geological Survey**

FOREWORD

The capricious climatic conditions which have typified much of the recent past were again evident in 1993 which, after a very dry interlude in the late winter, saw the continuation of a protracted recovery from the drought conditions which afflicted much of the country over the 1989-92 period. By the year-end, the water resources outlook was very healthy and the focus of hydrological concern had shifted to the widespread threat of flooding. The ability of the river network to harmlessly discharge large volumes of runoff was well demonstrated in 1993 but several notable flood events served to underline how man's activities can, as with drought, exacerbate the impact of unusual weather conditions.

In developing improved water management policies and procedures to address the problems caused by too little or too much water - and to give practical expression to sustainable water resources development strategies - hydrometric data have an essential role to play. A principal function of the Hydrological data UK series is to document and disseminate information relating to contemporary hydrological conditions and, thereby, to stimulate public and scientific interest in the associated issues. The Yearbooks also provide a gateway to the extensive data holdings which together constitute the National Water Archive.

The Hydrological data UK series of Yearbooks and reports was launched in 1985 as a joint venture by the Institute of Hydrology (IH) and the British Geological Survey (BGS); both organisations are component bodies of the Natural Environment Research Council (NERC). Such a collaborative enterprise arose naturally from the close liaison maintained between those responsible for the management of the National River Flow Archive at IH, and their counterparts at BGS concerned with the National Groundwater Level Archive.

The work of the national River Flow and Groundwater Level Archives is overseen by a steering committee which includes representatives of Government departments, the National Rivers Authority and the water industry from England, Wales, Scotland and Northern Ireland.

A.G.P. Debney
Acting Director, Institute of Hydrology


National Rivers Authority region or River Purification Board boundary
Hydrometric area number and boundary
HIGHLAND R.P.B.
NORTH EAST R.P.B.
TAY R.P.B.
FORTH R.P.B.
CLYDE R.P.B.
TWEED R.P.B.
SOLWAY R.P.B.
NORTHERN IRELAND
NORTHUMBRIA/ YORKSHIRE
NORTH WEST
SEVERN-TRENT
WELSH
ANGLIAN
THAMES
SOUTH WESTERN
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INTRODUCTION

The 1993 Yearbook is the thirteenth Yearbook in the Hydrological data UK series and the third volume in the third five-year publication cycle (1991–95). It is the fifth edition since responsibility for the publication of data, upon which assessments of water resources in England and Wales may be made, was transferred (under the Water Act 1989) from the Department of the Environment to the National Rivers Authority.

The 1993 Yearbook represents the thirty-fourth edition in the series of surface water publications which began with the 1935–36 Surface Water Yearbook. As a result of the incorporation of groundwater data in the Yearbook, this volume is also the eighteenth edition in the series of groundwater data publications which began with the 1964–66 Groundwater Yearbook.

Apart from summary information, surface water and groundwater data on a national basis were published separately prior to the introduction of the Hydrological data UK series. In common with the earlier editions, the 1993 Yearbook brings together the principal data sets relating to river flow, groundwater levels and areal rainfall throughout the United Kingdom. Also tabulated are water quality data for a selection of monitoring sites throughout the UK; such data first appeared in the 1986 Yearbook. A comprehensive hydrological review of the year is included together with a feature article documenting the remarkable flood which occurred in the River Tay basin during mid-January.

An outline description is given of the national River Flow and Groundwater Level Archives and the data retrieval facilities which complement them. Introductory details are also provided of the range of facilities and datasets available through the National Water Archive – one of the Natural Environment Research Council's (NERC) Designated Data Centres.

Publication of river flow data for Great Britain started with the series of Surface Water Yearbooks. The first edition, which was published in 1938 for the water-year (October-September) 1935–36, also included selected data for the previous fifteen years; the edition for 1936–37 followed in 1939. Both these publications were prepared under the direction of the Inland Water Survey Committee. Assisted by the Scottish Office, the Committee continued to publish hydrological data after the Second World War; the Yearbook for the period 1937–45 was published as a single volume in 1952. Due to economic stringency, the Survey was suspended in 1952 for a period of two years but was then re-formed as the Surface Water Survey Centre of Great Britain. A Yearbook covering the years 1945–53 was published in 1955.

In 1964 the Survey was transferred to the Water Resources Board where it remained until the Board was disbanded in 1974. The work of collecting and publishing surface water information in England and Wales then passed to the newly created Water Data Unit of the Department of the Environment (DoE). Yearbooks were published jointly each year by these organisations and the Scottish Office for the water-years 1953–54 to 1965–66; thereafter information for the five calendar years 1966 to 1970 was published in one volume in 1974. Following editions were renamed 'Surface Water: United Kingdom' to mark the inclusion of the first records from Northern Ireland and in recognition of the move away from single year volumes. Two volumes of Surface Water: United Kingdom, covering the years 1971–73 and 1974–76 were published jointly by the Water Data Unit, the Scottish Development Department (now – The Scottish Office Environment Department) and the Department of the Environment for Northern Ireland.

Following the transfer of the Surface Water Archive to the Natural Environment Research Council in 1982, the final edition of Surface Water: United Kingdom, for the years 1977–80, was prepared by the Institute of Hydrology at the request of the Water Directorate of the Department of the Environment, and published in 1983.

The 1981 and 1982 Yearbooks were prepared concurrently and were, in 1985, the first Yearbooks published by the Natural Environment Research Council. Further Yearbooks – the editions for 1983 to 1991 – were published over the following seven years.

A compilation of 'Groundwater levels in England during 1963', which was produced by the Geological Survey of Great Britain (prior to its incorporation into the Institute of Geological Sciences), was the precursor to the publication of groundwater level data on a national basis. The more formal Groundwater Yearbook series was instigated by the Water Resources Board which published the inaugural edition and a further volume for 1967, both covering England and Wales. In 1975 a third Yearbook, for 1968–70, was published by the Water Data Unit. The Groundwater: United Kingdom series was introduced in 1978 with the production of the 1971–73 volume, also published by the Water Data Unit.

Following the transfer of the Groundwater Archive to the Institute of Geological Sciences (now the British Geological Survey), the second edition of Groundwater: United Kingdom, covering the period 1974–80, was prepared by the Institute of Hydrology at the request of the Water Directorate of the Department of the Environment. Subsequently, groundwater level data have been included in the Hydrological data UK publications.

SCOPE AND SOURCES OF INFORMATION

The format of the 1993 Yearbook follows that of the recent editions in the Hydrological data UK series. The Hydrological Review examines rainfall, evaporation, soil moisture, river flow and groundwater conditions throughout the year. The following data sections provide detailed coverage for the featured year, and for comparison purposes, period of record reference statistics are also given.

Emphasis is placed upon ready access to basic data both within the Yearbook and through the complementary data retrieval facilities.

A companion publication to the individual Yearbooks - the '*Hydrometric Register and Statistics*' volume - provides a comprehensive reference source for hydrometric information which does not change materially from year to year; the second edition (for 1986-90) (see page 172) was published in 1992.

The Yearbook contents have been abstracted primarily from the National River Flow and Groundwater Level Archives. Water quality data have been provided from the Harmonised Monitoring Archive which is currently maintained by the Environmental Protection Statistics Division of the Department of the Environment (DoE). Similar data from Northern Ireland have been provided by the Environmental Service of the Department of the Environment (NI).

The National Rivers Authority (NRA) is responsible for the initial collection and processing of most river flow and groundwater level data in England and Wales. Following the 1989 Water Act, the new Water Service PLCs assumed responsibility for a small number of important monitoring sites for which historical - and a few contemporary - data sets are held on the River Flow and Groundwater Level Archives. The seven River Purification Boards (RPBs) are responsible for most hydrometric data acquisition in Scotland. In Northern Ireland responsibility is shared between the Departments of Environment and Agriculture. These organisations also supplied valuable material relating to significant hydrological events during 1993.

The majority of the rainfall data, and some of the material incorporated in the Hydrological Review, has been provided by the Meteorological Office. For historical comparisons of the rainfall over England and Wales, a data set based upon the homogeneous series derived by the Climatic Research Unit of the University of East Anglia has been used.

Most of the rainfall data published in the Hydrological data UK series are in the form of monthly rainfall totals for catchment areas (see page 36). For details of pre 1992 monthly and annual rainfalls associated with individual raingauge sites reference should be made to the 'RAINFALL' series published regularly by the Met. Office. Brief details of rainfall and climatological data sets published by the Meteorological Office, are given below.

The Natural Environment Research Council acknowledges and extends its appreciation to all who have assisted in the collection of information for this publication.

Rainfall and Climatological Data

The Meteorological Office maintains the national archives of rainfall and climatological data at its headquarters at Bracknell. Specific items, such as daily and hourly rainfalls from gauges and radar (from the PARAGON system) may be obtained by application to Met. Office Commercial Services Rainfall Section (address opposite, Tel: 01344 856849). Summaries of the data are also published regularly and a list of current titles is given below:

1. *Monthly Weather Report*
   This is published monthly and contains climatological means for more than 550 UK observing stations; in addition an introduction and annual summary are produced yearly. The publication should be available about a year after the month concerned, costs around £3 and is available only from Her Majesty's Stationery Office (HMSO) or their stockists.
2. *MORECS (Meteorological Office Rainfall and Evaporation Calculation System).*
   This is a weekly issue of maps and tables of evapotranspiration, soil moisture deficit, effective rainfall, stress and the hydrometeorological variables used to calculate them. The data are used to provide values for 40 km squares and various sets of maps and tables are available according to customer requirements.

Further information about these and other publications may be obtained from:

Meteorological Office, Commercial Manager,
Commercial Services, Johnson House,
London Road, Bracknell,
Berks RG12 2SY

Tel: (01344) 856207
Fax: (01344) 854906

HYDROLOGICAL REVIEW OF 1993

Summary

The drought conditions which characterised much of eastern and southern Britain until the summer of 1992 moderated rapidly in the latter half of the year and the hydrological transformation continued into 1993. The persistence of rain-bearing frontal systems across southern Britain soon allayed any lingering concern for the water resources outlook and, by the autumn, the focus of hydrological concern had shifted decisively from the long term rainfall deficiency to the widespread threat of flooding. Over the latter half of the year the recovery in runoff and aquifer recharge rates was remarkable. One important consequence was a substantial headwater extension of the river network. This was especially noticeable in eastern and southern England where, a year previously, many springs and winterbournes were dry and the associated loss of amenity and aquatic habitat was considerable.

The overall improvement in water resources from mid-1992 was exceptional but uneven. In southern Britain the late winter and early spring of 1993 rekindled fears of a further drought episode - the rainfall over England and Wales for February and March was the second lowest for 200 years - but a wet April heralded a very protracted wet phase which extended well into 1994 in many areas. The autumn was especially wet in much of southern and eastern Britain. By contrast a dry interlude in western Scotland, which began in August and continued into the early winter, brought an end to an exceptionally wet phase which - in the west - could be traced back to 1988. In 1993 some Highland catchments registered their driest August-to-November period in twenty years and isolated examples of drought stress could be identified - for instance the very limited late-autumn storage in a number of upland reservoirs restricted hydro-power generation and new period-of-record monthly minimum flows were established on an appreciable proportion of Highland rivers.

Regional rainfall totals for 1993 were mostly a little above the long term average and, significantly, spatial contrasts were much less marked than in the preceding five years. Overall, a distinct moderation in the normal north-west/south-east rainfall gradient across Great Britain could be recognised. The relative wetness of eastern and southern Britain was the principal reason for the rapid recovery of groundwater levels in the major aquifers. An important contributory factor was the relatively modest temperatures, certainly by comparison with the extremely warm years of 1989 and 1990. Temperatures for 1993 as a whole were close to the average, but still continued a sequence with above average temperature stretching back to 1987. Nonetheless, potential evaporation losses were up to 200 mm less than in 1990 in some areas and soils were generally much more moist than in the summers of 1988-1991. Soil moisture deficits (SMDs) developed only sluggishly during 1993 and most were rapidly eliminated in the early autumn heralding one of the longest aquifer recharge seasons in modern times. By year-end, water-tables were close to seasonal maxima over wide areas, only 18 months after overall groundwater resources had been exceptionally depressed - on the evidence of a limited network of long term monitoring sites, groundwater resources in the summer of 1992 had been the lowest since at least the turn of the century.

Very wet conditions characterised January and December 1993 and triggered several exceptional flood events. In Scotland the January flooding added to the cluster of notable events recorded over the 1988-92 period which has substantially increased the expected frequency of damaging spates in some regions. An unusual feature of the December flooding in parts of southern England was the role played by the remarkably high groundwater levels which resulted in some Chalk wells and boreholes overflowing around the end of the year. Floodplain inundation was also widespread following heavy rainfall in May and October; more localised flooding resulted from a number of intense thunderstorms in the late summer and early autumn. Generally, however, the abundant rainfall from the spring was well distributed through time - an important factor in mitigating the threat of widespread flooding. The ability of the natural drainage network to effectively discharge substantial volumes of runoff was well demonstrated in 1993 and flooding was mostly less extensive than the rainfall figures might suggest.

Rainfall

The rainfall pattern throughout the United Kingdom relative to the 1961-90 average is shown in Figure 1; Figure 2 illustrates the actual rainfall totals in millimetres. Below average annual rainfall throughout much of north-western Britain contrasted with the wetness of the eastern seaboard and produced relatively subdued regional differences in precipitation totals. The range of the isohyets featured on Figure 2 is moderate, particularly when compared with the exaggerated ranges which have typified much of the recent past. Annual precipitation totals exceeded 3000 mm in parts of the Scottish Highlands but were less than 550 mm in a few low-lying districts adjacent to the Thames Estuary; Southend reported the only sub-500 mm

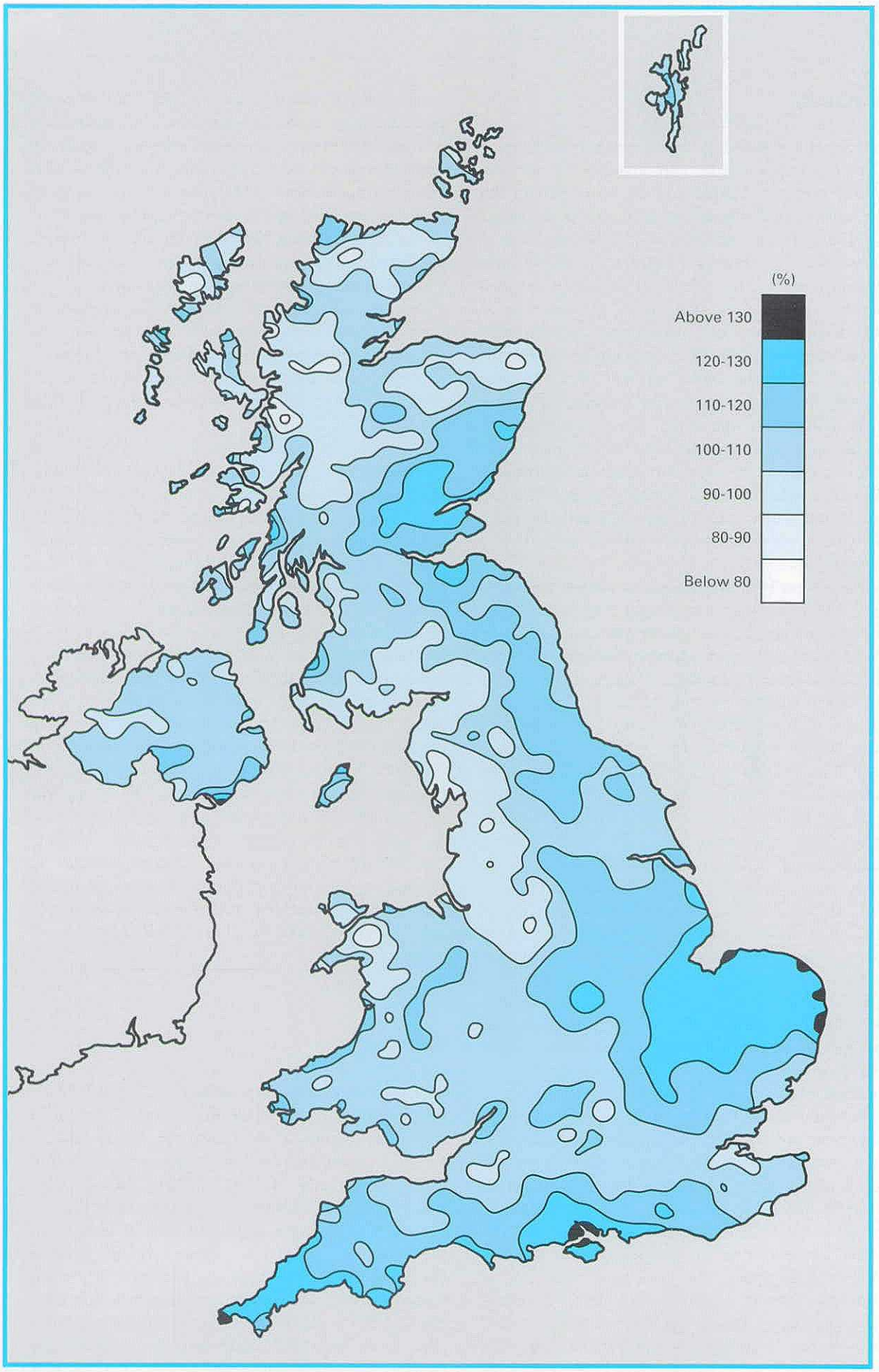


Figure 1 Annual rainfall in 1993 as a percentage of the 1961–90 average

Source: Meteorological Office

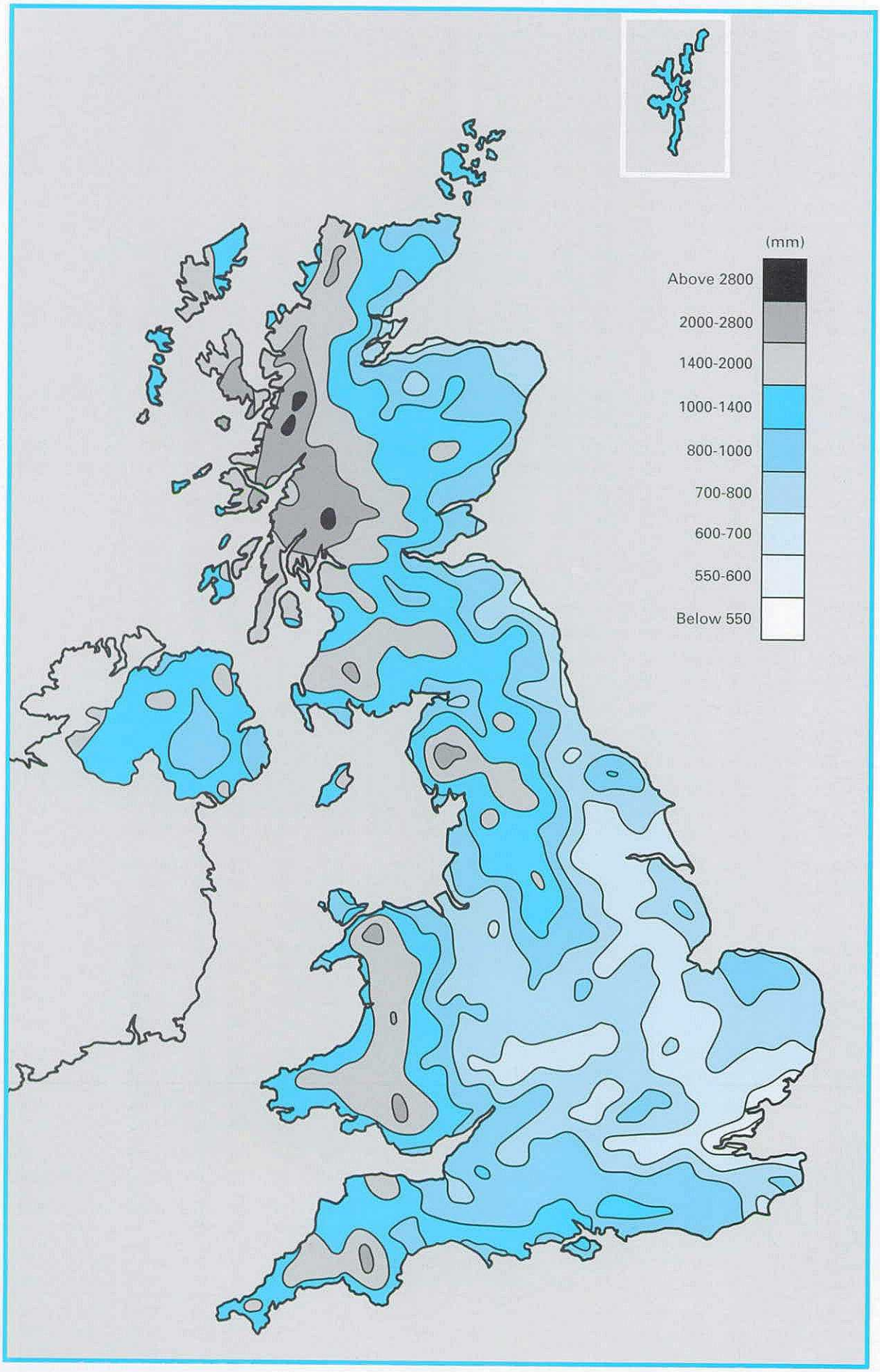


Figure 2 Annual rainfall in 1993

Source: Meteorological Office

TABLE 1 1993 RAINFALL IN MM AND AS A PERCENTAGE OF THE 1961-90 AVERAGE

1993														Year	Oct-Mar 1992/93	Apr-Sep 1993
United Kingdom	mm	177	33	59	102	100	68	94	62	101	96	74	190	1156	636	527
	%	161	43	66	157	139	94	129	69	102	87	67	168	107	104	112
England and Wales	mm	113	16	26	94	89	65	82	55	113	89	74	167	983	460	498
	%	128	25	36	157	139	100	132	72	147	105	82	178	110	93	123
Scotland	mm	307	66	122	114	115	72	113	75	76	118	76	234	1488	989	565
	%	203	65	98	150	134	84	120	64	54	76	50	155	104	118	94
Northern Ireland	mm	142	31	67	125	137	76	108	68	108	40	60	196	1158	544	622
	%	128	40	76	195	193	107	161	75	110	35	58	188	109	91	135
North West (NRA)	mm	162	18	38	123	128	57	109	80	87	51	65	247	1165	629	584
	%	134	23	40	173	171	70	128	75	76	40	53	199	97	94	109
Northumbria (NRA)	mm	108	16	25	123	119	39	59	77	109	91	63	136	965	401	526
	%	129	27	36	220	192	65	91	95	149	120	73	168	113	88	132
Severn-Trent (NRA)	mm	82	9	16	79	80	72	79	43	96	74	67	139	836	352	449
	%	117	17	26	144	136	122	149	64	150	116	94	181	111	89	126
Yorkshire (NRA)	mm	91	19	15	102	83	47	67	78	132	62	63	136	895	375	509
	%	115	33	22	173	138	78	114	105	194	85	79	164	109	85	134
Anglian (NRA)	mm	57	17	17	71	53	49	69	45	105	90	70	85	728	288	392
	%	114	46	36	154	110	96	141	82	214	176	121	155	122	97	132
Thames (NRA)	mm	86	7	24	84	61	56	55	33	103	111	47	105	772	365	392
	%	134	16	43	168	109	102	112	57	175	179	72	150	112	101	120
Southern (NRA)	mm	95	9	30	90	57	53	62	37	123	134	63	154	907	437	422
	%	119	17	48	170	106	98	129	65	178	168	74	188	116	98	126
Wessex (NRA)	mm	119	9	40	83	61	69	75	36	120	122	63	167	964	458	444
	%	137	14	57	157	100	121	144	55	167	154	76	180	115	96	123
South West (NRA)	mm	171	22	33	98	131	108	127	39	168	119	107	263	1386	660	671
	%	124	22	33	142	182	157	184	46	181	103	86	189	118	92	147
Welsh (NRA)	mm	194	24	35	113	133	98	111	75	118	81	113	275	1370	714	648
	%	136	25	33	141	162	124	144	74	103	59	80	180	104	92	121
Highland R.P.B.	mm	395	120	154	85	95	83	143	85	52	138	67	275	1692	1343	543
	%	210	94	95	93	103	85	135	67	30	70	33	140	96	125	79
North East R.P.B.	mm	157	35	54	69	111	59	82	70	84	170	44	115	1050	527	475
	%	159	54	69	115	161	89	112	80	97	175	44	124	108	99	107
Tay R.P.B.	mm	343	27	116	134	129	58	90	58	103	126	77	175	1436	832	572
	%	238	28	106	216	155	79	117	62	90	97	64	138	117	115	114
Forth R.P.B.	mm	261	19	92	111	124	72	76	51	80	107	73	189	1255	675	517
	%	221	24	98	188	168	104	101	54	73	93	65	172	113	107	107
Clyde R.P.B.	mm	351	70	163	159	119	77	138	89	75	66	114	306	1727	1137	657
	%	186	59	111	189	131	83	127	66	42	34	63	171	102	113	95
Tweed R.P.B.	mm	161	16	43	124	134	62	55	53	92	135	55	176	1106	514	520
	%	161	24	54	218	189	95	75	60	103	142	59	189	114	98	117
Solway R.P.B.	mm	217	29	106	165	147	72	101	65	102	54	97	269	1424	804	652
	%	139	29	91	214	173	86	112	55	71	34	67	182	100	98	109
Western Isles, Orkney and Shetland	mm	250	100	118	91	52	96	110	76	45	100	98	192	1328	958	470
	%	198	119	117	147	88	157	157	88	38	75	74	150	114	136	103

Note: In 1993, the Northumbria and Yorkshire and South-West and Wessex regions of the National Rivers Authority were amalgamated.

annual total in the UK. However, the area enclosed by the 600 mm isohyet for 1993 was very restricted and provides a clear contrast with 1989, 1990 and 1991 when most of the English lowlands was embraced.

In percentage terms, the wettest localities were predominantly coastal; a number of widely distributed pockets registered annual rainfall totals more than 25% above the 1961–90 mean and a few districts, for instance on the Isle of Wight, reported their wettest year since 1960. Of greater hydrological significance was the substantial proportion of the eastern lowlands of Scotland, East Anglia and southern England where rainfall exceeded 115% of the average. In southern Britain the largest positive anomalies were broadly coincident with the major aquifer outcrop areas (see page 147) – a feature of 1992 also. Generally, the lowest percentage annual rainfalls for 1993 were associated with the wettest regions. Rainfall over much of the Scottish Highlands, the Lake District and the mountains of North Wales fell short of the average by an appreciable margin. For example at Achnasheen (Highland Region), where January was exceptionally wet, the annual total was 84% of the long term average.

A breakdown of the annual, half-yearly and monthly actual and percentage rainfall totals in 1993 is given in Table 1 for the major administrative divisions in the water industry; the original 10 regions of the National Rivers Authority (NRA) have been retained to maintain consistency with earlier Yearbooks and allow better spatial differentiation. On a nationwide basis, the 1993 rainfall total was around seven per cent above the 1961–90 average with England and Wales, Scotland and Northern Ireland each modestly exceeding the average. The 985 mm total for England and Wales was the highest since 1986 and ranks sixth wettest over the last 25 years. Year-on-year variability in rainfall amounts over the last decade has been considerable but, overall, the 1984–93 average is very close to, if marginally above, the long term mean. Scotland provides a very different perspective. Although the annual rainfall was again appreciably above average, 1993 was the driest year since 1987 and ranks only fourth wettest since 1978. Rainfall over this 15-year period is approaching 20% above that for the preceding record in a series from 1869 – a remarkable increase over such an extended period. Long term rainfall accumulations for Scotland, up to the summer of 1993, are unprecedented over a range of timespans. For example, five of the wettest ten years on record have been registered since 1980 and the six-year total for the period ending with 1993 substantially exceeds any 72-month accumulation for the pre-1988 record.

Temporal variations in rainfall through the year were more significant than spatial variations in 1993. Table 2 lists regional accumulated rainfall totals over a range of timeframes – with estimates of the corresponding return periods. A measure of the remarkable contrast in weather patterns during and following the recent drought may be gauged by comparing the percentage rainfall – and associated return periods – in columns four and five. For the Anglian region, rainfall over the latter half of the drought and during the post-summary 1992 recovery both have return periods in excess of 100 years. Within 1993 the most compelling regional contrasts were over the late summer and autumn.

Following a very wet January, persistent anticyclonic conditions resulted in notably low rainfall totals in February and March. The two-month rainfall total was the lowest on record for many English catchments and for some, including the Trent, a new two-month minimum (for any start month) was established. Rain-bearing frontal systems began to penetrate the eastern lowlands in late March and a sequence of vigorous depressions produced very wet conditions in most regions through into the late summer. April and May were especially wet with some areas registering almost ten times the combined rainfall of the preceding two months. A number of catchments in northern England followed their driest February/March in twenty years with the wettest April/May for more than fifty. Rainfall accumulations over the four months to July were also outstanding in some regions. Northern Ireland recorded its highest April-July rainfall total this century and many catchments in the South-West and South Wales exceeded their previous highest by a very wide margin – albeit in records of mostly less than 30 years. Following a respite in August, when lengthy sequences of dry days were reported in southern England, a westerly airflow again became entrenched carrying an unremitting series of active frontal systems across the UK.

The September-December period was the wettest for nearly 30 years in large parts of the English lowlands, with the exception of 1992 in a few central southern areas. Many southern and East Anglian catchments registered record rainfall accumulations over the last four months of the year with totals typically 40–70% above average. More notably, the Anglian region as a whole recorded its wettest four-month sequence for at least 15 years and, very unusually, registered higher August-November rainfall than western Scotland; many western Highland catchments experienced their driest such period since 1973, recording only around half the average rainfall, a very notable contrast with the totals which have typified the recent past.

The autumn storms produced widespread falls in excess of 30 mm on a number of occasions. From a hydrological viewpoint, the most significant individual storm was that of the 11/12th October which produced two-day totals exceeding 50 mm in a large

TABLE 2 NATIONAL AND REGIONAL RAINFALL ACCUMULATIONS FOR SELECTED DURATIONS WITH ESTIMATES OF RETURN PERIODS

		Jul 92-Jan 93	Est R.P. (yrs)	Apr-Dec 93	Est. R.P. (yrs)	Aug-Nov 93	Est R.P. (yrs)	Jul 92-Dec 93	Est. R.P. (yrs)	Mar 90-Jun 92	Est. R.P. (yrs)
England and Wales	mm	722		828		331		1592		1693	
	%LTA	126	10-20	123	10-20	101	2-5	115	10-20	82	40-60
NRA REGIONS											
North West	mm	913		947		283		1916		2464	
	%LTA	114	2-5	104	2-5	60	25-40	102	2-5	90	5-10
Northumbria	mm	617		816		340		1474		1762	
	%LTA	113	2-5	128	15-25	108	2-5	112	5-10	90	5-10
Severn-Trent	mm	609		729		280		1363		1438	
	%LTA	131	15-25	128	15-25	105	2-5	119	10-20	83	25-40
Yorkshire	mm	616		770		335		1420		1533	
	%LTA	119	5-10	125	10-20	114	2-5	113	5-10	81	40-60
Anglian	mm	512		637		310		1183		1065	
	%LTA	140	40-60	138	60-90	146	20-35	130	110-150	77	140-180
Thames	mm	612		655		294		1298		1218	
	%LTA	143	40-60	125	10-15	120	2-5	123	20-35	76	80-120
Southern	mm	647		773		357		1459		1394	
	%LTA	129	10-20	133	20-35	123	5-10	122	15-25	78	50-80
Wessex	mm	687		796		341		1532		1507	
	%LTA	129	10-15	129	15-25	114	2-5	119	10-20	79	50-80
South West	mm	955		1160		433		2170		2176	
	%LTA	125	5-15	139	60-90	104	2-5	121	15-25	82	30-45
Welsh	mm	1084		1117		387		2260		2565	
	%LTA	125	10-15	116	5-10	78	5-10	111	5-10	86	10-20
Scotland	mm	1290		993		345		2471		3595	
	%LTA	134	90-130	94	2	61	70-100	110	5-10	111	10-20
RIVER PURIFICATION BOARDS											
Highland	mm	1633		1023		342		2930		4552	
	%LTA	137	110-150	80	10-20	49	>200	106	2-5	115	30-50
North East	mm	724		804		368		1617		2143	
	%LTA	114	5-10	110	2-5	99	2-5	107	2-5	97	2-5
Tay	mm	1127		950		364		2220		2844	
	%LTA	140	60-90	108	2-5	79	5-10	117	10-20	102	2-5
Forth	mm	987		883		311		1981		2607	
	%LTA	134	40-60	108	2-5	72	10-15	115	10-20	104	2-5
Tweed	mm	791		886		335		1736		2193	
	%LTA	125	10-20	122	10-20	92	2-5	116	10-20	99	2-5
Solway	mm	1140		1072		318		2347		3251	
	%LTA	119	5-10	102	2-5	56	40-60	106	2-5	101	2-5
Clyde	mm	1510		1143		344		2886		4409	
	%LTA	130	30-40	92	2-5	50	>200	108	2-5	116	30-50

R.P. = Return period. %LTA = Percentage of the 1961-90 average.

Return period assessments are based on tables provided by the Meteorological Office*. These assume a start in a specific month; return periods for a start in any month may be expected to be an order of magnitude less - for the longest durations the return period estimates converge. 'Wet' return periods are underlined.

The Tables reflect rainfall totals over the period 1911-70 only and the estimate assumes a sensibly stable climate.

*Tabony, R.C., 1977. The variability of long duration rainfall only over Great Britain, Scientific Paper No. 37, Meteorological Office (HMSO).

number of lowland districts. Coming at a time when soil moisture deficits had been largely eliminated, this storm, which included a number of very active convective cells, produced widespread surface flooding and triggered a brisk increase in aquifer recharge rates. The October storm is well represented in Table 3 which lists rain-day totals having associated return periods in excess of 100 years. Further details of other notable rainfall events are given in the Hydrological Diary on pages 21 to 24. Exceptional rain-day totals were rare towards year-end but a sequence of active frontal systems – echoing the weather conditions early in 1993 – produced significant rainfall throughout December which for most of southern Britain was the wettest month of the year – in some western districts the combined January and December rainfall accounted for almost 40% of the annual total.

Evaporation and Soil Moisture Deficits

Although temperatures were again above the long term mean, 1993 was significantly cooler than the preceding five years. Nonetheless, the last six years represent the warmest such sequence in the Central England Temperature Series which extends back to 1659.[1] Over this period, and especially in 1989 and 1990, Potential Evaporation (PE) rates have been exceptionally high; typically 20% above average and, at times, more typical of those which characterise western France.

1993 saw a return to more normal evaporative demands. PE losses were mostly above average but well within the normal range and commonly 150 mm less than the corresponding totals in the recent past. The relatively moist summer soils resulted in actual evaporation (AE) losses falling short of PE by a

TABLE 3 DAILY RAINFALLS IN 1993 WITH RETURN PERIODS EXCEEDING 100 YEARS

Date (Rain-day)	Station Number	Name	County	Grid Reference	Amount (mm)	Return Period*
29.03.93	662549	Doune	Highland	NS 313981	139.0	150
13.05.93	016991	Bywell	Northumberland	NZ 047616	76.0	110
25.05.93	260074	Uffington, Sower Hill	Oxfordshire	SU 303874	128.7	1320
08.06.93	380837	Culdrose RNAS Met.Office	Cornwall	SW 672257	122.7	720
10.06.93	114377	Thornton Resr.	Leicestershire	SK 473072	88.4E	190
10.06.93	238605	Thornwood S.Wks Auto Sta.	Esssex	TL 476048	96.2	360
10.06.93	534494	Conway Mussel Tanks	Gwynedd	SH 785773	137.0	1440
11.06.93	25035	Aynho Grounds	Northamptonshire	SP 509323	76.6	130
11.06.93	373224	Davidstow Moor	Cornwall	SX 147857	143.6	520
11.06.93	390388	Jennet's Resr.	Devon	SS 444247	89.1	150
11.06.93	390480	Bideford, King George's Field	Devon	SS 454271	81.2	110
11.06.93	395728	Combe Martin	Devon	SS 590468	92.1	110
11.06.93	396371	Lynmouth, Glen Lyn	Devon	SS 724493	124.0	290
11.06.93	512688	Pontfaen, Delnant	Dyfed	SN 032340	118.8	310
11.06.93	513071	Brynberian, Tafarn-y-bwlch	Dyfed	SN 088339	98.4	100
11.06.93	513226	Nevern, Rhoswrdan	Dyfed	SN 089424	100.6	240
13.07.93	967747	Lough Mourne W.Wks	Antrim, N.Ireland	IJ 425921	82.7E	130
09.09.93	938051	Altnagelvin Cemetery	Londonderry, N.Ireland	IC 453151	67.4	110
09.09.93	938112	Cloghole P.Sta	Londonderry, N.Ireland	IC 489200	73.0	180
09.09.93	938308	Carmoney W.Wks	Londonderry, N.Ireland	IC 503197	76.3	190
06.10.93	797616	Kiltarlity	Highland.	NH 503403	73.5	130
06.10.93	798112	Lentran	Highland	NH 578436	77.2	160
06.10.93	806285	Loch Duntelchaig	Highland	NH 627328	96.8	240
06.10.93	806646	Culloden, Leanach	Highland	NH 751452	104.3	450
06.10.93	807613	Clunas Tr.Wks	Highland	NH 874465	88.5	110
11.10.93	218117	Theberton	Suffolk	TM 437660	87.8	260
11.10.93	218185	Upper Abbey	Suffolk	TM 453645	75.0	130
11.10.93	218315	Aldeburgh	Suffolk	TM 458582	73.5E	110
11.10.93	219170	Aldeburgh, Linden Road	Suffolk.	TM 452575	77.4	140
12.10.93	150411	Leverton, Highgate	Lincolnshire	TF 411476	73.6	130
12.10.93	207568	Heydon	Norfolk	TG 107266	71.8	100
12.10.93	283710	Bagshot, Lutines Farm	Surrey	SU 918640	83.2	160

*Based on the methods and findings of the Flood Studies Report[1] as implemented by the Met. Office[2] whereby a return period can be assigned to the catch at a particular raingauge. Those exceeding a 160-year return period are classified as 'very rare' events. The return periods in Table 3 have been rounded to the nearest 10 years.

[1] Flood Studies Report 1975. Natural Environment Research Council (5 vols, reprinted 1993).

[2] Keers, J.F. and Wescott, P. 1977. A computer-based model for design rainfall in the United Kingdom: Meteorological Office Scientific Paper No. 36.

much smaller amount than is typical and AE totals were close to the highest on record in some eastern areas. As in 1992, the very moderate SMDs (relative to the long term average) which obtained in most areas by the early autumn allowed a rapid recovery in runoff and recharge rates as evaporation rates declined into the winter. The crucial hydrological role played by evaporation and soil moisture conditions, in the lowlands especially, is underlined by the contrast between runoff in the 18-month periods bracketing the summer of 1992. During the drought, when rainfall was around 20% below average, runoff fell to below half the long term average in parts of eastern England. Rainfall was around 20% above average from the late summer 1992 to the end of 1993 but, with evaporation much moderated and soils close to saturation for long periods, it was very much more hydrologically effective. Consequently runoff and recharge rates increased markedly to more than 50% above average and several times the rates measured during the corresponding seasons in the drought.

Computed MORECS (see page 2) potential evaporation totals for 1993 are mapped on Figure 3 – the modelled assessments assume a grass cover and a soil of medium water-retention capability. Annual losses range from above 600 mm in some, mostly coastal, locations (where wind is an important factor) in southern Britain to a little above 400 mm in parts of the Scottish Highlands. In all regions PE totals were, as in 1992, close to the long term average. AE losses displayed a similar geographical pattern but the relatively moist soils resulted in annual totals well above the average in much of English lowlands. For large parts of East Anglia and the South-East the 1993 totals were unprecedented in the 35-year MORECS series. This is confirmed by Table 4 which ranks the ten highest annual AE totals for two MORECS squares in East Anglia. For both squares, 1993 and 1992 rank first and second respectively, underlining the contrast with the preceding three years when AE losses were, on average, around 100 mm lower.

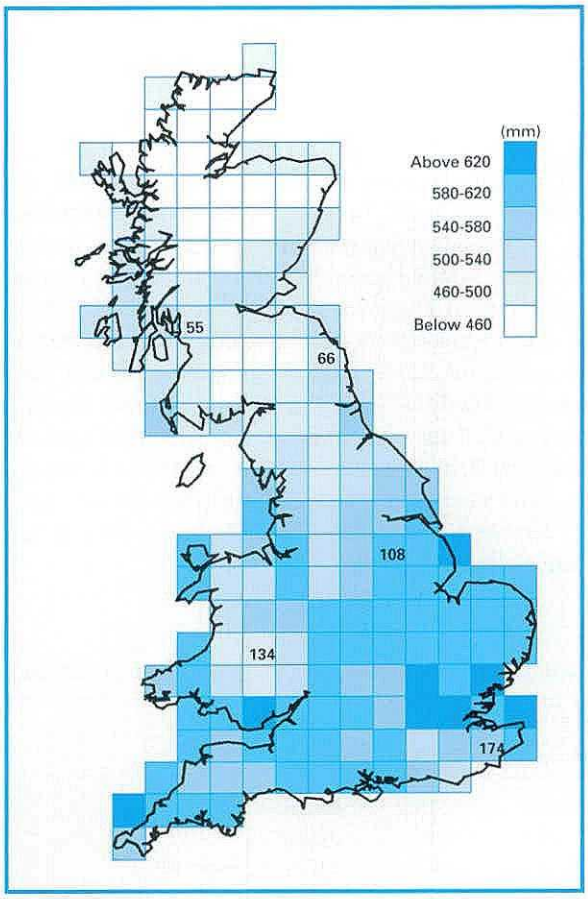


Figure 3 Potential evaporation (for a grass cover) in 1993
Data source: MORECS

TABLE 4 HIGHEST RANKED ANNUAL ACTUAL EVAPORATION TOTALS (FOR A GRASS COVER)

MORECS SQUARE 120 (NORFOLK)		MORECS SQUARE 140 (CAMBRIDGESHIRE)	
YEAR	AE (mm)	YEAR	AE (mm)
1993	569	1993	539
1992	550	1992	536
1966	549	1986	530
1965	543	1987	527
1986	537	1967	520
1982	536	1988	517
1985	533	1982	514
1973	533	1966	512
1987	531	1965	511
1968	529	1985	504
1961-92 Av.	483		443

Figure 4 illustrates the variation in PE, AE, and SMDs for five representative MORECS squares – the location of which are shown on Figure 3. Broad similarities may be identified between 1993 and 1992 but, western Scotland aside, the most significant feature of the temporal patterns are again the contrasts between the last two, and the preceding three years. The recent past has been very volatile in terms of evaporative demands and the large difference in magnitude between the annual PE minus AE totals provide a measure of the unusual climate conditions experienced since the mid-1980s. The length of time lowland soils were at or close to field capacity over the 1992/93 winter – commonly three times that which typified the 1988/89 to 1991/92 winter sequences in the lowlands – allowed recharge to extend over the full half-year. The rapid eradication of SMDs in the early autumn of 1993 once again promised a protracted recharge season over the ensuing winter.

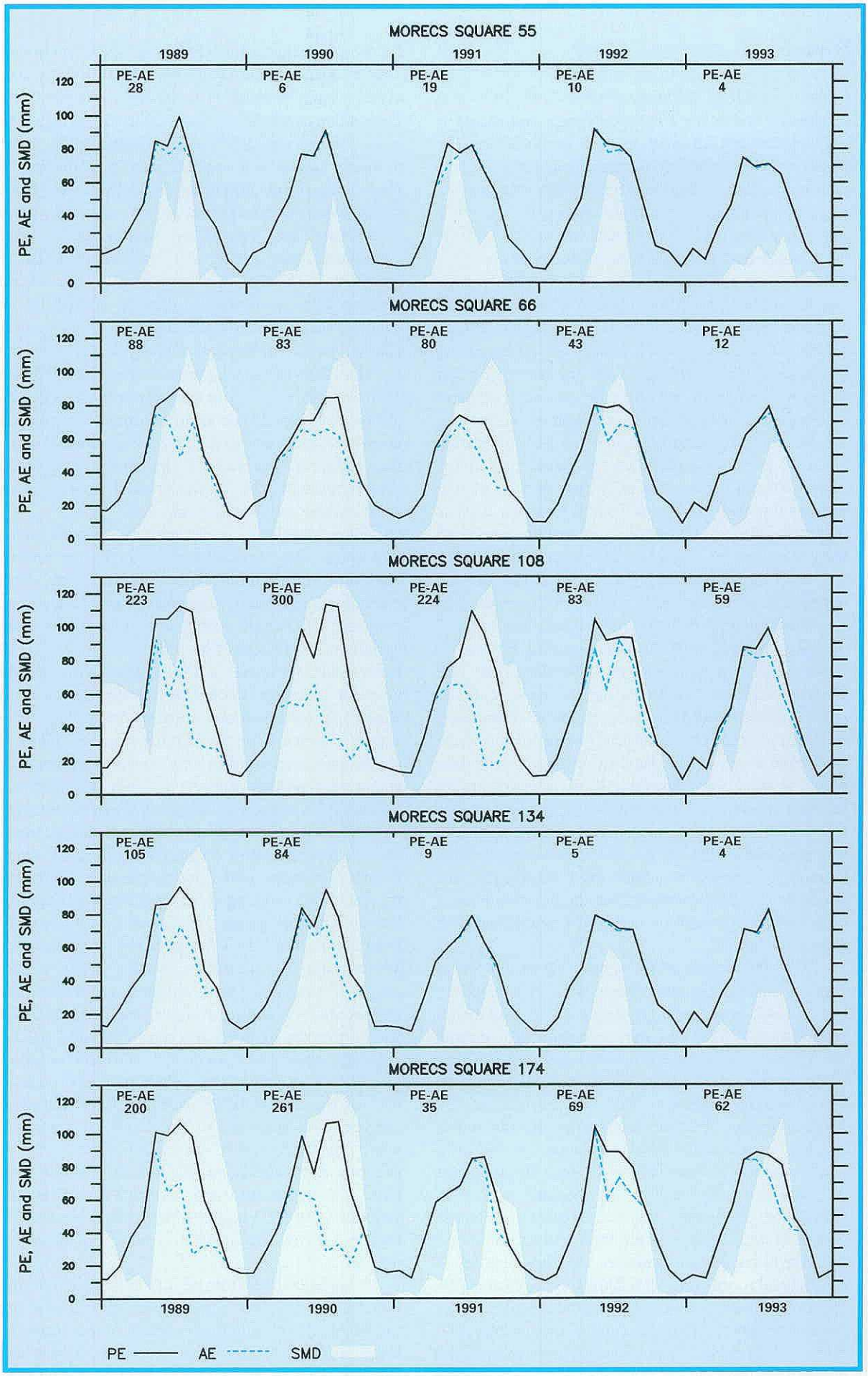


Figure 4 The variation in potential evaporation, actual evaporation and soil moisture deficits for five MORECS squares

Runoff

Runoff for Great Britain as a whole in 1993 was marginally above the 1961-90 average and the 11th year in the last 15 when runoff has exceeded the mean. Spatial variability in runoff was rather muted and much diminished relative to the exaggerated regional contrasts which characterised much of the preceding five years. Over this period the north-west/south-east gradient was reinforced even more heavily than for rainfall. In 1992 relatively high runoff in the East Midlands and central southern England provided a counterbalance to the established pattern and in 1993 - when abundant runoff was again a feature of parts of south-eastern Britain - below average runoff in some western Highland catchments helped establish a tendency, still weak, for the average runoff gradient to be moderated. Figure 5 provides a guide to 1993 runoff totals for Great Britain expressed as a percentage of the average for 1961-90; this is the first standard 30-year period for UK runoff and was selected to correspond with the latest standard rainfall period. Following a quiescent decade in the 1980s, the gauging station network has shown significant growth over the last five years but runoff data remain sparse in a number of mostly upland areas. As a consequence Figure 5 is least precise in north-western Scotland and the Welsh mountains. Technical measurement difficulties, combined with the effects of artificial drainage, are such that direct monitoring of runoff in some low-lying parts of the English lowlands is undertaken at few sites. In such areas assessments of residual rainfall (rainfall-evaporation) were used to help delineate runoff isopleths. A similar approach was used for Northern Ireland where only limited river flow data were available for 1993. Insufficient confirmatory flow data exist for the Scottish Islands or for Anglesey to allow runoff to be established with any confidence.

In 1992, notably high rainfall totals for many English lowland catchments coexisted with relatively low runoff totals - a consequence of depressed groundwater levels and the corresponding minimal contribution from baseflow over much of the first eight months of the year. Some parallels could be recognised in 1993 especially in the east of the Anglian region. Further west however, the above average groundwater levels through the 1992/93 winter, and the elevated water-tables in the latter part of 1993, contributed to very healthy runoff in permeable catchments. Hydrogeological influences on runoff meant that, overall, there was only a limited measure of consistency between the isopercentiles of rainfall and runoff for 1993. Runoff maps can only be broadly indicative below the regional scale; at the catchment level much greater spatial contrasts may be discerned. In north-eastern Scotland for example, the generalised isopleths on Figure 5 obscure a few areas where the 1993 runoff was marginally below that for the preceding record; however where catchments have runoff records of around 15 years or less the average itself is unlikely to be fully representative. Over much of the South-East, Chalk rivers registered more runoff in 1993 than neighbouring rivers draining impervious catchments; a reflection of abundant spring flows resulting from the heavy rainfall over the latter third of 1992. But even where catchments are geologically similar, large runoff differences can occur. An extreme example is provided in Yorkshire where average runoff was registered by a number of gauging stations in the Chalk of the southern Wolds but the Boynton gauging station, on the ephemeral Gypsey Race, registered less than 20% of the long term average for 1993 - the post-drought recovery in groundwater levels did not produce average flow at Boynton until November. As elsewhere, stretches well above the perennial head of such streams can remain dry over many years; correspondingly, the nominal runoff close to catchment divides can be minimal.

Spate conditions early and, more persistently, late in the year provided a notable contrast with the moderate late summer river flows in many catchments but, commonly, the normal seasonal decay and recovery of runoff rates was masked by large variations in monthly flow rates. Very steep recessions in the late winter were associated with a decline in some reservoir stocks, in the west particularly, which generated some concern regarding water supply prospects for the ensuing summer. However runoff rates increased briskly during April and May and a very notable further recovery occurred over the last third of the year. Figure 6 illustrates monthly mean flows (the blue trace) over the 1989-92 period for 16 representative rivers; the period of record monthly maxima and minima are also illustrated together with the long term monthly average. Flows for the Kingston gauging station on the Thames have been adjusted to take account of the major upstream abstractions for London's public water supply. Figure 7 illustrates flow duration curves for four representative gauging stations; such curves enable the proportion of time that river flows fall below a given threshold to be identified. With the exception of rivers in north-western Britain, flows exceeded 95% of the time in 1993 were generally well above average. This was true of the entire flow range for some lowland rivers sustained principally by groundwater. Similar characteristics could be identified for responsive rivers in the South-West but, generally, the 1993 regimes for rivers in western and northern Britain conformed reasonably closely to normal.

A predictable feature of the monthly flow hydrographs is that seasonal variations were less marked in rivers reliant principally on baseflow. For some rivers e.g. the Itchen, runoff dipped only slightly through the summer before continuing a brisk increase which began in mid-1992. Many rivers

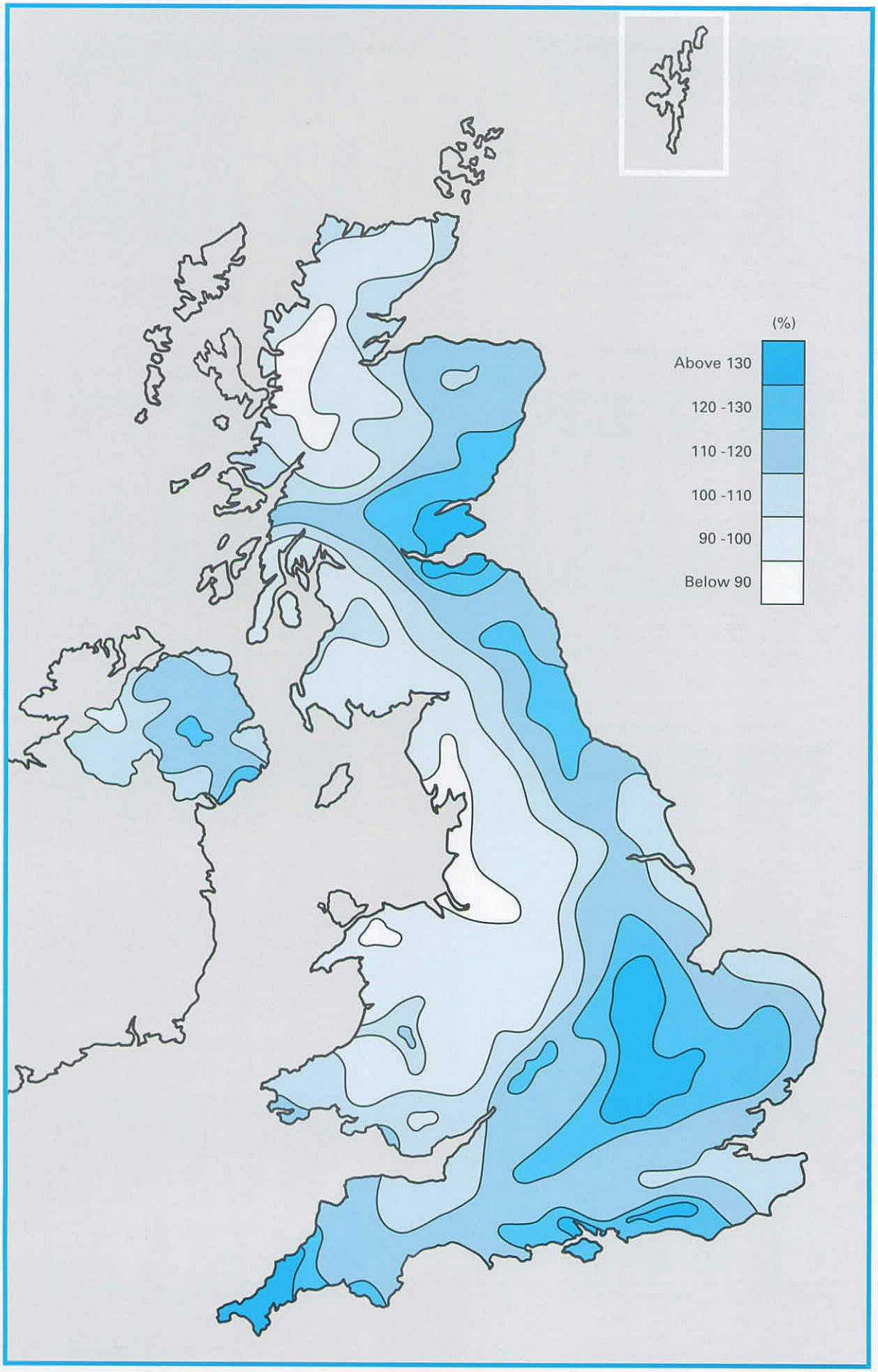
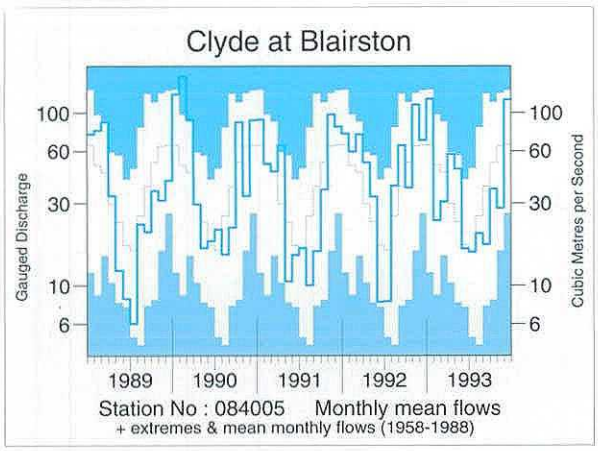
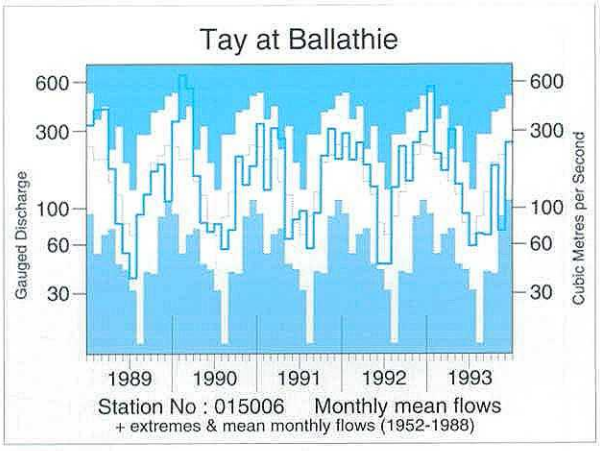
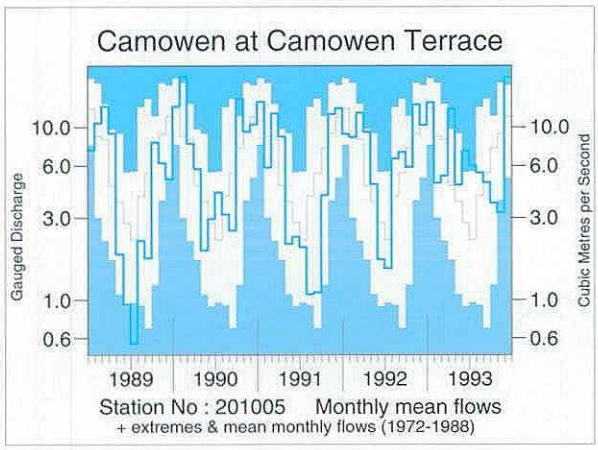
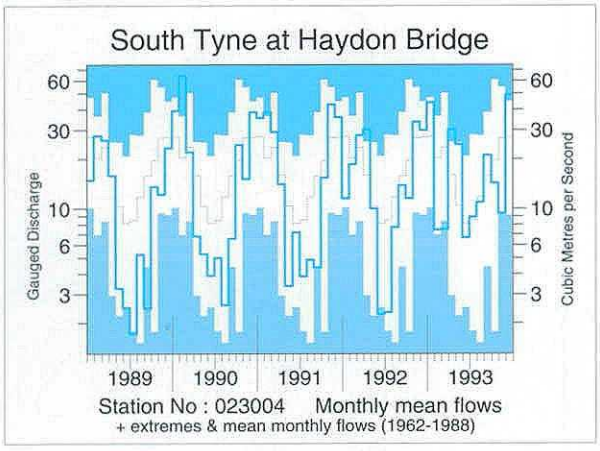


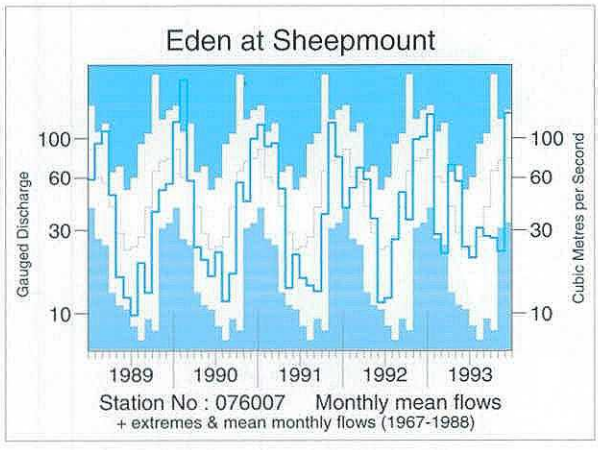
Figure 5 A guide to 1993 runoff expressed as a percentage of the average for the 1961–90 Standard Period

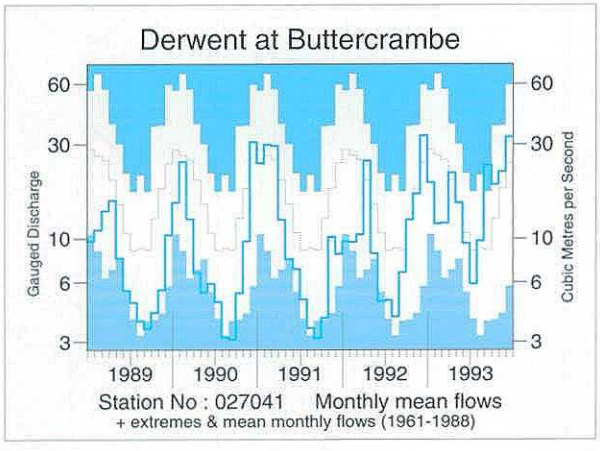


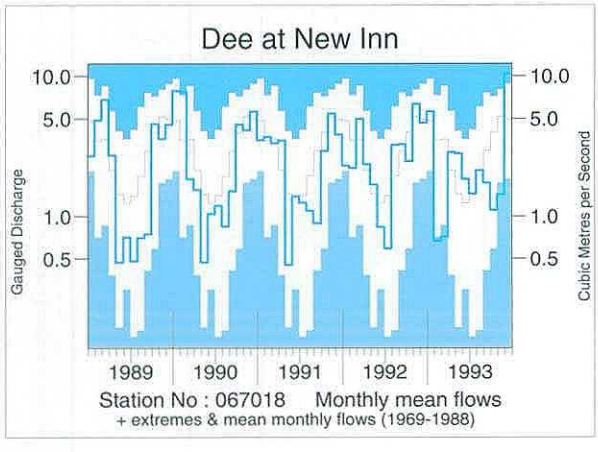












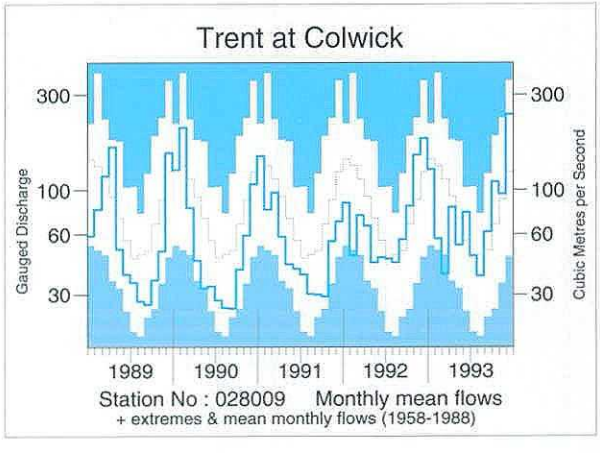
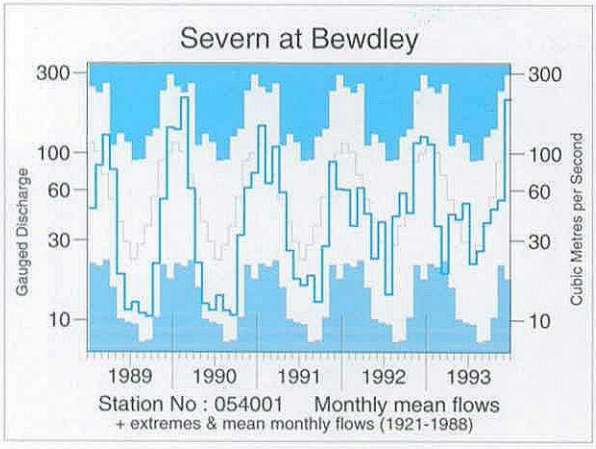
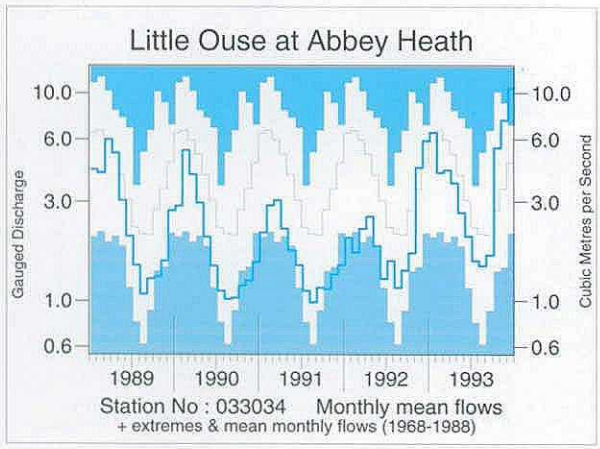
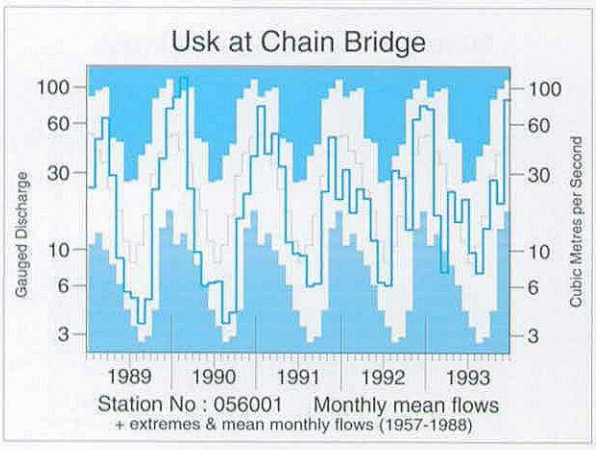
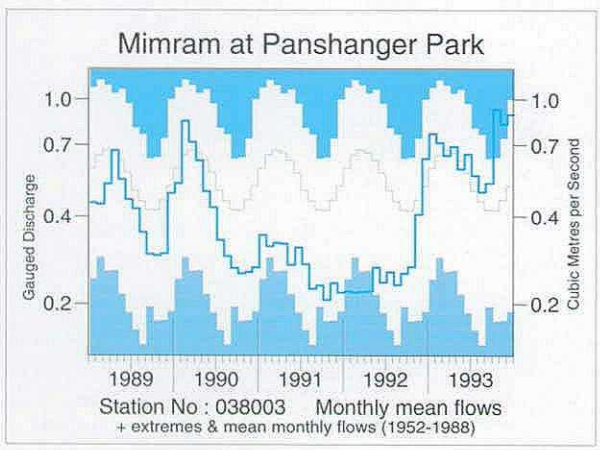


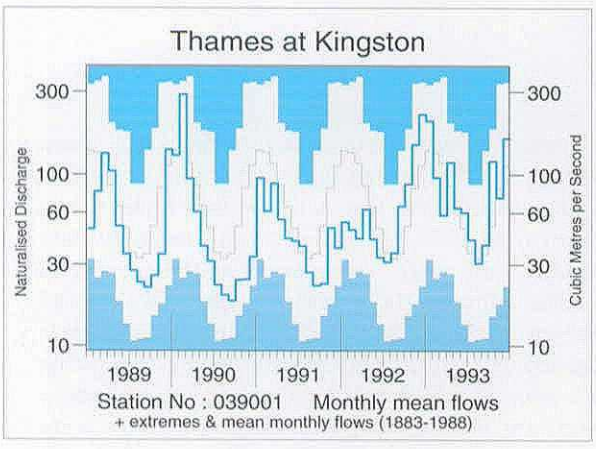
Figure 6 1989–93 monthly flow hydrographs

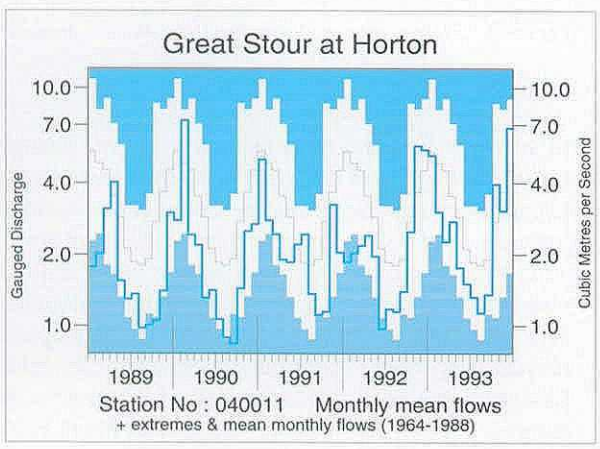


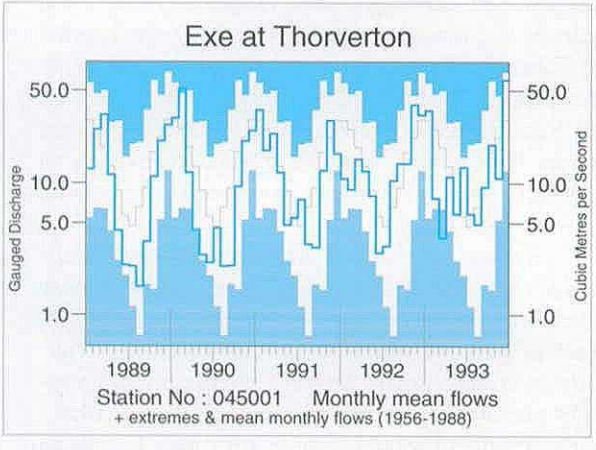












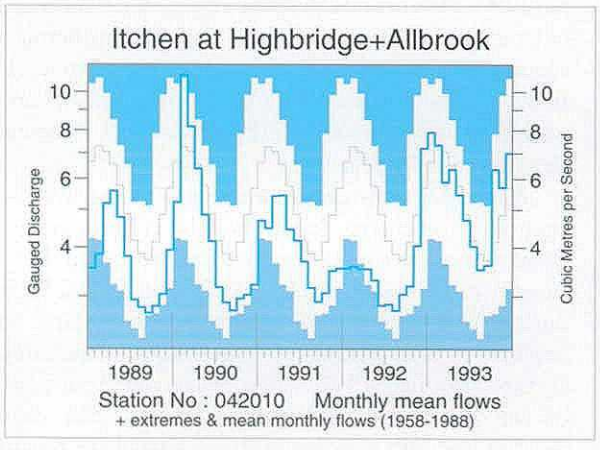


Figure 6—(continued)

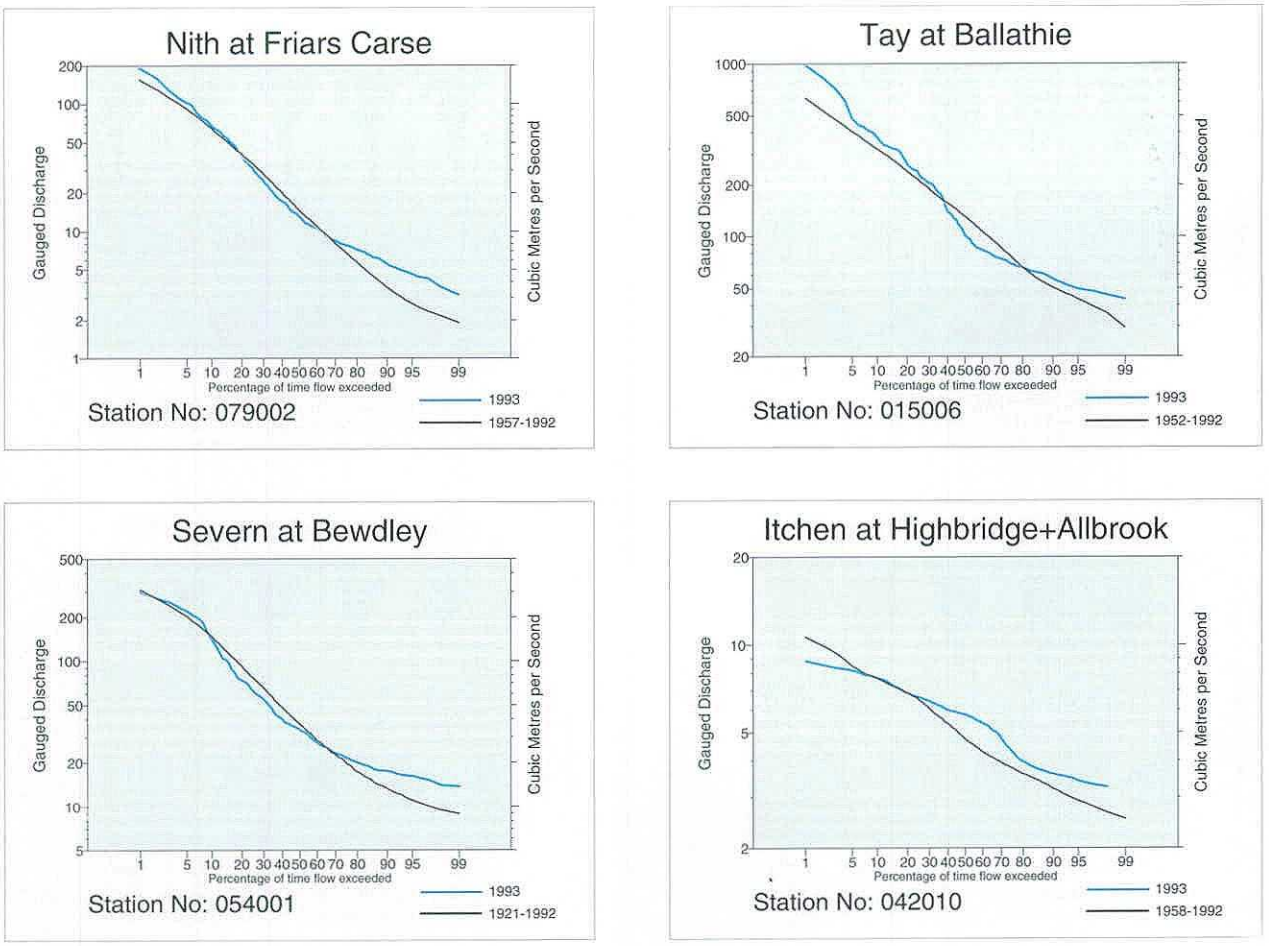


Figure 7 Flow duration curves for 1993 and the preceding record

in southern England remained at, or above, average throughout much of the year with some exceptional runoff rates registered near year-end (and continuing into 1994). One consequence of the high flows and the near saturated soils throughout much of 1993 was that catchments remained vulnerable to flooding for relatively lengthy periods. Major floodplain inundations were common in Scotland in mid-January and rivers registering record January totals showed a wide distribution – from the River Earn (Tayside) to the Hampshire Avon. The Tay (see page 25) was only one of many rivers which recorded outstanding flow rates in mid-month continuing a sequence of winters which have featured notable flood events. For the third time since 1989 a new peak flow was recorded on the River Teith (Central Region) in a 38-year series.

April again saw maximum monthly runoff totals eclipsed in northern Britain but thereafter, summer flooding was, as usual, very restricted in extent. High runoff rates were registered in the South-West during June and thunderstorms – particularly in September and October – produced substantial surface flooding, albeit spatially restricted, in parts of the South-East, London especially. The peak flow on the 12th October at Panshanger Park on the River Mimram was the highest in a 40-year series, eclipsing the record established in May 1992. More notably, the daily mean flow on the 13th at Feildes Weir on the River Lee is the second highest in a record from 1879. Steep recessions throughout late October and early November resulted in several seasonal minima in parts of North Wales and western Scotland but subsequently runoff rates climbed dramatically in the early winter. Following two years in which new hydrometric records established for United Kingdom gauging stations were principally related to low flows, there was a heavy emphasis on the high flow range in 1993. New hydrometric records established in 1993 are detailed in Table 5. Entries in Table 5 are confined to monitoring sites having 25 or more years of data on the National River Flow Archive and, by the nature of rare flow events, may be subject to revision as stage-discharge relations are reviewed in the light of the very high flows.

Sustained rainfall on already saturated catchments contributed to a runoff total for December which was the highest, for any month, in nearly 30 years in parts of southern Britain. Flooding, originally restricted to the South-West became increasingly prevalent towards the month end particularly in the English lowlands where very high baseflows contributed to lengthy periods of bankfull flows (or

TABLE 5 RIVER FLOW AND RUNOFF RECORDS ESTABLISHED IN 1993

Station Number	River	Station Name	First Year of Record	New Record (mm)	Month	Pre-1993 Record (mm)	Month/ Year
Highest Annual Runoff							
014001	Eden	Kemback	1967	577		573	1985
019006	Water of Leith	Murrayfield	1963	645		601	1965
028012	Trent	Yoxall	1959	549		479	1987
028026	Anker	Polesworth	1966	352		319	1981
033028	Flit	Shefford	1966	310		270	1988
041010	Adur W. Branch	Hatterell Bridge	1961	447		390	1988
047005	Ottery	Werrington Park	1963	1043		886	1986
049002	Hayle	St. Erth	1957	859		818	1988
071001	Ribble	Salmesbury	1960	1291		1240	1967
Highest Monthly Runoff							
007003	Lossie	Sherriffmills	1963	114	OCT	111	OCT 1981
014001	Eden	Kemback	1967	160	JAN	153	FEB 1977
015013	Almond	Almondbank	1955	359	JAN	324	FEB 1990
016001	Earn	Kinkell Bridge	1948	413	JAN	386	FEB 1990
018001	Allan Water	Kinbuck	1957	376	JAN	267	FEB 1990
018002	Devon	Glenochil	1959	324	JAN	233	FEB 1990
018003	Teith	Bridge of Teith	1957	516	JAN	509	FEB 1990
023009	South Tyne	Alston	1969	277	DEC	273	DEC 1974
027035	Aire	Kildwick Bridge	1968	234	DEC	214	MAR 1981
033019	Thet	Melford Bridge	1962	49	DEC	47	MAR 1988
033046	Thet	Red Bridge	1967	63	DEC	60	FEB 1979
039019	Lambourn	Shaw	1962	44	DEC	41	MAR 1967
045009	Exe	Pixton	1966	311	JAN	292	JAN 1984
047005	Ottery	Werrington Park	1963	279	DEC	236	FEB 1990
054022	Severn	Plynlimon Flume	1953	522	DEC	482	JAN 1983
055012	Irfin	Cilmery	1966	453	DEC	370	FEB 1990
055026	Wye	Ddol Farm	1937	404	DEC	368	DEC 1965
065001	Glaslyn	Beddgelert	1961	674	DEC	654	NOV 1970
066011	Conwy	Cwm Llanerch	1964	555	DEC	508	DEC 1964
067005	Ceiriog	Brykinalt Weir	1956	340	DEC	271	DEC 1965
067010	Gelyn	Cynefail	1966	476	DEC	405	OCT 1967
068005	Weaver	Audlem	1953	104	DEC	101	FEB 1977
071001	Ribble	Salmesbury	1960	313	DEC	281	DEC 1965
071004	Calder	Whalley Weir	1963	228	DEC	217	DEC 1965
084011	Gryfe	Craigend	1963	507	JAN	492	DEC 1986
084019	North Calder Water	Calderbank	1963	253	JAN	159	FEB 1990
084020	Glazert Water	Milton of Campsie	1968	326	JAN	290	SEP 1985
085002	Endrick Water	Gaidrew	1963	352	JAN	277	JAN 1990
086001	Little Eachaig	Dalinlongart	1968	395	JAN	381	JAN 1976
Lowest Monthly Runoff							
039036	Law Brook	Albury	1968	8.04	SEP	8.95	FEB 1992

Station Number	River	Station Name	First Year of Record	New Record (m^3s^{-1})	Day/ Month	Pre-1993 Record (m^3s^{-1})	Day/Month/ Year
Highest Daily Mean Flows							
015006	Tay	Ballathie	1952	1965	17 JAN	1648	05 FEB 1990
015013	Almond	Almondbank	1955	169.4	16 JAN	107.5	08 DEC 1962
018001	Allan Water	Kinbuck	1957	98.71	16 JAN	60.88	28 JUL 1958
018002	Devon	Glenochil	1959	81.96	16 JAN	71.15	02 JAN 1991
018003	Teith	Bridge of Teith	1957	311.0	16 JAN	294.3	05 FEB 1990
019006	Water of Leith	Murrayfield	1903	47.00	14 MAY	41.23	21 SEP 1985
033022	Ivel	Blunham	1959	26.20	14 OCT	25.90	28 DEC 1979
033052	Swaffham Lode	Swaffham Bulbeck	1963	0.83	13 OCT	0.56	06 MAY 1978
034008	Ant	Honing Lock	1966	3.16	01 MAR	2.60	26 APR 1981

TABLE 5—*(continued)*

Station Number	River	Station Name	First Year of Record	New Record (m^3s^{-1})	Day/ Month	Pre-1993 Record (m^3s^{-1})	Day/Month/ Year
Highest Daily Mean Flows—(continued)							
037019	Beam	Bretons Farm	1965	11.90	02 OCT	10.90	21 NOV 1974
038003	Mimram	Panshanger Park	1952	2.43	13 OCT	2.01	29 JAN 1988
038014	Salmon Brook	Edmonton	1956	4.62	12 OCT	3.71	03 FEB 1990
038022	Pymmes Brook	Edmonton Silver St.	1954	9.39	12 OCT	8.11	09 OCT 1987
039010	Colne	Denham	1952	17.60	14 OCT	15.70	29 JAN 1988
039019	Lambourn	Shaw	1962	4.27	22 JAN	4.02	14 FEB 1988
041015	Ems	Westbourne	1967	2.50	30 DEC	2.21	31 JAN 1983
044001	Frome	East Stoke Total	1965	24.38	30 DEC	24.09	26 FEB 1966
048007	Kennall	Ponsanooth	1968	3.87	30 DEC	3.76	27 DEC 1979
049001	Camel	Denby	1964	150.19	12 JUN	113.9	27 DEC 1979
053002	Semington Brook	Semington	1953	24.95	13 OCT	24.80	28 DEC 1979
Highest Instantaneous Flows							
015003	Tay	Caputh	1951	1874	17 JAN	1747	04 FEB 1990
015006	Tay	Ballathie	1952	2269	17 JAN	1746	05 FEB 1990
015007	Tay	Pitnacree	1957	732.9	16 JAN	668.9	04 FEB 1990
016001	Earn	Kinkell Bridge	1951	357.7	16 JAN	279.7	04 FEB 1990
018001	Allan Water	Kinbuck	1957	130.0	16 JAN	101.4	28 JUL 1958
018002	Devon	Glenochil	1959	115.0	16 JAN	109.1	08 JAN 1992
018003	Teith	Bridge of Teith	1963	378.3	16 JAN	373.7	02 JAN 1992
033023	Lea Brook	Beck Bridge	1962	5.39	13 OCT	5.26	07 FEB 1984
033027	Rhee	Wimpole	1965	9.19	13 OCT	8.87	06 MAY 1978
034008	Ant	Honing Lock	1966	3.20	01 MAR	1.66	19 NOV 1974
037015	Cripsey Brook	Chipping Ongar	1967	40.20	10 JUN	34.70	29 JUL 1987
037019	Beam	Bretons Farm	1965	17.80	02 OCT	17.40	22 AUG 1987
038003	Mimram	Panshanger Park	1952	3.82	12 OCT	3.57	29 MAY 1992
038007	Canons Brook	Elizabeth Way	1953	14.40	10 JUN	14.20	01 JUL 1958
039010	Colne	Denham	1952	18.40	14 OCT	17.70	29 JAN 1988
041015	Ems	Westbourne	1967	5.04	30 DEC	4.76	20 NOV 1986
071004	Calder	Whalley Weir	1963	237.5	19 DEC	230.6	18 JUL 1964
081002	Cree	Newton Stewart	1963	347.2	30 MAR	322.3	21 DEC 1991
084007	South Calder Water	Forgewood	1965	61.12	24 JAN	54.37	07 OCT 1990
084011	Gryfe	Craigend	1963	112.8	15 JAN	106.5	27 NOV 1979
Lowest Daily Mean Flows							
039036	Law Bridge	Albury	1968	0.034	28 SEP	0.049	20 SEP 1992

above). Flooding was especially serious in parts of southern England. Flood warnings were common in the Devon and Cornwall and, on the 30th December, the River Pol (Cornwall) rose out of its normal channel flooding over 100 properties. To the east, many rivers were in spate and, in Hampshire and Sussex particularly, high flows were maintained for extended periods as a consequence of sustained rainfall and remarkably high spring flows which culminated in the protracted inundation of parts of Chichester and upstream villages in early 1994. Numerous flood warnings were issued during the month but, at least until the New Year, the natural drainage system coped well. However, much of the flooding which did occur tended to be in the more highly populated regions - thus its impact was rather greater than hydrological data alone might suggest.

Groundwater

The relatively wet summer in 1992 heralded the end of a period of drought that had lasted four years from 1988 over much of eastern, central and southern Britain. During this drought, groundwater levels in many British aquifers, especially in the English lowlands, had fallen to the lowest levels recorded since measurements began. This protracted drought followed a quiescent period during the late 1970s and early to mid-1980s when groundwater levels in most major aquifers remained close to, but normally above, their seasonal average. With water-tables already depressed in the summer of 1991 the low volume of recharge due to the dry autumn in eastern regions led to a further decline in level. Through much of 1992 levels were exceptionally low over a wide area. The effect of the drought was particularly

notable in the Chalk aquifer, with a number of sources drying up, affecting wells and small holdings on the Chalk outcrop. The magnitude and spatial extent of the subsequent recovery is well illustrated in Figure 10 (pages 150 to 153) which features groundwater level hydrographs for 32 representative wells and boreholes.

Rainfall in the late summer of 1992 was relatively heavy and resulted in moist soils that were responsive to the autumn rainfall. Groundwater recessions were halted, and there was an early and brisk start to the seasonal recovery. By December, groundwater levels in most aquifers had recovered to close to their seasonal means. The rate of recovery was marked in some Chalk boreholes, for instance Redlands Hall in Cambridgeshire rose from close to its record minima to close to the seasonal mean between November 1992 and January 1993. There was, however, significant local variation with levels in some eastern areas still depressed, although higher than during the preceding years of drought, and only a patchy recovery in the Chalk and upper Greensand of Kent. Within the Permo-Triassic sandstones brisk recovery was evident in some areas, such as the South-West, but there were also areas, such as the Cheshire plain and Nottinghamshire, where levels remained depressed. In some cases this was exacerbated by the effect of abstraction superimposed on the low rate of recharge during the drought period.

The general recovery in levels was to some extent arrested in February 1993, when relatively low rainfall was reflected in falling water levels, except in those deep, slow responding boreholes which were still responding to infiltration from the previous autumn. Thus in the Llanfair DC borehole, which penetrates the Permo-Triassic sandstones of North Wales, levels were still below the seasonal minima recorded prior to the onset of drought in 1988, and this situation was echoed in other boreholes in the English Midlands and in Scotland. Heavy rainfall over much of the country during April offset the effect of low rainfall earlier in the year except in a few eastern areas where the dry early spring soils served to terminate the recharge season. More generally however, the continuing wet weather during May contributed to a delayed onset of the summer recession. By the end of May water levels in the Chalk were almost universally close to seasonal average levels, and well above the levels recorded in the preceding years of drought. In other aquifers levels were equally high, although the pockets of depressed water-tables within the Permo-Triassic sandstones persisted.

A comprehensive tabulation of estimated recharge over the 1992/93 winter, expressed as a percentage of the long term average, is given in the Register of Selected Groundwater Observation Wells (pages 154 to 156). The estimates are based on the cumulative rise registered over the full recharge period. Details of the method used are given on page 149. The percentage recharge estimates reflect the early onset of aquifer replenishment in 1992 and the overall length of the recharge season but are influenced also, in northern England especially, by the winter half-year (October-September) rainfall totals (see Table 1) which fell short of the average over a number of important outcrop areas. Table 6 presents estimates of the overall recharge to the major aquifers in England and Wales for each of the major administrative divisions in the water industry. Figure 8 provides a guide to the spatial variation in groundwater replenishment over the 1992/93 winter throughout the Chalk and Upper Greensand aquifer. In many eastern areas recharge was easily the highest since 1987/88 and for a few individual aquifer units, amongst the highest on record. From the Chilterns to parts of Norfolk recharge over wide areas exceeded 150% of average and was, commonly, an order of magnitude greater than in 1991/92. Greater spatial variation was evident in other aquifers but only in a few, mostly western, pockets did the 1992/93 recharge fall substantially below average.

TABLE 6 ANNUAL REPLENISHMENT TO THE MORE IMPORTANT AQUIFERS IN ENGLAND AND WALES FOR THE YEAR 1992/93

NRA Region	Mean annual replenishment ($m^3 \times 10^6$)	1992-93 replenishment ($m^3 \times 10^6$)
Chalk and Upper Greensand aquifers		
Anglian	955	1330 (140)
Southern	1230	1420 (115)
South West	200	253 (125)
Thames	975	1790 (185)
Wessex	950	1250 (130)
Yorkshire	320	360 (110)
Total	4630	6400 (140)
Lincolnshire Limestone aquifer		
Anglian	85	90 (105)
Permo-Triassic sandstone aquifers		
Northumbria	10	20 (180)
North West	330	565 (170)
Severn-Trent	530	465 (90)
South West	205	175 (85)
Welsh	30	25 (95)
Wessex	40	35 (85)
Yorkshire	300	190 (60)
Total	1440	1475 (100)
Magnesian Limestone aquifers		
Northumbria	80	90 (110)
Severn-Trent	40	40 (105)
Yorkshire	125	100 (20)
Total	250	230 (90)

Values have been rounded to reflect uncertainty in source data and recharge calculation.
Percentages of the annual mean are shown in parentheses.
For the sake of conformity with previous publications, the values for the Northumbria and Yorkshire and the South West and Wessex NRA Regions are shown separately.

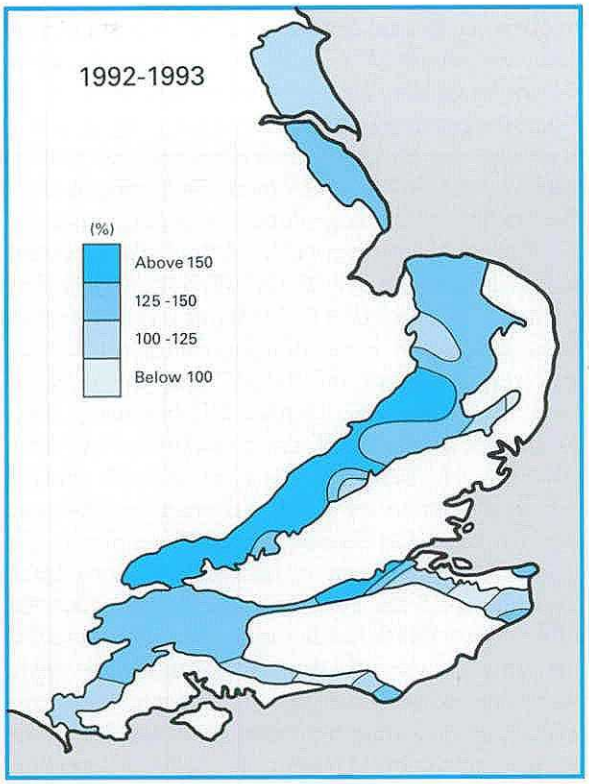


Figure 8 Generalised percentage of the mean annual replenishment to the main outcrops of the Chalk and Upper Greensand aquifer for 1992–93

The need in most areas to generate post-drought recoveries from an exceptionally low base meant that despite notable recharge volumes, the 1993 recessions generally began from around, or below, the seasonal average. Thereafter, the groundwater recession was characterised by a gentle fall in levels. For the majority of boreholes the recession kept levels close to their long term seasonal averages. Within the Chalk, a zone of relatively depressed levels persisted in Lincolnshire, Cambridgeshire and Norfolk, but even within these areas levels were substantially higher at the end of August than at the corresponding time in 1992. Minimum levels during 1993 were, typically, registered in the early autumn and, with a few exceptions, fell within the normal range (see Table 7) – and were very considerably above those of 1989–92 in the English lowlands. At a few sites, especially in the North-West, levels continued to decline into the early winter.

By late September soil conditions conducive to recharge had been established over most of Great Britain. Levels in the boreholes penetrating the Carboniferous Limestone, with its characteristically rapid response to infiltration, began to rise almost immediately. Boreholes within the Permo-Triassic sandstones also began to show rises in level by the end of September. Response to infiltration is normally somewhat delayed in the Chalk, but by mid-October the shallower Chalk wells had begun to recover. In some instances the recoveries were steep. The Holt borehole exceeded its recorded maximum level in October and continued to record new maxima through the remainder of the year.

In general, a wet autumn and early winter resulted in replenishment to the Chalk aquifer which had exceeded the full winter average over wide areas by very early in 1994. This – following abundant recharge over the previous winter – led to many Chalk boreholes approaching their maximum recorded levels by December. A number of boreholes, especially on the South Downs, began to overflow following dramatic increases in groundwater levels. Brisk recoveries were noted elsewhere, with an exceptional rise of 11 metres in 17 days recorded for the Little Bucket Farm borehole (see Figure 10) at the year end. Over wide areas the overall rise from the summer of 1992 was the equivalent of more than three times the annual range.

In the fissured Jurassic and Carboniferous Limestones rapid recharge in October, November and December left water-tables substantially higher than their seasonal average. The Alstonfield borehole in the South Pennine Carboniferous Limestone rose 30 metres to exceed previously recorded maximum levels in December.

In the Permo-Triassic sandstones the recovery was equally pronounced, with end-of-year levels generally well above average. There were still some areas of confined aquifer – which respond much more slowly than the outcrop zones – where levels were below average, but rising steadily. Boreholes that had been persistently below average level over much of the previous five years, such as Llanfair DC, finally showed a recovery and ended the year close to their average.

Over the twelve months of 1993 groundwater levels in Great Britain underwent a very notable transformation. At the beginning of the year levels, while recovering, were still presenting evidence of the 1988–92 drought, with levels generally close to the seasonal average, but with a number of areas still significantly depressed. At the end of the year levels were generally well above average and many boreholes were recording new maxima, both in terms of level and in their rate of recovery.

Reference

1. Manley, G. (1974) Central England Temperatures: monthly means 1659 60 1973. Quart. Journ. Royal Met. Soc., 100, 389–405.

TABLE 7 END-OF-SUMMER RECESSION GROUNDWATER LEVELS AND DECEMBER MEANS IN SELECTED OBSERVATION WELLS

Site	Aquifer	Records commence	Mean level at end of recession	End of 91/92 recession	End of 92/93 recession	End of Dec mean all years	92 Dec mean	93 Dec mean
Dalton Holme	C & UGS	1889	14.99	10.98	13.82	15.64	14.41	16.08
Little Brocklesby	C & UGS	1926	10.79	4.59	7.61	11.52	9.98	16.41
Washpit Farm	C & UGS	1950	43.42	40.30	42.73	43.22	40.70*	44.32*
The Hold	C & UGS	1964	86.67	84.26	88.69	86.71	86.13*	90.00
Dial Farm	C & UGS	1968	25.44	24.73	25.07	25.43	24.89*	25.59*
Redlands Farm	C & UGS	1964	39.49	32.29	36.01	38.79	37.46*	40.82*
Rockley	C & UGS	1933	130.72	130.26	130.64	133.73	142.91	135.33
Little Bucket Farm	C & UGS	1971	62.38	59.56	60.81	63.77	71.53	67.04
Compton House	C & UGS	1894	32.69	29.93	31.45	41.13	47.47	45.73
West Dean	C & UGS	1940	1.45	1.33	1.38	1.95	2.53	2.20
Lime Kiln Way	C & UGS	1969	124.94	123.70	124.08	124.82	123.91	124.75*
Ashton Farm	C & UGS	1974	65.29	64.66	65.36	67.05	71.29*	71.48*
West Woodyates	C & UGS	1942	74.12	72.59	72.90	86.08	98.72*	99.34*
New Red Lion	LLst	1964	11.43	8.72	12.39	12.36	20.02	18.80
Ampney Crucis	Mid Jur	1958	100.24	100.14	100.02	101.83	102.99*	102.37
Dunmurry (NI)	PTS	1985	27.83	27.81	27.11	28.34	28.34	27.56
Llanfair DC	PTS	1972	79.63	78.92	79.10	79.83	79.60*	79.50
Stone	PTS	1974	89.92	89.73	89.94	90.05	90.59*	90.00*
Weeford Flats	PTS	1966	89.88	88.61 dry	88.91	89.80	88.61* dry2	88.92*
Bussels 7A	PTS	1972	23.47	23.15	23.44	23.70	3.51	24.19
Rushyford NE	MgLst	1979	72.96	74.47	75.06	71.94	77.82	76.39
Peggy Ellerton	MgLst	1968	33.83	31.23	31.37	33.95	32.29*	32.59*
Alstonfield	CLst	1974	176.48	175.95	178.34	191.96	209.62*	182.31*

C & UGS Chalk and Upper Greensand
LLst Lincolnshire Limestone
PTS Permo-Triassic sandstones
Mid Jur Middle Jurassic limestones
MgLst Magnesian Limestone
CLst Carboniferous Limestone

* Based on a single reading.

1993 Hydrological Diary

Compiled by S. C. Loader

January

January was a month of very disturbed and stormy weather throughout the UK, with a series of deep low pressure systems passing across the north of the British Isles. Scotland recorded its wettest month in a rainfall series beginning in 1869. Widespread flooding was reported throughout Great Britain; there was considerable disruption to road and rail transport. New highest monthly runoffs were recorded over large areas of Scotland; the Rivers Gryfe, North Calder Water, Endrick Water, Almond and Earn all recorded new high monthly runoff totals in records of 30 years or more. In England, the River Lambourn in Berkshire and the Rivers Boyd and Frome in Avon recorded new monthly runoff totals in records extending 32, 21 and 16 years respectively.

11th-18th: Blizzards at the start of the month left large accumulations of snow over much of the Highlands. Further heavy snowfalls on the 11th were followed by rapid snowmelt, due to a sharp temperature rise and persistent rain, producing very high runoff totals and extreme flooding over wide areas. On the 18th, the River Tay recorded a daily mean flow of 1965 m^3s^{-1}, exceeding the previous maximum on the entire National River Flow Archive. River levels at Perth were the highest since February 1814. Severe flooding occurred in Perth and >50 km^2 of floodplain was inundated; the total damage was provisionally estimated at £20 million (see page 28). Other Scottish rivers also recorded notable flows: the River Earn established a new highest daily mean flow in a 46-year record, whilst on the Spey the peak was second only to that of February 1990 in a 42-year record. Torrential rain, high winds and spate conditions extended into England and Wales. Flood alerts were called on several rivers in South Wales; a new peak flow was recorded on the River Ewenny (West Glamorgan).

February

A mild, dull month dominated by high pressure; most regions were very dry. England and Wales registered its fifth driest February this century and the driest since 1959. Rainfall for some locations in southern England totalled less than 5mm; at Wallingford (Oxfordshire) only one wet day was recorded (on the 26th). Following the record flows in January, prolonged recessions became established; new minimum February runoff totals were recorded on the South Tyne (Northumberland) and Dee (North Wales).

March

Dry and mild conditions prevailed throughout March over much of England and Wales. Sustained river flow recessions continued from February and new minimum March runoff totals were registered for many rivers including the Wharfe, Trent, Medway, Exe, Severn, and Eden.

29th: Heavy rain fell across Northern Ireland and Scotland; 139 mm fell at Doune (Strathclyde Region), corresponding to a return period of over 150 years. The resulting spates included a new highest instantaneous flow ($347 m^3 s^{-1}$) for the River Cree (Dumfries and Galloway) in a 31-year record.

31st-1st April: A band of heavy frontal rain tracked across southern England, producing localised flooding. Salisbury (Wiltshire) registered 48 mm in 28 hours from the 31st, having recorded only 17 mm of rain in the previous 62 days.

April

A cloudy, warm and mild month – very wet in all regions except for northern Scotland. In England and Wales it was the 7th wettest April this century. Record April runoff totals were registered on the Tay (Tayside) and Eden (Cumbria), in records starting in 1952 and 1967 respectively.

May

Very unsettled weather patterns during May resulted in wide spatial variations in sunshine hours, temperature and rainfall. Thundery activity increased as the month progressed, contributing to the wettest May in England and Wales since 1983.

13th-14th: A slow moving frontal system brought heavy rainfall to much of north-east England and south-east Scotland. 85.6 mm fell at Newbiggin (Durham) and 76 mm was recorded at Bywell (Northumberland), the latter corresponding to a return period of over 100 years. Sunderland recorded its highest rain-day total since 1903. On the 14th, 94.6 mm fell at Dungonnell, Northern Ireland, whilst in the Lothian Region of Scotland, record high daily flows were established on the Water of Leith and the Braid Burn in flow series of 31 and 25 years respectively.

25th: Intense thunderstorms tracked across southern Britain, bringing heavy rain to many areas. A particularly active cell produced a remarkable 128.7 mm precipitation total at Uffington (Oxfordshire); the associated return period exceeds 1000 years; localised flooding ensued – the centre of Faringdon being inundated with mud-laden water.

June

A warm, rather wet month with thunderstorms producing some very notable precipitation totals and severe but spatially very restricted flooding.

8th-9th: Convective cells associated with a frontal system produced a series of intense and very localised downpours. 122.7 mm was recorded on the 8th at Culdrose (Cornwall), including a 92 mm burst in only two hours, corresponding to a return period of over 1000 years. Extensive surface flooding resulted, most seriously in Porthleven and Helston in Cornwall where over 50 houses were flooded, some to a depth of two metres.

10th: A further remarkably intense storm took place over the coast of North Wales; Conwy recorded 137 mm in 24 hours, an event with a return period well in excess of 1000 years. Considerable flooding occurred in Llandudno; over 500 residents were evacuated. Slow moving cells in thunderstorms tracking north-westwards

from France produced several exceptional rainfall events in the South-East. 120.8 mm fell at North Weald, Essex, in 3¼ hours, with 76 mm falling in only 45 minutes (another >1000-year event). A new record peak flow of 40.2 m^3s^{-1} was established on the Cripsey Brook and severe flooding ensued in the Roding, Colne, and Stort catchments in Essex, with substantial structural damage to properties and considerable transport disruption. An intense thunderstorm over Birmingham virtually brought the city centre to a standstill, with severe flooding in places. The River Tame at Bescot (West Midlands) recorded a new peak flow of 70.0 m^3s^{-1} on the 11th, exceeding the previous peak by over 50%. Flooding was reported at other locations in the Midlands: 45.7 mm of rain fell at Bayton Common (Hereford and Worcester) and the peak flow of 21.6 m^3s^{-1} in the nearby Dowles Brook was the highest in a 23-year record.

10th-11th: Intense and persistent rain, associated with a deep depression, fell on Wales and the South-West. In Dyfed, 174 mm fell in 36 hours at Aberporth, whilst at nearby Cardigan 84.6 mm fell in 18 hours on the 11th. Over 40 homes and a caravan park were flooded when the Mwldan Brook and the River Teifi overflowed. At Davidstow Moor (Cornwall), 143.6 mm fell on the 11th, the highest daily rainfall total in mainland Britain for 1993, and totals over 70 mm were reported across much of Devon and Cornwall. The River Camel in Cornwall recorded a peak flow of 306.4 m^3s^{-1} on the 12th, the highest in a 30-year record and flooding was particularly severe in Bude, Bideford and Barnstaple.

July

July was cold, cloudy and showery over much of the UK. Most areas were substantially wetter than average.

15th: An intense thunderstorm produced a 63 mm precipitation total at Louth (Lincolnshire). The dry soils moderated the storm's hydrological impact but flooding occurred in Lincoln.

August

August was generally a cool and very dry month, but thunderstorms produced a few localised downpours.

4th-5th: Heavy rain spread across England and Wales. 85.3 mm of rain fell in 18 hours at Carlton-in-Cleveland, North Yorkshire.

September

A very cool, dull and wet month – after a dry start – in most regions, although northern Scotland remained exceptionally dry. In Luton, Bedfordshire, it was the wettest September since 1918, whilst in Ulceby, Humberside, it was the wettest for at least 100 years. In contrast, Lerwick in the Shetland Islands recorded its driest September for over 50 years; water was shipped to outer islands to augment reserves.

12th-14th: A series of deep depressions tracked north-eastwards across the country, bringing heavy and persistent rain to many areas. On the 12th, 114.3 mm fell at Swincombe (Devon), whilst a two-day rainfall total of 108.5 mm was recorded at Gouthwaite Reservoir (North Yorkshire) on the 13th-14th. Flows in rivers draining the North York Moors were notable: a new peak flow of 14.01 m^3s^{-1} was recorded on the River Leven and a daily flow of 171.7 m^3s^{-1} on the River Esk, establishing new maxima in records extending back more than 20 years.

October

A month of contrasting halves: Initially the cyclonic, unsettled conditions that prevailed during September continued; East Anglia, central and southern England were exceptionally wet. In a few areas, for example the Waveney catchment, the 31-day period ending on the 12 October produced rainfall totals equivalent to 35–40% of the annual average. Thereafter, it was mostly dry. Parts of north-western Britain remained largely dry throughout the month; at Coniston (Cumbria) it was the driest October since 1951. Reservoir storage (for hydro-power) in the Lochaber region of Scotland fell to its lowest October levels for 50 years.

1st-3rd: A deep depression moving eastwards brought heavy and sustained rainfall to much of the South-East. 67.5 mm fell at Gatwick (West Sussex) on the 1st, and many locations received over 40mm. On the 2nd, a

deluge produced 34.8 mm of rain in one hour at Shide (Isle of Wight). The River Beam in Essex recorded a new maximum peak flow in a 29-year record; flooding also occurred in the Ravensbourne and Roding catchments.

6th: Widespread and heavy rainfall in Scotland; 104.3 mm fell at Culloden, Highland Region, on the 6th, an event with a return period of 450 years. In northern Scotland, the Rivers Thurso, Helmsdale, Alness and Nairn all recorded new maximum flow rates in records between 15 and 22 years in length. Localised flooding was reported in the Dee catchment (Grampian Region). In north-eastern England a short-lived but intense band of convectional rainfall caused flooding in a number of small catchments, the most serious being on the Cockshaw Burn in Hexham (Northumberland). Damage to commercial property in Hexham was estimated at over £1 million.

12th-14th: A band of very heavy rain tracked north-eastwards across southern England; Bagshot (Surrey) recorded 83.2 mm on the 12th, and many other locations from Lincolnshire to Sussex received over 40mm. With catchments already saturated from previous storms, floodplain inundation was common throughout the eastern lowlands. On the 14th, the River Colne in Essex exceeded its previous peak flow in a 42-year record. Flood alerts were issued for the Rivers Lud, Bain, Waring and Rase as North Lincolnshire experienced its worst flooding since 1981. Flooding also occurred in Norfolk and Suffolk.

November

A notably cold but relatively dry month away from the east coast. Substantial snowfalls were experienced in eastern England and Scotland but the dry conditions in northern and western Scotland persisted; several rivers recorded new November minimum runoff totals, including the Tay, Carron and Ewe.

December

A sequence of vigorous Atlantic frontal systems crossed southern England from the start of the month and continued, without respite, into January 1994. Individual daily rainfall totals were unremarkable, but monthly totals were exceptional in the South; Brighton experienced its wettest December since 1934. A large number of rivers, particularly in the South-West, Wales, north-west England and Northern Ireland, recorded new monthly maximum runoff totals. Extensive washland inundation occurred in the River Severn catchment from early in the month and extended into the New Year. The water-table in the Chalk and Upper Greensand aquifer of southern England rose very rapidly in response to the persistently wet conditions.

18th-21st: Flood warnings were issued on over 30 rivers in the South-West and South Wales. As in the River Severn catchment, the flooding was more notable for its geographical extent and its longevity than its magnitude. The Horner Water (Somerset) registered a peak flow of 11.32 m^3s^{-1}, a new record in a 21-year series. A rainfall total of 122.6 mm was recorded at Llyn Fawr Reservoir (Mid Glamorgan) on the 18th.

29th-31st: Flooding became a serious problem in many parts of southern England at the end of the month. Soils had remained close to saturation after prolonged wet weather in the autumn and sustained December rainfall produced flooding in many catchments draining to the south coast, with the most severe occurring in Sussex and Cornwall. Polperro in south Cornwall experienced flooding of a similar level to late-1976, as the River Pol rose over its banks; up to 100 properties were affected. The Rivers Bull, Ems and Clayhill Stream in Sussex and the Wey (Dorset) recorded new peak flows in records varying between 19 and 27 years in length. Groundwater levels at the Chilgrove House borehole (West Sussex) rose 25 metres in three weeks from mid-month, becoming artesian early in the New Year for the first time since the early winter of 1960. The River Lavant recorded flows (at Graylingwell) several times the previous maximum; its culverted reach through Chichester (West Sussex) required emergency bypass pumping for a considerable time.

THE GREAT TAY FLOOD OF JANUARY 1993

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Flooding is a natural process which each year sees rivers across the United Kingdom rise out of their banks and occupy floodplains which have been developing over many thousands of years. In relatively recent times the growth of towns and cities on floodplains has caused society to become more vulnerable to the effects of flooding which, although often lasting for no more than a few days within periods of tens of years, can nonetheless be severe. Defences built to protect settlements from the flood hazard are rarely able to afford total protection. In January 1993 river levels at Perth, at the foot of the UK's largest river, reached their highest stage since 1814. This paper explores the causes of the flood, its historical context, and examines its impact and implications.

Introduction

The Tay flood of January 1993 was, in one sense, history repeating itself as a major event with some similar characteristics had occurred just three years previously. However, the peak flow at Perth was 30% greater in the second event, with a disproportionately large increase in the damage caused.

The Tay flood of February 1990 had significance not only in a regional context – flooding many rural and urban properties, inundating tens of square kilometres of floodplain and dislocating transport links – but also on a national scale. It appeared as the culmination of a remarkably wet phase in Highland Scotland, and in a year which was later to witness severe drought in eastern and southern England[1]. The flood was thought to be the highest since November 1951, and its magnitude alerted the local community to the very real dangers of flooding in Perth. Few would have thought, after a 40-year period of relatively minor flooding problems, that a much greater event would visit the Tay just three years later.

The peak flow recorded in February 1990 at Ballathie gauging station, 8 km upstream of Perth (Figure 1), was 1965 m^3s^{-1}. By comparison the peak on the 17th January 1993 reached 2268 m^3s^{-1} and the corresponding daily mean flow of 1965 m^3s^{-1} represents a new record for the UK National River Flow Archive. In the week preceding the 17th, large snow accumulations had built up throughout the catchment, down to low levels, and with the passage of two frontal systems on the 14th and 16th bringing heavy rainfall and temperature rises (both of which contributing to snowmelt), large volumes of runoff were generated. The resulting flood was the largest at Perth since 1814. In many parts of Perth, including the city centre and much of a large housing estate to the north, properties were severely inundated, with attendant economic and social costs. In the rural catchment, over 50 km^2 of farmland was inundated, floodbanks were breached, villages were isolated and major transport links were dislocated. The weather conditions responsible for these dramatic events form the starting point of this account.

Weather Conditions

January 1993 was unusual from a meteorological perspective in a number of ways. The month was characterised by a remarkable succession of Atlantic frontal systems[3], including what may have been the deepest depression to pass over the UK this century. Each brought to Scotland either rain, snow or both and by mid-month rivers in many areas were at moderately high levels. The wintry conditions experienced from the 8th to the 14th produced substantial snow depths not only on high ground, but also over coastal areas. Roads were blocked on the 11th in many of the usual Highland trouble-spots and also, for example, on the Fife coast where such problems are much less frequent.

Rainfall over the first ten days of January was equivalent to the monthly average at many localities in the Tay catchment, and the weather continued in the same very unsettled vein over the next few days[4]. Over the night of 14th January, a temperature rise of typically 4–6°C, accompanied by moderately heavy rainfall, resulted from the passage of another vigorous weather system. This rainfall was most intense in the headwaters of the adjacent Earn catchment; 58.6 mm being recorded at Lochearnhead. The overall effect was a widespread melting of snow at elevations up to 400 m. Temperatures remained high throughout the 15th, and meltwater produced very high flows in many coastal and lowland rivers, while headwater streams displayed a more modest response, though on the Tay at Ballathie (despite a mostly upland catchment) the peak flow for the 15th of 1025 m^3s^{-1} was close to the mean annual flood value.

After an overnight fall in temperature, another general rise occurred on the 16th, associated with the passage of a further warm front and bringing more heavy, wind-driven rain. While there had been substantial snowmelt at lower altitudes, some snow remained in these areas, along with deeper accumulations at higher levels. Moreover, much of the recent rain had accumulated within the snowpack, bringing it to a very unstable state in many areas. In some cases, e.g. at mid-altitudes in the Braan and Almond catchments, the snowpack became mobilised under its own weight, and flowed down slopes in a manner analogous to the failure of a saturated soil. Daytime temperatures on the 16th were sufficiently high to exceed freezing point on the highest mountains, while approaching 10°C at 250 m, e.g. at Kindrogan in the Ardle catchment. Coupled with the rainfall, snowmelt occurred throughout the catchment, and with rivers still at high flows, it was inevitable that extreme rates of runoff would occur.

Generation of the Flood Peak

Unlike the 1990 flood, the feature which so importantly characterised this event was the large amount of runoff contributing to the main flood peak from *all* major sub-catchments. In particular, the River Isla and other tributaries at the bottom of the Tay system (Figure 1) made large contributions to the peak, while in 1990 their effect was either minor or, in the case of the Isla, negative. Flow from the Isla on that occasion was so small in comparison with the main river that Tay floodwaters were able to cause reverse flow in its lowest reaches. Some details are provided here to illustrate the magnitude of the water fluxes involved, and the importance of the timing from individual sub-catchments in producing the final peak.

Figures 2a–c show the hydrographs recorded on the Tay and its main tributaries through the 1993 event. It can be seen that peaks emerging from adjacent catchments were often coincident in time, notably at the Garry-Tummel, Tay-Tummel and Tay-Isla confluences, such that the resulting downstream peaks were the highest possible with the given input hydrographs. The likelihood of such coincidences is low, and reflects the nature of the developing weather pattern over the area at that time.

It is important to note the impact of the hydropower schemes of the area. Four of the large storage reservoirs in the Tummel-Garry and Breadalbane schemes – Lochs Lyon, Ericht, Errochty and Loch an Daimh – were able to continue storing water without any spillage throughout the entire event and, receiving water from approximately 15% of the catchment to Perth, thus afforded substantial reduction of the downstream peak that would otherwise have resulted. Further attenuation was afforded by floodwaters taking up capacity in many other reservoirs which had filled, and then lost water as spillage, during the event; unfortunately draw-down rates severely limit the potential for providing alleviation capacity within these reservoirs. The modest initial increase in runoff from the highly regulated Tummel valley can be seen in Figure 2(a). Flows in the Tay at Kenmore (Figure 2b, station 15016) were also slow to rise, but as a result of the natural damping effect of Loch Tay; the result at the Tay-Lyon confluence was a modest time-displacement of peaks from the two rivers.

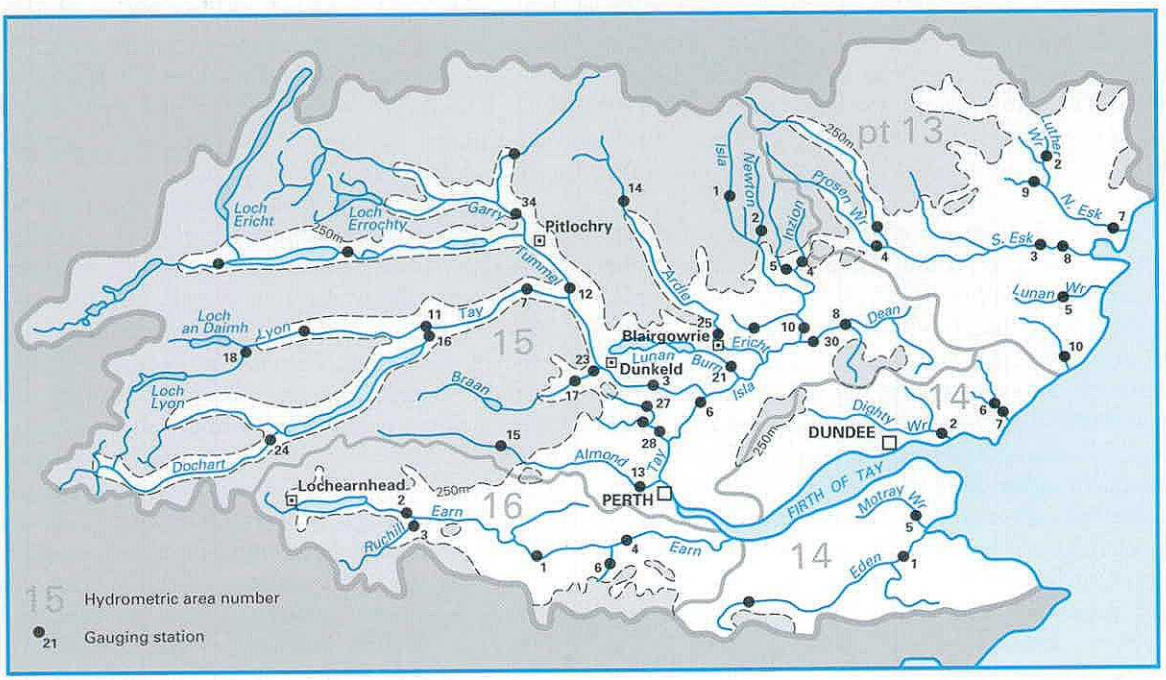


Figure 1 *The catchment of the River Tay*
(Gauging station reference details appear on page 137; to derive the full station number see page 35)

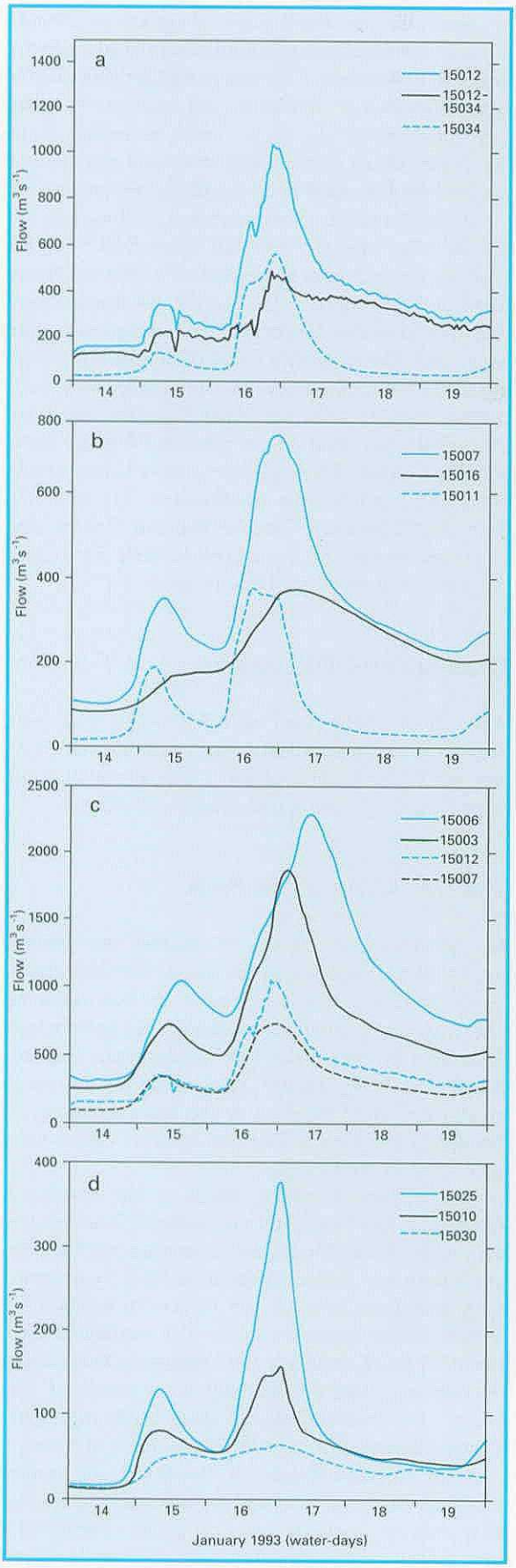


Figure 2 Hydrographs of the River Tay and major tributaries during the flood of January 1993 (The key gives the relevant gauging station numbers – see Fig. 1 for station locations)

On the Tay floodplain downstream of the Tummel confluence, large areas of agricultural land are protected from flooding by an extensive network of floodbanks, and a similar situation applies on the floodplain of the lower Isla. As these rivers rose to unusually high levels, the floodbanks were overtopped and often breached, causing extensive inundation. The result was further attenuation of the flood wave although the high flow in the Tay was such that this effect is thought to have been modest. Suggestions have been made[5] that flood damage may be reduced by locating embankments further away from the main river channel, but hydraulic modelling of these areas[6] suggests that the present configuration is near-optimal in terms of flood wave attenuation, and it is unlikely that major changes will follow this most recent flood.

As mentioned above, the role of the River Isla in the January 1993 flood proved to be very different to that of February 1990, and Figure 2c shows the increase in the flood peak from 1873 m^3s^{-1} at Caputh to 2269 m^3s^{-1} at Ballathie, below the Tay-Isla confluence. For hydraulic reasons, it is not possible to operate a current meter gauging station on the lower Isla, but the behaviour of the three principal rivers in this catchment can be seen in Figure 2d, and it is evident that the Dean Water (15030), draining the eastern extremity of the catchment (230 km^2), produced only very modest rates of runoff. With the highest recorded flow in the Tay just 8 km upstream of Perth, and no floodplain storage available to significantly reduce the peak, major flooding in Perth was inevitable. However, the recent installation of a flood warning system provided the potential to reduce the effects of such inundation.

Flood Warnings

A request by the local authorities and other organisations for the Tay River Purification Board to develop a warning system for the Rivers Tay and Earn was one of the consequences of the 1990 flooding. By the end of 1990 a system was operational on the River Tay and was extended to cover the Rivers Earn and Isla by the autumn of 1991. The warning system was based largely on the existing hydrometric network, modified by the installation of a telemetry based data logging and alarm system. A number of new gauging stations were installed where gaps existed in the hydrometric network, most notably in the catchments of the Rivers Tummel and Garry, and these helped to increase warning lead times.

Three levels of warning are currently in use[2,7]: Yellow (flooding possible – minor flooding of low lying agricultural land), Amber (flooding likely – agricultural land, some roads and high risk properties), and Red (serious flooding likely – agricultural land, properties, communications; flood defences at risk). The rural areas of the catchment and smaller

communities are organised into flood warning groups of 5–10 people, most of which receive Amber and Red warnings. The Yellow warning is issued only to farming groups with very vulnerable land. All flood warnings are issued by the Tay River Purification Board to Tayside Police who pass on the warnings to the flood warning groups, the public and other bodies.

Since January 1991 the system has been activated on several occasions, principally for Amber level warnings, and these soon provided the Board, Police and warning groups with some experience of the system. It was to receive its first significant test in the floods of January 1993. At 1030 hours on Thursday 14th January the Board, with regard to the weather forecast for thaw and overnight rain, contacted the Control Room of Scottish Hydro-Electric Plc for an assessment of the storage situation in the Tummel-Garry and Breadalbane Hydro-Electric Schemes. The Board and Scottish Hydro-Electric were then in regular contact throughout the period of the flood events.

At 1130 hours on the 14th the Board issued formal Yellow warnings to the farming flood warning groups in the upper and middle reaches of the Tay and Earn catchments. These were precautionary warnings to indicate that river conditions in excess of bankfull could develop overnight. As well as issuing these warnings through the formal channels of Tayside Police, the Board also contacted the leaders of these warning groups to explain the reasons for issuing the warnings in advance of the developing river conditions and the Board's concern for potentially more severe flooding.

On Friday 15th most flood risk areas were elevated to Amber status as river levels rose throughout the day. By 1030 hours the River Earn was placed on Red alert and this status remained throughout the weekend. On the River Tay the first Red warnings for the upper reaches were issued at 1445 hours on the 16th and these were extended to cover the whole river including Perth by 1900 hours.

In most upper catchments the Red warnings were issued some three to four hours ahead of the onset of severe flows. When the Red warning for Perth was issued, the flow at Ballathie gauging station was 923 m^3s^{-1}. This was some 10 hours before the flow in this reach exceeded 1500 m^3s^{-1}, the threshold at which serious flood problems are expected to develop in Perth, and 24 hours before the flood peak passed through the city.

After the Red warnings were issued the Regional Emergency Control Centre (RECC) at Perth & Kinross District Council was issued with regular updates of rising river levels. At a meeting on the evening of Saturday 16th January, the RECC was told that serious flooding would develop in Perth the following day and that there was a serious risk of overtopping of the North Muirton flood defences.

Generally the flood warning system performed well, with warnings issued sufficiently in advance for losses to be reduced. This was particularly evident in rural areas where livestock and machinery losses were minimised. In some cases warnings were ignored resulting in avoidable losses and instances of people being rescued from inundated properties.

In the Perth area where warnings are disseminated via the local authority services rather than by a cascade system, problems arose, particularly in the North Muirton area where failure of the floodbanks gave rise to sudden inundation as the flood approached its peak level. Consequently losses of household possessions, commercial equipment and stocks were substantially greater than should have been the case given the substantial lead times provided by the flood warning system. These problems have subsequently been addressed by the development of the Perth Business Community Cascade Warning System, and improved procedures for a door-to-door warning of domestic properties by Tayside Police.

Damage and Disruption

The effects of the flood were felt over a wide area, mostly in the middle and lower reaches of the Tay, and the lower reaches of the Tummel and Isla. Its impact encompassed a wide variety of effects.

The Catchment above Perth

In the rural part of the catchment, the clearest impact of the flood was in the area of land inundated: a total of 52 km^2 was identified on the basis of aerial photography, ground survey and local knowledge[8]. This area is more than 50% greater than the area flooded in 1990, mostly as a result of the much greater extent of flooding in the Isla catchment; all floodplain areas in the Tay and Tummel valleys were inundated in both events.

As mentioned above, much of the floodplain throughout the Tay system is protected from moderate floods by floodbanks, and in an event such as this, areas normally protected are inundated by overtopping and breaching of the banks. A total of 73 breaches were identified in the Tay catchment after the 1993 flood, resulting predominantly from initial overtopping, but occasionally as a result of bed scour[5]. The reinstatement of these banks represents a major financial burden for the farmers affected.

The repeated failure of floodbanks in certain locations has been shown to be a feature of the Tay area over at least the last 150 years[5]. Frequently, this results from super-elevation of water levels on the outside of bends, leading to overtopping. However, the construction of embankments over former river channels in-filled with coarse, unconsolidated material is also cited as an important reason for

repeated breaching at a number of locations, the two factors often interacting at the same location (see Figure 3). Water returning to rivers from floodplain areas also overtops floodbanks and was responsible for several breaches; in one case at Dalguise (north of Dunkeld) this resulted in the breach of a railway embankment by water which had entered the floodplain through another breach 2.5 km upstream. Similar damage occurred at an immediately adjacent location in the February 1990 flood (see Plate 1).

The rapid flow of water through such breaches generally results in scour of the surrounding soil and, coupled with widespread sediment deposition over farmland, represents further economic loss for farmers. In addition much of the fertile floodplain was planted with winter crops, and in many cases the extent of damage, with surface water lying for weeks after the flood, precluded any recovery of these. Because of silt clogging soil pores, fears have also been expressed regarding the effects of the inundation on fertility in future years.

As previously noted, one fortunate aspect of the flood in agricultural areas was that due to warnings issued by the Tay River Purification Board, and the prolonged threat of banks being overtopped, there were no livestock losses reported. Previous events, in which there has been no flood warning system, have resulted in hundreds of livestock deaths.

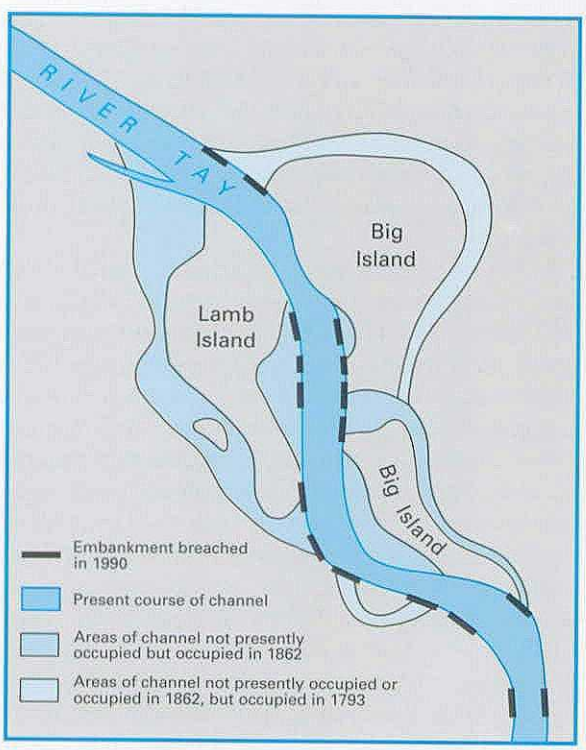
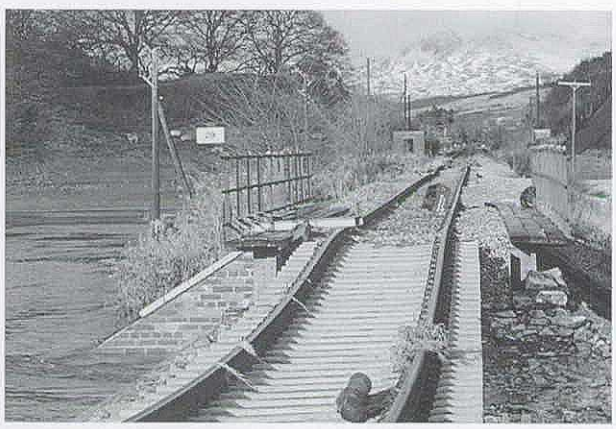


Figure 3 *Location of flood embankment breaches during the February 1990 flood (near Guay, downstream of the confluence with the River Tummel)*

Source: Gilvear, D.J. et al (1993) Mechanisms of floodbank failure during large events on the Rivers Tay and Earn, Scotland. Quart. Jour. Eng. Geol., 27, 319–332.

a.



b.

Plate 1 *The Tay in flood near Dalguise*
a: February 1990 b: January 1993
(Photos: a – Scot Rail b – Tay RPB)

Transport links invariably suffer in floods, and the 1993 event was no exception. The high water levels reached on floodplain areas blocked many roads and at Almondbank a bridge collapsed into the flooding River Almond. Some roads in the Isla catchment were blocked for several days because of water becoming trapped behind floodbanks. Landslips, caused by saturated soils, further added to the situation. Several communities including Pitlochry, Dunkeld and Blairgowrie were cut off for a time.

The previously described breaching of the railway embankment at Dalguise dislocated the Perth-Inverness route for some weeks. In the Earn catchment to the south, bed scour caused the collapse of a bridge carrying the Perth-Glasgow railway, causing additional disruption for three months and contributing to a joint repair bill in excess of £1.1 million.

Finally, flooding of properties in the rural catchment must be considered. Data collation is neither simple nor necessarily very accurate, but the *Factual Report* produced for Tayside Regional Council in May 1993[8] shows that housing, some industrial areas, holiday lodges and wastewater treatment plants were all affected in various parts of the Tay catchment. In many cases, flooding of property resulted from small burns rather than main

rivers overtopping their banks. Many of the most vulnerable properties are in farmsteads lying on the floodplains: these were completely surrounded by floodwaters and often inundated even though buildings stood at higher elevations than their immediate surroundings.

Perth

Flooding of property in Perth affected many more properties than in the catchment upstream, and also occurred on a much more extensive scale than in the February 1990 event. Most important was the inundation of the North Muirton housing estate on the north side of Perth, as a result of overtopping and then multiple breaching of a flood embankment. Approximately 780 properties were affected, causing in excess of £10 million of damage. A further £1 million of costs was incurred through the provision of temporary accommodation by Perth & Kinross District Council, owners of most of the affected properties; some houses were not fully repaired until almost a year after the flood.

In the city centre many properties, generally shops and offices, were affected by direct flooding from the River Tay. While water depths at street level were generally quite modest, many buildings have basements and this is where much of the damage was sustained. Even when warnings had been received contents were still sometimes damaged, for example at the Perth City Museum and Art Gallery, where defences had been overwhelmed by the flood. Despite the issue of warnings well in advance of damage levels being reached, it seems the response was, in many cases, either limited or inadequate.

Damage in the city centre extended beyond the effects of direct flooding. Through groundwater, the sewerage and drainage system and a mill lade which runs through the city centre, basement flooding occurred in further areas which were not directly inundated. However, no assessment of the total cost of damage has yet been made.

Many residential properties in the city centre were also affected. In the streets surrounding the North and South Inches, houses have been built with ground floors elevated slightly above the surrounding ground level such that in the past only basements were flooded - a clear indicator of many years experience of flooding. However, in recent years many of these basements have been converted into flats, thereby exacerbating the flooding problem. The benefits of historical adaptation to flood risk are thus rather less now than they have been previously.

The planners responsible for the North Muirton development responded to the flood hazard by erecting a flood embankment around the estate. In January 1974, the then recently developed estate was flooded following failure of the existing embankment. The local authority reacted by rebuilding the defences to a higher specification based on a 100-year return period event, then assessed at approximately 2100 m^3s^{-1}. These defences were successful in February 1990 in affording the desired protection, if only by a small margin. The local topography and the design of the floodbank, however, are such that if the design flood is exceeded, a large number of properties sustain major damage. This is exactly what happened in January 1993, with some properties flooded to a depth of 2 m, and is the principal reason for the great local significance attached to the flood.

Historical Perspective

At 162 m^3s^{-1}, the mean flow of the Tay is the highest of any river in the UK, reflecting its large and wet catchment, and it is to be expected that its floods will be large in comparison with other UK rivers. The most salient point to emerge from the description of this particular flood is the way in which a number of factors combined to produce a peak flow which, although not unprecedented in the period of flow measurement in this country, was the largest to be witnessed in the UK in over 20 years, and registered an exceptional impact in terms of the amount of land and the number of properties inundated. The synchrony of flood peaks emerging from the Garry and Tummel sub-catchments, the Tummel and Tay, and then the Tay and Isla seems remarkable, resulting from the timing, extent and spatial distribution of first snowfall, then melt-inducing pulses of rain and temperature increases, and finally producing the major flood which swept through Perth.

Also remarkable is the occurrence of such a large flood only three years after another which was noteworthy in its own right, and in a series of large peaks from 1989 (and general wetness since 1982) which is unprecedented on the Tay in records which commenced in 1947. Conventional risk analysis treats flooding as an entirely random process, and assumes the climate which generates floods to be unchanging through time - such that the risk of exceeding any given flood level is invariant between years. However Table 1, which gives levels of major floods at Smeaton's Bridge in Perth since 1814, shows a clustering of major events. Distinct periods containing concentrations of floods can be identified, separated by intervening periods with few major peaks. Clusters are apparent around 1850, 1910, 1950, and 1990. Nothing is known about the incidence of any other peaks around the time of the largest known peak in 1814, caused in part by ice-jamming in the bridge. Clustering has also been found in a number of long UK seasonal and annual runoff records[9], supporting the suggestion of inter-dependence within runoff records. The information

TABLE 1 FLOOD LEVELS AT SMEATON'S BRIDGE, PERTH (METRES OD)

Year	Date	Level
1814	February 12	7.0
1847	October 7	6.11
1851	January 19	5.65
1853	January 20	5.79
1868	February 1	5.90
1894	February 7	5.64
1903	January 31	5.64
1909	January 18	5.52
1910	August 29	5.61
1912	December 21	5.68
1913	May 9	5.66
1928	January 22	5.77
1931	June 15	5.49
1947	January 15	5.55
1950	February 17	6.03
1951	November 5	5.97
1962	February 12	5.37
1974	January 31	5.61
1989	February 7	5.07
1990	February 5	5.85
1993	January 17	6.48

provided by Smeaton's Bridge, as is so often the case with observations from before the time of instrumental recordings, is of great value in placing recent events in an historical context.

Whether the recent large Tay floods simply constitute the latest in a series of clusters, or signify some change in the flood regime of the river, perhaps resulting from climate change, poses a question which is difficult to answer. Some favoured climate change scenarios envisage an increase in rainfall along the west of the British mainland, including the headwaters of most of the Tay's tributaries, so an increase in the frequency of flood-producing conditions seems quite plausible. However, the links between climate change studies and any changes in river flow regime are difficult to develop – not least because of the limitations of climate change modelling – and likely changes in flood risk cannot therefore be postulated with any great certainty.

Comparison with other Great UK Floods

At this point it is worth making comparison with other major UK floods, specifically recalling the great Findhorn flood of 17th August 1970, which still holds the UK gauging station peak discharge record. A peak of 2410 m^3s^{-1} was recorded at Forres gauging station, where the catchment area is 781.9 km^2, a mere 17% of the catchment area to Ballathie on the Tay. Considering also that there was no snowmelt contribution to the Findhorn flood, its magnitude seems all the more remarkable.

The rainfall responsible for the 1970 Findhorn flood was intense over a wide area, benefiting from strong orographic enhancement as the northerly winds rose over the Monadhliath Mountains[10]. Such a synoptic situation is characteristic of all the known major floods of this area, always occurring in summer[11], and historical records of the 'Muckle Spate' of 1829[12] demonstrate the occurrence of a larger peak in the more distant past.

Archer's investigation of the 1771 Tyne flood[13] produced a discharge estimate of 3900 m^3s^{-1} for Hexham (catchment area 1970 km^2), exceeding by a large margin any other UK historical flood estimate. Like the Findhorn flood, this seems a remarkable discharge in relation to the corresponding catchment area, and these two extreme historical events together provide a useful context in which to view the recent Tay flood.

Rainfall intensities in the 1993 Tay flood were not exceptional, and it is important to note that at most gauging stations on the Tay's main tributaries, previous events generated with rather less important snowmelt components have achieved peaks comparable with those of January 1993 (e.g. Kenmore, Comrie Bridge, Pitnacree, Port-na-Craig, Wester Cardean). Had heavier rain fallen on the snowpack present on January 16th, an even larger flood peak would have been produced. However, the likelihood of heavier rain falling on such a snowpack, and with a spatial and temporal distribution still capable of producing coincident high peaks from all the major tributaries, is quite remote.

Risk Assessment

With the occurrence of the major floods of 1990 and 1993, the time series data on which risk assessments may be made have changed substantially[14]. While assessments of flood risk should never be made solely on the basis of statistically derived magnitude-frequency curves, changes in the shape of such curves are still likely to have some bearing on the understanding of flood risk at a given site.

On the Tay, the definition of flood series is further complicated by the existence of five years of estimated peaks at Ballathie preceding the full record commencing in 1952. Moreover, the estimated peaks of 1950 and 1951 are both larger than any others recorded until 1993. Up until 1989 the flood series from 1952 contained only one peak above 1500 m^3s^{-1} (1570 m^3s^{-1} on 30th January 1974) and, if considered in isolation, could be interpreted to suggest a very low risk of any major flood, above say 2000 m^3s^{-1}. If all the peak estimates for the preceding five years are accepted, however, the two peaks of 1890 m^3s^{-1} and 1850 m^3s^{-1} for 1950 and 1951 respectively produce a much different picture with a small but discrete group of outliers appearing, and indicating a higher risk of floods exceeding the 2000 m^3s^{-1} threshold. This group is substantially enlarged by the addition of the 1990 and 1993 annual

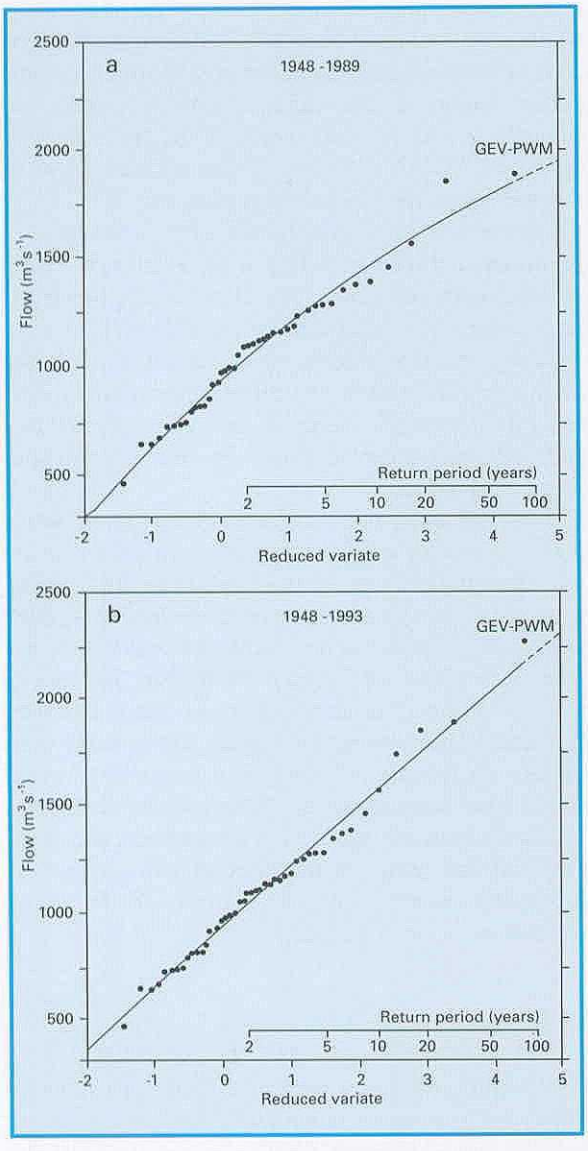


Figure 4 Flood frequency curves for the River Tay at Ballathie

maxima (Figure 4), and it is interesting to note that three of the four largest events (1993, 1950, 1990) were all associated with substantial snow-melt contributions. Such an observation raises the possibility that Tay flood series might best be modelled by use of methods which explicitly recognise different populations within the observed data[15].

The events of the past few years have done much to concentrate attention on the nature of flood risk. The clustered nature of major floods on the Tay, coupled with an important variability in the mechanisms of flood generation, illustrates the complexity of modelling flood frequency distributions.

Long-term Response

In the course of its progress, the flood made considerable demands on the emergency services and local authorities throughout Tayside, as occurred in many surrounding areas which were also affected. With its damaging effects at North Muirton, central Perth and throughout the surrounding area, however, it was acknowledged that some more considered long-term response was also required, to minimise within justifiable resources the risk of similar damage recurring in the future.

The most urgent need to counter the effects of any future peak was at North Muirton. With the floodbank there breached in three places, it was imperative to repair these as soon as possible, as the Tay remained high after its major peak and further frontal systems threatened to bring rain which might cause further inundation of property. Heavy plant was therefore brought in quickly to reduce this vulnerability. On the agricultural floodplain too, farmers were concerned to mend breaches in their defences to prevent any further flooding of their land. Unfortunately, two further peaks at approximately the mean annual flood level occurred on 30 March and 8 April 1993, and in some areas where floodbanks had not been reinstated, further crop loss and sediment deposition occurred. One method of damage limitation not yet introduced in the Tay valley would be a re-positioning of these banks in areas of repeated failure: benefits would accrue from a reduction of damage to banks and fields alike. However, as noted above, the *River Tay Catchment Study*[6] has found the present arrangement of banks to be near-optimal for the purpose of attenuating downstream flooding.

Following the 1993 flood, Tayside Regional Council commissioned two major studies: a catchment study to enhance the understanding of flood-generating processes in the Tay basin and its sensitivity to various changes in land use, climate, snowmelt and hydro-power operations; and a Perth flood study to assess structural options for flood mitigation in the urban area. An initial estimate of the cost of works to protect Perth from a flood similar to that of January 1993 combined with a 100-year extreme tide is £11.1 million, with other design options also having been identified[16]. In the catchment study, the effects of afforestation were considered to be broadly helpful in reducing the rate of snowmelt which might contribute to flood generation, though in rainfall events land use impact would be very limited[6]. Little or no improvement in the operation of the hydro-power schemes is available to help attenuate floods in the Tay: by the time that the value of additional storage capacity becomes apparent, the limited potential rate of draw-down makes such efforts futile against the volume of runoff being produced in upstream areas.

Considering the large size of catchment, and the marginal effects of land use and resource management on its hydrological behaviour in times of extreme flood, it seems unlikely that any formal basin management plan could be justified in response to the flood threat. The control of floodplain

development, through planning legislation, appears to offer much greater scope for the future management of the flood hazard. More practically, the flood warning system has shown its worth in reducing damage in the 1993 event, and it is hoped that more recent developments of the system will allow businesses and individuals to more effectively protect their property in any future emergency.

Conclusions

The Tay flood of 17th January 1993 achieved a peak discharge of 2269 m^3s^{-1} at Ballathie gauging station and is the second largest - after the Findhorn flood of 1970 - recorded at any UK gauging station. It resulted from a very deep snowpack across the entire catchment being subject to temperature increases and rainfall, which caused major tributaries of the main river to add to the flood wave as it passed downstream in a way which was to ensure the flooding of hundreds of properties and some 52 km^2 of farmland. The North Muirton housing estate received the most concentrated damage after its flood embankment was breached, but effects were widespread throughout the lower part of the Tay basin.

The presence of several large hydro-electric reservoirs in the catchment reduced the magnitude of the peaks emerging from the Garry, Tummel and Lyon tributaries, and while it was suggested that the presence of agricultural flood embankments might have exacerbated flooding in downstream areas, their widespread failure and the inundation of areas normally protected by them in fact provided greater attenuation than would otherwise have been available. Flood warnings gave early notice of the floods for all areas, but nothing could be done to substantially reduce the major peak which was developing in the river upstream.

Coming only three years after the February 1990 event, this larger flood generated considerable local concern both through the damage and disruption it caused, and by raising awareness of the threat of further flooding in the future. In a broader context such events raise the possibility of a temporally variable model of flood risk being applicable to the Tay and other rivers, while the threat of climate change introduces the possibility of greater flood risk for the future. Detailed studies and discussions are now taking place to assess what means might be employed to afford the maximum protection to Perth in any further major floods.

Recent events have served to remind Perth and other communities in the Tay catchment of their vulnerability to flooding after a substantial period of relatively little threat. However, it is likely that not only the activities of the local authorities, but also the behaviour of the river itself over the next few winters, will play a large part in determining whether or how any efforts to reduce this vulnerability should be attempted. It is certain that the continuing monitoring and documentation of notable flows will play a fundamental role in enhancing our understanding of flooding on the Tay, which must form the basis of any future plans for its management.

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Computation and Accuracy of Gauged Flows

Gauged flows are generally calculated by the conversion of the record of stage, or water level, using a stage-discharge relation, often referred to as the rating or calibration. Stage is measured and recorded against time by instruments usually actuated by a float in a stilling well. The instrument records the level either digitally, on a solid state logger, less commonly on punched tape, or continuously by pen and chart. At the majority of the gauging stations in the United Kingdom provision is made for the routine transmission of river levels directly to the processing centre, by telephone line or, less generally, by radio; on occasions satellites have been used to receive and re-transmit the radio signal. The rapid growth in the use of the public telephone network for the transmission of river level and flow data is enabling hydrometric data acquisition to proceed on a near real-time basis in most areas. Typically, levels are recorded at 15-minute intervals and stored on-site for overnight transmission to allow the initial processing to be completed on the following day. Normally, both digital and analogue recording devices are deployed at gauging stations to provide a measure of security against loss of record caused by instrument malfunction.

The stage-discharge relation is obtained either by installing a gauging structure, usually a weir or flume with known hydraulic characteristics, or by measuring the stream velocity and cross-sectional area at points throughout the range of flow at a site characterised by its ability to maintain the relationship.

The accuracy of the processed gauged flows therefore depends upon several factors:

i. accuracy and reliability in measuring and recording water levels,
ii. accuracy and reliability of the derived stage-discharge relation, and
iii. concurrency of revised ratings and the stage record with respect to changes in the station control.

Flow data from ultrasonic gauging stations are computed on-site where the times are measured for acoustic pulses to traverse a river section along an oblique path in both directions. The mean river velocity is related to the difference in the two timings and the flow is then assessed using the river's cross-sectional area. Accurate computed flows can be expected for stable river sections and within a range in stage that permits good estimates of mean channel velocity to be derived from a velocity traverse set at a series of fixed depths.

Flow data from electromagnetic gauging stations may also be computed on-site. The technique requires the measurement of the electromotive force (emf) induced in flowing water as it cuts a vertical magnetic field generated by means of a large coil buried beneath the river bed, or constructed above it. This emf is sensed by electrodes at each side of the river and is directly proportional to the average velocity in the cross-section.

British and International Standards are followed as far as possible in the design, installation and operation of gauging stations. Most of these Standards include a section devoted to accuracy, which results in recommendations for reducing uncertainties in discharge measurements and for estimating the extent of the uncertainties which do arise.

The National River Flow Archive exists to provide not only a central UK database and retrieval service but also an extra level of hydrological validation. To further this aim, staff at the Institute of Hydrology liaise with their counterparts in the water industry on a regional basis and, by visiting gauging stations and data processing centres, endeavour to maintain the necessary knowledge of local conditions and problems which is essential to help identify and rectify anomalous flow data.

Scope of the Flow Data Tabulations

River flow data are presented in two parts. In the first, daily mean gauged flows are tabulated for 49 gauging stations; daily naturalised flows are also tabulated for the River Lee (page 61) and River Thames (page 64). Monthly flow data for a further 163 gauging stations are given in the second part. The featured gauging stations have been selected to give a broad geographical coverage and to typify a wide range of catchment types found throughout the United Kingdom. A map (Figure 9) is provided on page 40 to assist in locating the gauging stations featured in this section.

For each gauging station, basic reference information is given together with comparative average and extreme river flow and rainfall figures based upon the archived record.

Explanatory notes precede the two sets of tables and are provided to assist in the interpretation of particular items. The notes relating to the daily flow tables are given in the following section; those relating to the monthly data are given on page 91.

Part (i) - the daily mean flow tabulations

Station Number

The gauging station number is a unique six-digit reference number which serves as the primary identifier of the station record on the River Flow Archive. The first digit is a regional identifier being 0 for mainland Britain, 1 for the islands around Britain

and 2 for Ireland. This is followed by the hydrometric area number given in the second and third digits. Hydrometric areas are either integral river catchments having one or more outlets to the sea or tidal estuary or, for convenience, they may include several contiguous river catchments having topographical similarity with separate tidal outlets. In Britain they are numbered from 1 to 97 in clockwise order around the coastline commencing in north-east Scotland: Ireland has a unified numbering system from 1 to 40, commencing with the River Foyle catchment and circulating clockwise; not all Irish hydrometric areas, however, have an outlet directly on the coast.

The numbers and boundaries of the United Kingdom hydrometric areas are shown in the frontispiece.

The fourth, fifth and sixth digits comprise the number, usually allocated chronologically, of the gauging station within the hydrometric area. Where the leading digit, or digits, are zero they may be omitted giving rise to apparent four or five-digit reference numbers.

Measuring Authority

The abbreviation references the organisation responsible for the provision of flow data to the River Flow Archive. A list of measuring authority codes together with the corresponding names and addresses for organisations currently contributing data to the National River Flow Archive appears on pages 170 and 171.

Grid Reference

The initial two-letter and two-figure codes each designate the relevant 100 kilometre National Grid square or Irish Grid square; the standard six-figure map reference follows.

Note: Irish Grid references - which are italicised - have only one prefix letter but it is common practice to precede it with the letter I to make the identification clear.

Catchment Area

The surface catchment area, in the horizontal plane, draining to the gauging station in square kilometres. There are a few gauging stations where, because of geological considerations, or as a result of water transfers - for instance, the use of catchwaters to increase reservoir yields - the actual contributing area may differ appreciably from that defined by the topographical boundary. In consequence, the river flows whether augmented or diminished, may cause the runoff (as a depth in millimetres) values to appear anomalous.

First Year

The year in which the station started producing daily mean flow data, usually the first year for which data are held on the River Flow Archive. Earlier data, often of a sporadic nature or of poorer quality, may occasionally be available from the measuring authorities or other sources.

Level of Station

The level of the station is, generally, the level of the gauge zero in metres above Ordnance Datum, or above Malin Head Datum for stations in Northern Ireland. Although gauge zero is usually closely related to zero discharge, it is the practice in a few areas for an arbitrary height, typically one metre, to be added to the level of the lowest crest of a measuring structure to avoid the possibility of false recording of negative values by some digital recorders.

Maximum Altitude

The level to the nearest metre of the highest point in the catchment.

Table of daily mean gauged (or naturalised) discharges

The mean flow in cubic metres per second (abbreviated to m^3s^{-1} and sometimes also referred to as 'cumecs') in a water-day, normally 09.00 to 09.00. The naturalised discharge is the gauged discharge adjusted to take account of net abstractions and discharges upstream of the gauging station.

Peak Flow: The highest flow in cubic metres per second for each month. The day of peak generally refers to the water-day but the calendar day has also been used, particularly in Scotland. Normally the peak flow corresponds to the highest fifteen-minute flow where water levels are recorded digitally, or the highest instantaneous flow associated with maximum stage where analogue recorders are used.

Runoff: The notional depth of water in millimetres over the catchment equivalent to the mean flow for the month as measured at the gauging station. It is computed using the relationship:

$$\text{Runoff in mm} = \frac{\text{Average Flow in Cumecs} \times 86.4 \times n}{\text{Catchment Area (km}^2\text{)}}$$

where n is the number of days in the month. The runoff total is rounded to the nearest millimetre.

Runoff is computed on the basis of naturalised flows (see 'Factors Affecting Runoff') for the minority of catchments where daily, or monthly, naturalised flows are available.

Rainfall: The rainfall over the catchment in millimetres for each month. Each areal rainfall total is derived from a one kilometre square grid of rainfall values generated from all available daily and

monthly rainfall data. A computer program calculates catchment rainfall by averaging the values at the grid points lying within the digitised catchment boundary. Validation procedures allow for the rejection of obviously erroneous raingauge observations prior to the gridding exercise. The bulk of the rainfall data are provided by the Meteorological Office†. Where, as for instance in some small mountainous catchments, raingauges are few and their siting and exposure are not ideal, great precision in the areal rainfall estimates cannot be expected.

Statistics of monthly data for previous record

Only complete monthly records are used in the derivation of the average, low and high values of river flow, runoff and rainfall. The rainfall and runoff statistics are normally directly comparable but full equivalence will not obtain where the pattern of missing data differs between the archived rainfall and runoff data sets.

Where applicable, a guide to the amount of missing data is given following the section heading. Some slight variations from the statistics held by the measuring authorities may occur; these may be due to the different methods of computation or the need for uniformity in presentation.

Summary statistics

Current year flow statistics are tabulated alongside the corresponding values for the previous record. Where appropriate, the current year figures are expressed as a percentage* of the preceding average.

Mean Flow: The average of all available daily mean flows during the term indicated.

Lowest Daily Mean: The value and date of occurrence of the lowest mean flow in cubic metres per second in a water-day during the term indicated. In a record in which the value recurs, the date is that of the last occasion.

River flow measurement tends to become more imprecise at very low discharges. Very low velocities, heavy weed growth and the insensitivity of stage-discharge relations combine with the difficulty of accurately measuring limited water depths to reduce the accuracy of computed flows. The reliability of both the lowest daily mean flow and the 95 per cent exceedance flow (see below) as representative measures of low flow must, therefore, be considered carefully and the values used with caution in view of the increasing proportional variability between the natural flow and the artificial influences, such as abstractions, discharges and storage changes as the river flow diminishes.

† For the IH research catchments, the monthly totals are subsequently updated using areal figures derived from a dense local raingauge network.

* As a consequence of leap years the runoff and mean flow percentage may not be identical.

Peak: The peak flow in cubic metres per second during the term indicated. The date of occurrence, normally the water-day, is also indicated. Generally, the peak flows are derived from the record of monthly instantaneous maximum flows stored on the River Flow Archive*. As a result of particular flow measurement difficulties in the flood range, this peak flow series is often incomplete. Consequently, in some cases, the peak flow from the previous period of record has been abstracted from the Flood Studies Report[1]. Reference to this report should be made to check for historical flood events which may exceed the peak falling within the gauged flow record.

10% exceedance: The flow in cubic metres per second which was equalled or exceeded for 10 per cent of the specified term – a high flow parameter which, when compared with the mean may give a measure of the variability, or 'flashiness', of the flow regime. The 10 per cent exceedance value is computed using daily flow data only for those years with ten days, or less, missing on the River Flow Archive.

50% exceedance: The flow in cubic metres per second which was equalled or exceeded for 50 per cent of the specified term – the median value. The same conditions for completeness of the annual records apply as for the 10 per cent exceedance flow.

95% exceedance: The flow in cubic metres per second which was equalled or exceeded for 95 per cent of the specified term – a significant low flow parameter relevant in the assessment of river water quality consent conditions. The same conditions for completeness of the annual records apply as for the 10 per cent exceedance flow.

Factors Affecting Runoff (FAR)

An indication of the various types of abstractions from, and discharges to, the river operating within the catchment which alter the natural flow is given by a standard set of abbreviated descriptions. In Part (ii) – the monthly flow data – each description is shortened to a code letter. An explanation of the abbreviated descriptions and the code letters is given overleaf. With the exception of the induced loss in surface flow resulting from underlying groundwater abstraction, these codes and descriptions refer to quantifiable variations and do not include the progressive, and difficult to measure, modifications in the regime related to land-use changes.

Except for a small set of gauging stations for which the net variation, i.e. reservoir storage changes and/or the balance between imports and exports of water to, or from, the catchment, is assessed in order to derive the 'naturalised' flow from the gauged flow, (see page 36), the record of individual abstractions, discharges and changes in storage as indicated in the code above is not held centrally.

* Additional data are held on the flood peak archives (page 134).

[1] Flood Studies Report 1975. Natural Environment Research Council (5 vols. reprinted 1993).

CODE	EXPLANATION	ABBREVIATED DESCRIPTION
N	Natural, i.e., there are no significant abstractions and discharges or the variation due to them is so limited that the gauged flow is within 10 per cent of the natural flow at, or in excess of, the 95 per cent exceedance flow.	Natural within 10 per cent at the 95 per cent exceedance flow.
	Storage or impounding reservoir. Natural river flows will be affected by water stored in a reservoir situated in, and supplied from, the catchment above the gauging station.	Reservoirs in catchment.
	Regulated river. Under certain flow conditions the river will be augmented from surface water and/or groundwater storage upstream of the gauging station.	Augmentation from surface water and/or groundwater.
	Public water supplies. Natural river flows are reduced by the quantity abstracted from a reservoir or by a river intake if the water is conveyed outside the gauging station's catchment area.	Abstraction for public water supply.
	Groundwater abstraction. Natural river flow may be reduced or augmented by groundwater abstraction or recharge. This category includes catchments where minewater discharges influence the flow regime.	Flows influenced by groundwater abstraction and/or recharge.
	Effluent return. Outflows from sewage treatment works will augment the river flow if the effluents originate from outside the catchment.	Augmentation from effluent returns.
	Industrial and agricultural abstractions. Direct industrial and agricultural abstractions from surface water and from groundwater may reduce the natural river flow.	Flow reduced by industrial and/or agricultural abstraction.
H	Hydro-electric power. The river flow is regulated to suit the need for power generation.	Regulation for HEP.

Station and catchment description

A short commentary providing a guide to the characteristics of the station, its flow record and the catchment it commands; refer to page 174 for an explanatory listing of the abbreviations and acronyms used. The principal objectives of this summary information are to assist data users in the selection of gauging station records appropriate to their needs and to assist in the interpretation of flow variability at individual gauging stations particularly where the natural flow pattern is significantly disturbed by artificial influences.

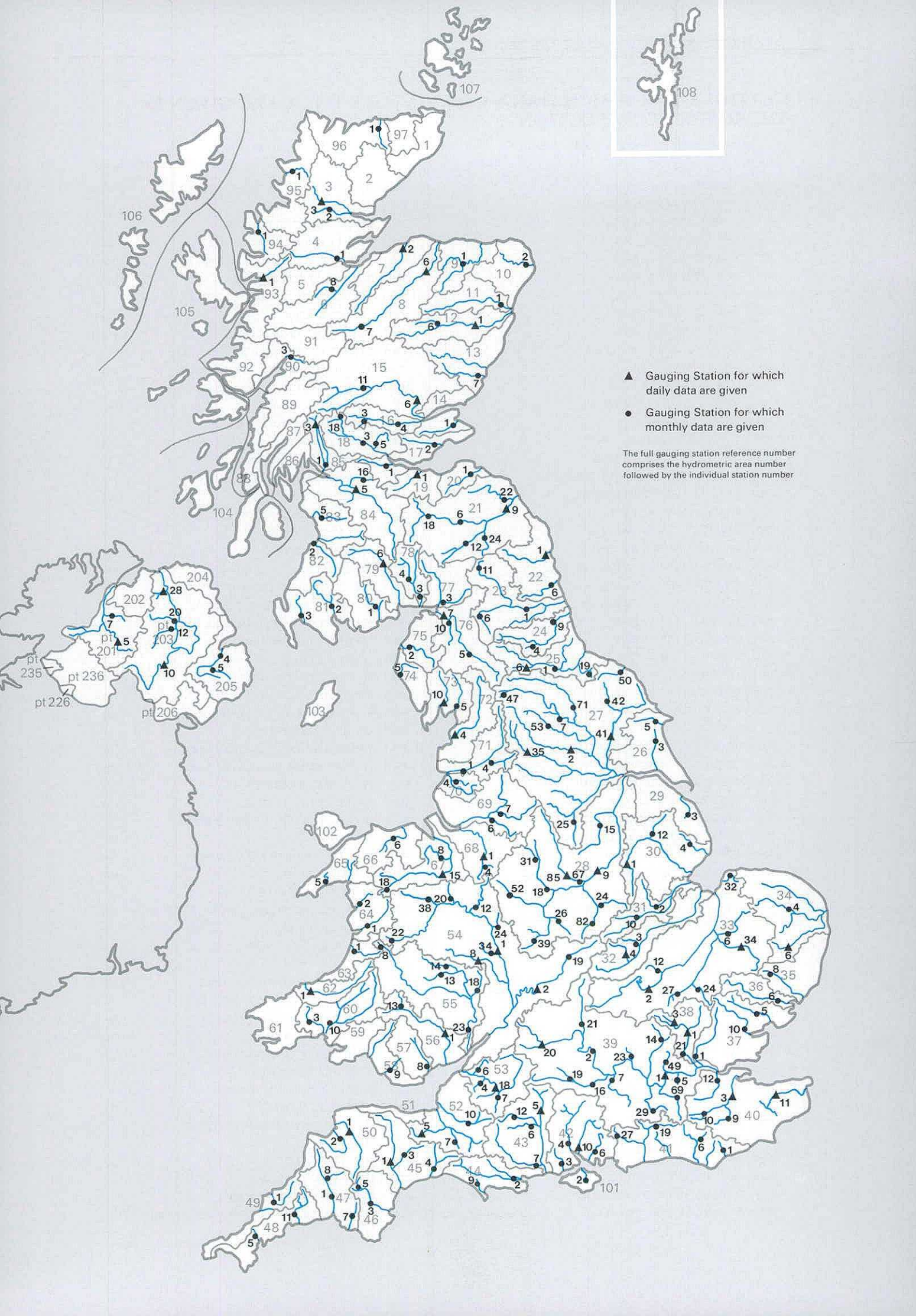
A comprehensive set of gauging station and catchment descriptions is provided in the '*Hydrometric Register and Statistics 1986–90*' (see page 172). Further details of the net impact of abstractions and discharges on river flow patterns are given in: Gustard, A., Bullock, A. and Dixon, J.M. 1992. Estimating Low River Flows in the United Kingdom. Institute of Hydrology Report number 108.

Comment

A summary of any important factors influencing the accuracy of the current year's flow data specifically; for instance, the reconstruction of a gauging station or the use of extrapolated stage-discharge relations during periods of very low or very high flows.

STATIONS FOR WHICH DAILY OR MONTHLY DATA ARE GIVEN IN THE RIVER FLOW SECTION

continued on page 41


▲ Gauging Station for which daily data are given
● Gauging Station for which monthly data are given
The full gauging station reference number comprises the hydrometric area number followed by the individual station number

A 'D' indicates that the featured station is in the daily flow section.

003003 Oykel at Easter Turnaig 1993

Measuring authority: HRPB
First year: 1977
Grid reference: 29 (NC) 403 001
Level stn (m OD): 15.60
Catchment area (sq km): 330.7
Max alt (m OD): 998

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	8.629	5.967	4.496	4.338	1.828	5.505	2.061	19.970	2.141	25.360	1.790	7.215
2	33.690	12.970	4.088	3.328	1.725	5.595	5.972	15.770	10.020	31.320	1.663	35.700
3	24.850	23.190	3.421	3.102	1.686	3.955	18.700	16.730	8.102	7.149	1.564	40.420
4	24.940	37.460	39.910	4.678	1.701	4.391	28.420	10.740	3.718	39.010	1.508	47.530
5	32.310	81.890	50.830	5.774	1.938	13.880	30.010	6.342	2.519	45.420	1.451	32.450
6	19.600	41.020	18.160	5.124	1.890	12.030	35.370	4.366	1.989	97.570	1.659	32.400
7	20.710	25.360	8.154	3.587	1.968	4.783	54.410	4.830	1.708	35.560	23.060	17.240
8	39.150	12.820	5.588	4.297	1.514	3.027	59.980	4.978	1.505	48.100	8.429	26.180
9	33.130	7.562	4.536	6.397	1.302	2.287	61.640	35.400	1.464	21.840	15.180	37.860
10	18.940	5.504	3.419	8.939	1.137	1.838	68.300	32.720	2.392	37.540	6.735	19.670
11	6.370	4.374	3.067	4.279	1.019	1.551	30.430	11.940	19.890	30.830	8.518	9.266
12	14.760	3.802	2.784	3.046	0.999	1.281	14.960	6.472	9.408	11.600	13.350	7.202
13	12.100	3.340	2.792	2.471	5.080	1.060	6.570	4.316	7.778	7.176	8.134	6.249
14	25.350	11.650	3.776	2.190	2.619	0.937	4.181	4.528	4.603	13.230	9.113	32.570
15	76.130	14.360	22.300	11.900	60.490	0.887	3.151	3.450	3.627	10.520	6.393	15.680
16	196.800	60.780	44.610	15.270	18.750	3.119	2.951	2.565	2.815	7.614	4.931	31.650
17	66.030	32.900	90.950	22.920	14.100	43.620	2.845	2.145	2.243	21.990	3.396	20.530
18	19.090	45.340	32.480	8.286	8.071	42.040	2.740	1.975	1.853	10.510	2.606	112.200
19	40.470	34.500	37.580	30.300	3.784	13.690	2.320	1.790	3.463	19.000	2.040	48.300
20	38.740	61.220	38.200	18.620	2.750	7.902	3.807	1.880	2.516	26.640	1.760	13.750
21	68.150	16.920	26.570	11.580	2.584	21.900	7.945	5.221	2.064	11.500	1.582	7.321
22	73.650	19.890	28.740	8.478	2.349	11.580	10.220	3.519	1.864	6.061	1.729	6.231
23	100.400	11.460	14.490	8.501	1.862	8.226	21.740	5.262	1.628	5.102	1.474	4.939
24	57.250	7.268	24.640	22.510	1.536	4.602	13.050	4.357	2.152	4.251	0.962	6.938
25	42.620	10.340	14.450	9.166	1.291	13.150	32.010	7.305	2.375	3.380	1.412	4.998
26	81.470	12.020	11.290	4.773	1.087	13.140	55.860	3.880	1.856	2.863	1.534	5.567
27	33.670	6.712	11.290	3.435	0.959	5.130	14.080	3.914	1.573	2.518	1.500	8.343
28	25.230	5.504	8.483	2.676	0.881	3.248	6.143	2.909	1.427	2.371	1.447	8.806
29	14.060		8.141	2.218	0.870	2.656	4.681	2.961	1.339	2.196	1.463	32.480
30	16.180		11.670	1.931	2.588	2.366	10.180	2.602	1.259	2.007	1.239	18.320
31	10.610		7.355		8.088		21.750	2.351		1.898		7.713
Average	41.130	22.000	18.980	8.137	5.111	8.646	20.530	7.651	3.710	19.100	4.587	22.770
Lowest	6.370	3.340	2.784	1.931	0.870	0.887	2.061	1.790	1.259	1.898	0.962	4.939
Highest	196.800	81.890	90.950	30.300	60.490	43.620	68.300	35.400	19.890	97.570	23.060	112.200
Peak flow	368.30	133.80	189.40	69.00	111.20	98.45	107.30	58.40	57.07	148.50	39.46	185.20
Day of peak	16	20	17	24	15	18	7	9	11	6	7	18
Monthly total (million cu m)	110.20	53.23	50.83	21.09	13.69	22.41	54.99	20.49	9.62	51.16	11.89	60.97
Runoff (mm)	333	161	154	64	41	68	166	62	29	155	36	184
Rainfall (mm)	430	156	161	81	92	108	191	77	49	156	44	240

Statistics of monthly data for previous record (Nov 1977 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	24.880	18.140	22.930	9.911	6.487	6.263	7.727	11.150	20.370	23.620	26.350	23.760
	Low	13.550	2.376	6.649	5.445	1.067	0.752	2.756	2.332	7.292	7.329	10.050	8.246
	(year)	1985	1986	1980	1980	1980	1982	1992	1984	1989	1979	1989	1977
	High	43.980	39.930	48.340	17.710	14.380	14.140	15.690	22.590	31.870	41.100	49.380	38.210
	(year)	1983	1989	1990	1979	1982	1980	1979	1985	1981	1980	1981	1980
Runoff	Avg	202	134	186	78	53	49	63	90	160	191	207	192
	Low	110	17	54	43	9	6	22	19	57	59	79	67
	High	356	292	391	139	116	111	127	183	250	333	387	309
Rainfall	Avg	229	144	213	96	83	99	109	148	215	232	247	224
	Low	113	21	76	50	29	44	60	52	86	96	85	82
	High	408	423	436	175	167	176	169	263	326	401	458	361

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	15.240		16.800		91
Lowest yearly mean			12.970	1987	
Highest yearly mean			20.250	1981	
Lowest monthly mean	3.710	Sep	0.752	Jun 1982	
Highest monthly mean	41.130	Jan	49.380	Nov 1981	
Lowest daily mean	0.870	29 May	0.353	26 Jun 1982	
Highest daily mean	196.800	16 Jan	404.800	29 Jan 1982	
Peak	368.300	16 Jan	847.500	6 Oct 1978	
10% exceedance	38.420		40.390		95
50% exceedance	7.210		8.575		84
95% exceedance	1.425		1.058		135
Annual total (million cu m)	480.60		530.20		91
Annual runoff (mm)	1453		1603		91
Annual rainfall (mm)	1785		2039		88
1941-70 rainfall average (mm)			1966		

Factors affecting runoff

• Natural to within 10% at 95 percentile flow.

Station and catchment description

40m wide river section. Flows fully contained except in extreme circumstances (e.g. October 1978). Construction of gabion groynes immediately downstream, in February 1986, has rendered the low flow rating less stable. 100% natural flow regime with little loch storage. Catchment is typical Highland mix of rough grazing and moorland with some afforestation in the middle reaches.

007002 Findhorn at Forres 1993

Measuring authority: HRPB
First year: 1958
Grid reference: 38 (NJ) 018 583
Level stn. (m OD): 6 80
Catchment area (sq km): 781.9
Max alt. (m OD): 941

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	10.300	18.220	10 030	16 620	6.945	21 090	4 872	4.850	3.577	18.690	6 060	4.579
2	59.170	17 030	9.089	13.200	5 740	16.180	4.215	4 111	3.505	52 070	5.957	9.645
3	32.380	77.680	8 574	10 930	4.772	12.830	3.952	4 261	3 637	16 600	5 734	50.350
4	15.570	125 000	9.798	10 850	4 385	9 238	4 075	4.497	4.149	27 440	9 107	49 140
5	37 250	102.200	46 420	9 935	4 820	7.412	3.924	11 870	3.523	28 020	7.920	61.060
6	23.620	88 760	26.700	20 140	5 344	6.136	3 750	5 558	3 248	305 800	6.455	49.840
7	35.490	70 070	16 880	15 290	6.924	5.545	3 451	5 103	3 171	215 500	6 851	20 850
8	29.100	31 300	14 320	12.000	9.993	5 314	3 713	4.923	3.131	101 900	16.560	13.530
9	34.860	18 310	14.790	18 370	6 651	5 048	12 650	4 317	3.115	63 190	13.120	26 820
10	34 420	19.530	11 930	12.940	5.408	5.586	23 090	8 831	3 621	111 900	10 930	17 870
11	21 550	15 820	8 909	12 140	5 542	5.507	26.960	7 806	11 960	72 760	7 437	12.510
12	13 900	13.560	13 420	9 662	5.523	5 055	11 410	9 004	12.560	68 380	6 428	9 789
13	14.840	17 670	20 970	7 806	11 020	4.517	6 921	6.587	8 470	38 810	6 021	9 236
14	12 540	33.180	25 640	7.527	39 550	4.115	5 266	5 452	9 059	26 920	5 245	8 223
15	72.570	25 860	24 080	7.753	89 410	3 964	4 653	8.324	11 880	21 630	5 096	8 913
16	230 300	37 090	18 550	13 110	49 610	3 996	11 430	5 515	8 440	17 320	12 090	8 187
17	261.300	37.890	53 760	10 300	174 400	4.696	13.050	4 302	6 380	13 800	9 578	7 115
18	62.520	24 730	25.540	7.488	63 570	5 949	6 425	3 956	5 128	14 020	6.588	122.700
19	38 110	18.410	14.430	8.105	20 880	7.773	5 002	4 010	4 524	14 600	4 980	110 300
20	84.860	19 250	28 430	19 750	14 670	7 460	4.455	3 591	6 658	38.850	3.838	35 050
21	100.500	18 120	34 770	16 410	12 590	6 707	4.144	3.381	5.946	26 620	4 164	19.240
22	87.450	17.150	16 130	12.200	13.180	6.942	4 205	3 425	5.459	16 760	3 098	14.710
23	70.590	22.400	11 630	10 960	12.980	8 028	5.225	12.900	4 657	13.510	2.994	11.940
24	116 000	20.940	11 970	10 080	9 274	6.907	5.388	11 920	4 122	11.750	4 566	10 700
25	42.470	31 290	13 460	8 614	7.770	7.525	4.316	22 280	6 278	10 010	6 634	9.558
26	36.050	25 020	13 540	8 224	6 757	21.690	4.513	14 370	4 782	8 779	7.216	7.571
27	34.370	15.340	16 420	7.904	6 084	8.428	5 026	7 999	4 131	8 121	8 362	9 484
28	35 580	11.690	18 540	7 270	5.584	5.597	4.322	5 918	3 769	7.650	6 742	11 290
29	26.290		16 450	6 730	5.573	4 734	5.962	4.752	3 557	7.300	4 854	17 040
30	30.140		111 100	6 562	12.060	4 760	5.511	4.181	3 416	6 891	4.328	15.760
31	28 180		27 800		25 880		4 546	3 810		6 230		11 550
Average	55 880	34.770	22 390	11 300	21 060	7.624	6 981	6 832	5 528	44 900	6.965	24 990
Lowest	10.300	11 690	8.574	6 562	4.385	3 964	3 451	3.381	3 115	6 230	2.994	4.579
Highest	261 300	125.000	111 100	20 140	174.400	21.690	26 960	22 280	12 560	305 800	16 560	122.700
Peak flow	592 50	131.20	185.40	31 92	365 00	37.58	38 97	31 33	19 22	425 40	21.66	215.20
Day of peak	17	4	30	6	17	26	11	23	11	6	16	19
Monthly total (million cu m)	149.70	84 11	59 97	29 28	56 41	19 76	18.70	18.30	14 33	120 30	18 05	66 92
Runoff (mm)	191	108	77	37	72	25	24	23	18	154	23	86
Rainfall (mm)	217	34	64	33	127	51	64	52	54	197	27	151

Statistics of monthly data for previous record (Oct 1958 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg.	24 670	21.160	25 070	21 170	15.520	10.570	9 667	13 460	15 100	21 170	23 550	24 600
	Low	9.429	5.259	8 615	5 561	3.836	3.141	2.743	2 478	2 864	3 548	9 300	8.333
	(year)	1963	1963	1964	1974	1960	1992	1984	1976	1972	1972	1983	1976
	High	51.190	53.760	58 360	54 180	41 990	41 900	24 650	58.840	37 870	49 540	39 710	61.550
	(year)	1983	1990	1990	1979	1968	1966	1965	1970	1965	1981	1977	1966
Runoff:	Avg.	84	66	86	70	53	35	33	46	50	73	78	84
	Low	32	16	30	18	13	10	9	8	9	12	31	29
	High	175	168	200	180	144	139	84	202	126	170	132	211
Rainfall:	Avg.	105	71	92	63	71	78	82	103	100	112	115	106
	Low	34	19	29	13	22	22	26	18	18	26	30	37
	High	201	197	228	136	169	239	167	247	216	223	225	210

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	20 790		18 800		111
Lowest yearly mean			11 990	1972	
Highest yearly mean			25 650	1990	
Lowest monthly mean	5 528	Sep	2 478	Aug 1976	
Highest monthly mean	55 880	Jan	61 550	Dec 1966	
Lowest daily mean	2 994	23 Nov	1 752	23 Aug 1976	
Highest daily mean	305 800	6 Oct	612 000	17 Aug 1970	
Peak	592 500	17 Jan	2410 000	17 Aug 1970	
10% exceedance	43 940		41 440		106
50% exceedance	10 040		11 430		88
95% exceedance	3 735		3 251		115
Annual total (million cu m)	655.60		593 30		111
Annual runoff (mm)	839		759		111
Annual rainfall (mm)	1071		1098		98
1941-70 rainfall average (mm)			1208		

Factors affecting runoff

- Natural to within 10% at 95 percentile flow.

Station and catchment description

50m wide river section in a mobile gravel reach which necessitates frequent recalibration of low flow rating. Flows contained under cableway up to 3.8m. Adequately gauged to bankfull. 100% natural catchment with minimal surface storage. Other than a narrow agricultural coastal plain the catchment drains the Monadhliath Mountains with an extensive blanket peat cover.

008006 Spey at Boat o Brig 1993

Measuring authority: NERPB
First year: 1952

Grid reference: 38 (NJ) 318 518
Level stn. (m OD): 43.10

Catchment area (sq km): 2861.2
Max alt. (m OD): 1309

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	41.010	77.600	44.900	97.390	36.870	53.550	26.490	24.880	23.500	80.440	35.810	23.950
2	85.150	69.770	43.130	70.410	35.550	50.660	23.190	23.710	22.940	195.100	34.550	32.270
3	89.620	114.900	41.810	57.580	32.490	46.230	22.420	24.930	25.550	93.060	33.610	79.610
4	61.730	190.100	45.820	53.780	30.080	39.850	21.500	27.500	25.040	98.990	35.490	131.800
5	108.600	200.300	122.600	58.170	29.000	35.510	21.250	41.880	23.140	86.700	34.630	131.000
6	104.300	220.100	86.650	83.160	30.060	31.800	22.250	34.580	21.880	274.100	33.040	107.000
7	89.380	202.900	63.810	71.350	35.700	29.560	21.750	31.390	21.220	376.300	33.100	90.630
8	104.000	154.400	54.710	55.420	45.270	28.440	22.080	30.600	20.780	253.800	45.420	69.130
9	100.300	107.300	50.930	56.150	39.390	27.740	26.950	30.110	24.230	208.300	45.660	83.710
10	108.200	86.080	46.210	62.450	33.650	28.530	34.400	32.390	64.490	252.700	42.890	64.070
11	91.350	72.380	42.780	55.680	32.160	28.430	48.260	36.460	110.300	174.600	37.670	53.210
12	63.190	62.640	43.330	47.840	32.450	27.040	38.750	42.660	71.400	155.600	34.380	46.420
13	57.120	59.620	50.230	43.230	42.610	25.180	31.610	39.150	65.940	126.300	33.420	43.480
14	53.340	64.290	60.500	39.850	82.560	23.500	28.660	32.910	57.690	104.800	32.130	39.990
15	197.100	72.620	62.360	38.820	172.900	22.620	26.400	36.570	50.800	93.840	30.480	39.770
16	375.000	66.180	67.730	39.590	115.600	22.800	28.330	33.870	43.140	75.340	35.100	41.030
17	475.600	84.460	73.940	45.360	198.700	26.720	47.830	29.620	38.430	65.740	37.570	37.540
18	381.900	72.510	92.010	40.780	202.900	30.820	35.130	27.520	34.340	63.730	32.110	158.800
19	247.100	64.440	70.090	40.650	124.200	30.280	29.580	26.260	32.580	65.510	28.440	247.600
20	239.300	61.550	66.660	55.150	85.750	30.780	27.010	24.640	37.350	94.870	25.800	151.900
21	253.500	61.930	83.650	72.290	70.560	28.690	25.560	23.380	36.720	86.010	26.250	96.600
22	279.900	64.150	68.160	59.220	61.630	27.490	24.460	23.180	32.920	68.050	23.400	70.080
23	241.000	66.260	57.220	54.980	52.980	27.890	25.380	41.280	30.870	59.680	21.780	57.510
24	297.700	55.130	52.040	52.530	46.080	26.950	24.960	45.700	29.290	56.130	19.180	50.320
25	211.000	66.140	51.820	46.940	41.470	27.140	24.090	57.780	31.580	50.070	20.840	45.070
26	162.800	75.630	50.350	43.290	37.820	45.860	24.420	43.490	30.240	46.360	22.510	33.830
27	139.700	57.410	49.170	42.480	35.040	36.540	24.200	34.680	28.040	43.700	23.810	33.850
28	126.900	47.790	49.440	40.070	32.720	30.310	24.330	30.910	26.260	41.860	24.740	39.670
29	104.000		46.020	37.760	32.220	27.230	29.030	27.650	25.180	40.000	23.070	58.710
30	102.200		154.100	35.790	39.000	27.330	28.510	25.770	24.510	38.390	23.320	63.280
31	96.650		145.600		50.140		25.870	24.300		37.050		48.550
Average	164.100	92.810	65.730	53.270	62.500	31.520	27.890	32.570	37.010	113.100	31.010	73.240
Lowest	41.010	47.790	41.810	35.790	29.000	22.620	21.250	23.180	20.780	37.050	19.180	23.950
Highest	475.600	220.100	154.100	97.390	202.900	53.550	48.260	57.780	110.300	376.300	45.660	247.600
Peak flow	681.10	228.70	206.40	117.50	284.40	55.15	78.02	66.59	154.90	459.50	51.45	310.90
Day of peak	16	6	30	1	17	1	17	25	11	7	8	18
Monthly total (million cu m)	439.70	224.50	176.10	138.10	167.40	81.69	74.71	87.24	95.93	303.00	80.37	196.20
Runoff (mm)	154	78	62	48	59	29	26	30	34	106	28	69
Rainfall (mm)	267	141	167	146	115	54	166	155	171	147	133	143

Statistics of monthly data for previous record (Oct 1952 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	84.930	73.510	79.580	69.280	58.050	42.170	39.230	47.410	48.980	68.180	76.030	84.480
	Low	41.080	26.470	35.760	33.580	26.910	17.900	15.530	11.310	14.090	13.350	30.130	31.230
	(year)	1979	1963	1964	1974	1960	1961	1992	1955	1972	1972	1958	1989
	High	145.900	200.500	186.200	135.200	103.400	103.000	79.860	119.600	105.500	153.900	147.000	198.600
	(year)	1983	1990	1990	1979	1968	1966	1980	1956	1965	1981	1984	1954
Runoff:	Avg.	80	63	74	63	54	38	37	44	44	64	69	79
	Low	38	22	33	30	25	16	15	11	13	12	27	29
	High	137	170	174	122	97	93	75	112	96	144	133	186
Rainfall:	Avg.	110	77	88	64	75	75	84	98	96	116	113	116
	Low	38	26	29	19	24	23	20	21	21	30	30	46
	High	185	212	179	128	146	181	158	188	178	205	213	211

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre 1993
Mean flow (m^3s^{-1})	65.480		64.310		102
Lowest yearly mean			44.210	1972	
Highest yearly mean			82.810	1954	
Lowest monthly mean	27.890	Jul	11.310	Aug 1955	
Highest monthly mean	164.100	Jan	200.500	Feb 1990	
Lowest daily mean	19.180	24 Nov	9.311	16 Aug 1955	
Highest daily mean	475.600	17 Jan	1089.000	17 Aug 1970	
Peak	681.100	16 Jan	1675.000	17 Aug 1970	
10% exceedance	129.100		120.500		107
50% exceedance	43.760		49.780		88
95% exceedance	23.090		19.020		121
Annual total (million cu m)	2065.00		2030.00		102
Annual runoff (mm)	722		709		102
Annual rainfall (mm)	1105		1112		99
1941-70 rainfall average (mm)			1184		

Factors affecting runoff

- Regulation for HEP

Station and catchment description

Lowest station currently operating on the Spey. Cableway rated 65m wide section with natural control, extreme floods bypass station on left bank. 380 sq. km. developed for hydro-power with diversions and storage; limited net impact on annual runoff (small loss). Geology is mainly granites and Moinian metamorphics with some Dalradian and Old Red Sandstone. Catchment is mixed with mountain (all northern slopes of Cairngorms) moorland, hill grazing, arable and forestry.

012001 Dee at Woodend 1993

Measuring authority: NERPB
First year: 1929
Grid reference: 37 (NO) 635 956
Level stn. (m OD) 70 50
Catchment area (sq km): 1370.0
Max alt. (m OD): 1309

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	30 160	37.980	22 080	47 620	29 980	39 980	13.040	10 680	8 904	140 900	20 860	23 950
2	59.740	35 630	21.830	42 200	27 010	46 010	11.530	10 410	8 603	219.300	19 840	33 590
3	42 420	89.470	20 790	37.650	23 380	37.220	11.010	14 610	8.763	93.110	19.740	79 950
4	27.190	136.900	22.620	51 390	20 920	30 670	10 610	17.130	9.030	95 460	22 670	92 020
5	62.760	116.800	81 640	73.180	20 280	27.380	10 050	20.630	8 202	63 850	20 860	49 410
6	41 300	142.200	51 420	88.240	21 380	24 430	9 654	14.930	7 921	176.500	19 650	44 940
7	55 870	114 500	37 790	56 580	27.610	22 550	9.055	15.620	7 949	476.600	19.620	37.980
8	49.540	72.210	33.870	45.510	28 560	21.400	9 466	14 430	8.053	249.100	23 830	30 390
9	52 330	51.990	31 070	93.300	23.290	20 730	11.770	13.290	20 490	192.700	28.890	40 030
10	60 150	44 890	27.180	94.980	20 900	20 840	13.280	13.930	79 950	161 600	26 840	32 540
11	40 830	38.030	24 260	60 820	21 760	19 800	19 860	20 440	108.900	112.100	20 770	27.620
12	31.230	33 360	27 340	50.630	21 810	18 600	16.650	21 370	52 910	97 080	19 080	25 170
13	30 580	31 420	32 910	44 070	27 380	16 900	13.370	16 530	76 080	76.980	19 130	25 640
14	30 170	34.710	40 170	37.900	45 480	15.590	11 800	14 650	54 570	65.110	17 190	23 260
15	179.000	37.920	41 000	36.560	70 340	14 730	12.170	18 420	45 910	57 370	16 090	24.520
16	259 200	37.080	41 250	42.390	72 190	14.370	32.800	17.250	33.780	49 060	24.180	22.960
17	367.300	53 670	47 780	42 890	326 200	14 450	31.620	15.750	28 920	42 870	22.420	19 410
18	101.600	38.970	45 810	36 020	162.800	14.720	19 570	13 790	24.720	39.930	17 420	149.700
19	75.370	32 220	32.390	41 540	76 810	15 470	15.710	13 320	25 910	37.550	15.180	159 200
20	112.200	32.500	32 570	75.440	57.150	15.540	13 910	11 620	73 930	41 770	12 330	58.030
21	145.400	30.970	43 990	74 920	51 860	14 130	12.450	10 540	35 770	41 190	16 230	39 210
22	127.500	32.210	30.900	53 650	44 240	13 430	11.500	10 200	30 840	35.810	14 460	34 420
23	96.530	33.670	26 660	52.370	37 240	13 320	12 340	13 670	26 690	32.390	13 370	30.080
24	156.100	27 600	23.750	45.520	32 690	13 160	12.120	15 940	24 680	31 930	12 330	26 580
25	68 540	33.710	22 620	39 140	29.530	13 460	11 230	14 370	27 690	28.530	14 160	25 390
26	63 440	34.320	21 760	37.700	26 620	25 630	10.960	15 370	21.950	26 530	14 290	19 970
27	56 510	24 380	20 910	37 270	24.330	16 600	11.100	12 900	19 680	25 080	15 490	20 590
28	52 320	20.130	21 540	34 160	22.460	13.810	10.910	11 660	18 170	24.120	19.550	23 800
29	45 850		37.050	30 330	22.720	12 730	11 130	10 560	17 070	23.170	18 910	49 320
30	54 820		231.100	28.970	51.940	12 850	11.460	9 883	23 080	21.750	19 490	34 010
31	50 290		71 310		49 070		10 640	9 396		21.530		22 960
Average	84.720	51 770	40.880	51.100	48 970	20 020	13.640	14.300	31 300	90 350 *	18 830	42 790
Lowest	27.190	20 130	20.790	28.970	20 280	12 730	9 055	9 396	7 921	21.530	12.330	19 410
Highest	367 300	142.200	231.100	94 980	326 200	46 010	32.800	21 370	108 900	476.600	28 890	159 200
Peak flow	680.40	160 00	349 50	131.70	531 80	50 30	51 96	32 75	138.60	586.10	37 16	288 00
Day of peak	17	6	30	9	17	2	16	11	11	7	9	18
Monthly total (million cu m)	226.90	125 20	109 50	132.40	131.10	51 88	36.53	38.30	81 14	242 00	48 80	114.60
Runoff (mm)	166	91	80	97	96	38	27	28	59	177	36	84
Rainfall (mm)	231	35	81	99	138	43	71	62	129	192	51	112

Statistics of monthly data for previous record (Oct 1929 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg	47.200	40.700	43 880	45 030	35.710	22 270	18 400	22 140	25 690	39 450	46.700	48 100
	Low	15 450	13.420	15 160	11 380	12.130	7 340	6.851	5.141	6 491	6.798	12.230	22 020
	(year)	1940	1947	1973	1938	1946	1940	1989	1984	1972	1972	1983	1976
	High	127 800	104 200	88 680	113 300	85 950	56 080	36.710	63 850	71 830	138 200	127.500	108 400
	(year)	1937	1990	1977	1947	1986	1948	1958	1948	1930	1982	1984	1954
Runoff:	Avg	92	73	86	85	70	42	36	43	49	77	88	94
	Low	30	24	30	22	24	14	13	10	12	13	23	43
	High	250	184	173	214	168	106	72	125	136	270	241	212
Rainfall:	Avg	119	79	80	69	79	68	87	94	93	120	113	117
	Low	36	10	16	12	21	16	22	13	13	8	22	43
	High	374	216	175	196	179	160	206	185	227	310	320	282

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	42.440		36 250		117
Lowest yearly mean			24.190	1973	
Highest yearly mean			49 050	1982	
Lowest monthly mean	13 640	Jul	5.141	Aug 1984	
Highest monthly mean	90.350	Oct	138 200	Oct 1982	
Lowest daily mean	7.921	6 Sep	3 536	27 Aug 1976	
Highest daily mean	476 600	7 Oct	648.500	24 Jan 1937	
Peak	680 400	17 Jan	1133 000	24 Jan 1937	
10% exceedance	80 400		72 400		111
50% exceedance	27.480		25.730		107
95% exceedance	10 560		8.302		127
Annual total (million cu m)	1338 00		1144 00		117
Annual runoff (mm)	977		835		117
Annual rainfall (mm)	1242		1118		111
1941-70 rainfall average (mm)			1194		

Factors affecting runoff

- Natural to within 10% at 95 percentile flow.

Station and catchment description

Cableway rated, fairly stable natural control. Present station, built in 1972, replaced earlier station on same reach (flow records from 1929, chart records from 1934). Cairnton; c/m measurements at Woodend established by Capt. McClean. Earlier staff gauge record dates from 1911. No regulation, little natural storage, minor abstractions. Dalradian and Moinian metamorphic along most of the valley, flanked by igneous intrusive. Mountain, moorland, forestry, pastoral and some arable in the valley bottom.

015006 Tay at Ballathie 1993

Measuring authority: TRPB
First year: 1952
Grid reference: 37 (NO) 147 367
Level stn. (m OD): 26.30
Catchment area (sq km): 4587.1
Max alt. (m OD): 1214

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	130.100	258.100	84.990	357.700	137.300	155.000	54.030	61.480	47.590	337.300	61.790	105.500
2	208.100	216.700	73.970	322.500	108.600	202.000	50.420	68.620	46.490	421.600	61.280	200.500
3	202.200	328.500	70.400	297.800	99.460	146.700	50.200	83.270	44.440	246.100	60.380	342.400
4	206.000	406.400	67.770	320.600	112.800	137.200	49.970	75.580	43.540	273.900	75.110	406.500
5	384.200	408.500	97.330	408.300	101.200	133.500	49.070	81.140	42.900	208.400	69.260	320.100
6	313.000	447.900	86.350	423.500	91.630	129.000	48.470	81.650	42.670	250.500	60.920	297.200
7	335.100	384.900	83.350	338.500	89.670	123.800	45.640	83.550	42.330	369.400	62.580	268.400
8	326.000	313.300	77.830	332.100	85.350	112.900	49.340	79.320	43.540	445.400	73.850	235.000
9	410.700	244.200	69.000	658.600	74.660	103.000	53.210	78.190	50.270	334.700	88.100	260.700
10	479.900	227.400	61.830	649.800	68.740	95.530	51.450	77.240	90.960	292.300	89.810	277.800
11	405.500	242.700	63.290	449.300	66.390	85.880	49.930	81.710	124.600	246.000	78.970	248.900
12	347.200	224.000	73.110	372.500	67.320	86.120	47.960	84.350	85.650	205.800	76.050	220.000
13	330.400	212.400	76.050	320.500	84.820	80.980	46.630	74.920	75.810	186.400	80.750	221.700
14	320.500	196.700	83.030	277.800	97.910	84.350	48.450	72.590	72.120	177.200	73.270	205.300
15	862.800	204.200	87.730	254.600	117.000	77.110	52.240	83.190	66.520	162.600	69.520	245.600
16	1127.000	183.100	102.000	211.200	128.200	84.890	105.800	83.410	62.990	150.400	93.480	205.800
17	1965.000	163.900	182.200	188.900	554.800	78.390	78.320	76.250	56.850	125.900	80.780	202.700
18	1081.000	158.200	255.900	181.200	445.700	86.900	60.700	69.990	52.490	125.100	82.230	457.100
19	746.900	142.400	238.000	223.500	260.200	73.820	58.960	68.350	66.120	109.300	81.630	587.300
20	816.900	140.200	208.400	320.700	218.000	70.250	74.210	65.710	174.300	113.000	73.890	384.000
21	819.000	135.600	231.700	334.000	185.800	70.440	60.850	65.290	96.240	118.500	74.350	332.900
22	856.100	138.300	213.400	276.000	142.500	69.860	56.990	61.510	90.960	107.800	74.690	250.700
23	725.000	137.700	212.200	273.100	120.300	63.810	64.110	61.130	88.890	98.730	67.420	245.300
24	978.500	131.200	170.400	245.800	116.000	62.710	63.720	62.970	79.130	87.840	68.260	211.400
25	665.200	133.200	139.400	221.500	98.880	66.300	67.220	58.750	81.630	84.380	71.110	169.400
26	582.600	128.400	126.800	206.500	91.120	77.050	64.510	55.260	66.270	74.640	68.150	132.000
27	456.500	111.400	112.400	198.800	100.900	56.560	65.560	54.330	59.820	72.510	66.850	124.500
28	402.000	97.120	175.800	194.400	98.190	55.650	64.950	58.180	57.100	81.230	64.810	120.000
29	348.700		352.200	183.400	99.290	51.460	63.660	52.460	54.730	75.320	65.910	241.800
30	335.200		939.900	164.500	145.000	54.660	62.850	51.360	59.030	68.800	80.360	190.700
31	292.400		496.600		185.000		61.800	48.660		65.170		178.600
Average	563.200	218.500	171.400	306.900	141.700	92.530	58.750	69.690	68.870	184.400	73.190	254.500
Lowest	130.100	97.120	61.830	164.500	66.390	51.460	45.640	48.660	42.330	65.170	60.380	105.500
Highest	1965.000	447.900	939.900	658.600	554.800	202.000	105.800	84.350	174.300	445.400	93.480	587.300
Peak flow	2268.00	474.00	1102.00	821.20	823.90	222.30	122.90	93.44	235.60	491.10	111.50	754.50
Day of peak	17	6	30	9	17	2	16	11	20	8	9	19
Monthly total (million cu m)	1509.00	528.50	459.10	795.50	379.50	239.80	157.40	186.70	178.50	493.90	189.70	681.70
Runoff (mm)	329	115	100	173	83	52	34	41	39	108	41	149
Rainfall (mm)	403	35	142	134	134	56	94	61	107	112	75	202

Statistics of monthly data for previous record (Oct 1952 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	247.500	215.300	219.700	151.300	118.300	78.920	68.280	88.640	126.100	190.800	214.400	241.000
	Low	92.900	52.560	69.380	75.210	45.500	42.080	31.390	14.700	40.660	39.690	89.160	110.500
	(year)	1963	1963	1953	1974	1980	1957	1984	1955	1955	1972	1972	1989
	High	515.800	661.000	551.600	269.400	321.100	190.400	129.600	286.100	283.900	390.500	407.700	491.400
	(year)	1974	1990	1990	1991	1986	1966	1988	1985	1985	1982	1984	1954
Runoff	Avg	145	115	128	86	69	45	40	52	71	111	121	141
	Low	54	28	41	43	27	24	18	9	23	23	50	65
	High	301	349	322	152	188	108	76	167	160	228	230	287
Rainfall	Avg	161	111	128	74	93	83	93	110	132	152	145	166
	Low	33	29	39	10	24	23	21	14	11	63	38	64
	High	393	353	251	150	214	181	219	250	266	269	311	304

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	183.900		163.200		113
Lowest yearly mean			107.300	1955	
Highest yearly mean			215.100	1990	
Lowest monthly mean	58.750	Jul	14.700	Aug 1955	
Highest monthly mean	563.200	Jan	661.000	Feb 1990	
Lowest daily mean	42.330	7 Sep	11.460	6 Aug 1955	
Highest daily mean	1965.000	17 Jan	1647.000	5 Feb 1990	
Peak	2268.000	17 Jan	1746.000	5 Feb 1990	
10% exceedance	379.800		319.900		119
50% exceedance	103.000		129.900		79
95% exceedance	50.040		43.190		116
Annual total (million cu m)	5799.00		5150.00		113
Annual runoff (mm)	1264		1123		113
Annual rainfall (mm)	1555		1448		107
1941-70 rainfall average (mm)			1443		

Factors affecting runoff

- Reservoir(s) in catchment.
- Regulation for HEP.
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.

Station and catchment description

Velocity-area station with cableway. 90m wide. The most d/s station on the Tay, records highest mean flow in UK. Since end of 1957, 1980 sq. km (43%) controlled for HEP, there was some control prior to this. 73 sq. km controlled for water supply. Catchment is mostly steep, comprising mountains and moorland; exceptions are lower valleys. Mainly rough grazing and forestry. Geology: mainly metamorphics and granite, but lower 20% (Isla Valley) is Old Red Sandstone.

019001 Almond at Craigiehall 1993

Measuring authority: FRPB
First year: 1957
Grid reference: 36 (NT) 165 752
Level stn. (m OD): 22.90
Catchment area (sq km): 369 0
Max alt. (m OD): 518

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2 576	5.281	1 757	1.932	3 549	3 864	2 010	1.598	1 594	2 567	1 795	5 162
2	2.907	5.128	1 839	1.738	4 959	6 536	1.988	1.651	1 599	3 794	1 766	20 550
3	4 042	4 663	2 518	1 657	3 552	4.531	2 106	1.867	1 678	5 380	5 191	47 550
4	5.379	4.157	2 354	1 689	2.986	3 492	2.149	2.288	1 544	6.508	6 884	27 870
5	6 406	3 744	3 275	2 440	2 651	2.713	1.951	7 477	1 549	10.730	3 814	13 240
6	4 871	3.419	2 724	5 884	2 462	2 380	1.862	3 533	1 619	49 480	3 175	12.160
7	7 000	3 225	2.338	3 249	2 568	2 225	1 767	2.584	1 611	70 870	3 003	13 240
8	15 650	3.119	2 179	3.143	4 251	2 035	2.323	2.580	2 925	21 740	5 010	49 420
9	30 320	3 008	1 851	5.707	2.895	8 539	2.217	2.864	2 596	60 080	10.920	37 100
10	19.170	2 886	1.791	5 486	2 768	8.251	1 816	2.273	4 027	32 690	7 309	17 140
11	11 660	2 780	1 955	3 513	2 343	8 328	1.706	7 292	3.382	14 220	5 007	13.410
12	10 870	2 679	1.870	2 848	2 195	12.170	1 592	5 009	2 224	10 340	6 249	17 300
13	16 550	2.515	2 401	2 591	15.570	5 711	1.595	2.908	3 157	7.205	7 200	39 270
14	26.740	2 535	2.199	2 255	122.200	5.758	2.039	2.386	12.500	5 579	7 077	29 650
15	59 940	2 416	2.239	2 127	65 640	4 185	2 353	2 135	12 560	4 511	5 084	28 500
16	37 580	2 393	2 335	2 184	28 680	3 294	7 438	2 376	6 192	3 836	10 600	13 750
17	25 610	2.338	6 502	3 108	36 430	3 482	5.259	1.922	3 511	3 403	6 856	9 677
18	34.710	2.537	7 713	15.350	14 330	3.935	2.852	1 890	2.752	3 159	4 602	16.080
19	35.630	2.577	3 994	27 890	8.521	4 400	2.762	1.761	5 277	3 081	3 524	24 480
20	31.510	2.322	3.234	12 100	6 497	3 535	3 093	1.691	6.312	2 983	2.907	10 030
21	38.300	2 170	3 246	13 750	5 550	2 747	2.289	1.597	3.766	2 705	2 720	6 931
22	27 310	2 075	3 331	7 870	4 648	2 474	1 965	1.734	3 114	2 497	2 562	6 593
23	71.330	1.950	7.784	6.929	4 003	2.461	2.013	1 638	2.568	2 268	2 530	6 651
24	40.260	1.931	6 683	5 289	3 585	2.291	1.637	1.641	2 516	2 164	2 324	6 006
25	17.400	2 214	4 525	9.906	3 085	2.763	1 561	1 625	2.238	2 071	2 417	5 116
26	17.550	2.302	3 135	8 328	2 712	2 469	1.551	1 584	2 097	1 992	2 319	4.386
27	12 090	2 042	2.663	5 705	2 533	2.124	1.664	1.578	1.992	1 967	2 142	3 991
28	10.810	1 817	2.259	4 413	2 307	2.175	1.766	1.522	1.819	1 922	2 076	5.391
29	8 349		2 331	3 605	2.283	2 094	1.846	1 524	1 748	1 905	2 339	30 380
30	7 115		2 692	3 171	3.383	2 136	1 696	1 584	1 800	1.786	2 706	12 430
31	5.875		2 179		3 724		1 727	1 624		1 762		7 498
Average	20.820	2 865	3.158	5 862	12 030	4.103	2.277	2.443	3.409	11 140	4 404	17 450
Lowest	2.576	1.817	1.757	1 657	2.195	2 035	1.551	1.522	1.544	1.762	1.766	3 991
Highest	71.330	5.281	7 784	27 890	122.200	12 170	7 438	7.477	12.560	70 870	10 920	49 420
Peak flow	134.90	5 37	11 05	43 52	182 60	20 32	11 29	11 05	21 97	127 60	15 30	87 06
Day of peak	23	1	17	19	14	12	16	5	14	7	9	8
Monthly total (million cu m)	55.77	6 93	8 46	15 19	32 22	10 64	6 10	6 54	8.84	29 82	11 41	46 74
Runoff (mm)	151	19	23	41	87	29	17	18	24	81	31	127
Rainfall (mm)	174	11	49	78	134	74	60	55	73	120	54	161

Statistics of monthly data for previous record (Jan 1957 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg.	9 833	7 935	6 825	4 487	3 039	2.384	2.359	3 173	4 608	6 362	9 088	9.271
	Low	3 574	1.782	1 918	1 410	1 091	0 817	0 950	0.869	0 668	0 668	1 862	3 016
	(year)	1963	1963	1973	1974	1961	1961	1960	1983	1959	1972	1972	1975
	High	18 970	22.010	14 300	9 840	11.170	8 572	9.223	8 568	20 360	15.120	21 660	19.860
	(year)	1990	1990	1979	1986	1968	1966	1958	1985	1985	1981	1963	1986
Runoff	Avg.	71	53	50	32	22	17	17	23	32	46	64	67
	Low	26	12	14	10	8	6	7	6	5	5	13	22
	High	138	144	104	69	81	60	67	62	143	110	152	144
Rainfall	Avg	84	60	71	52	58	61	72	85	89	89	89	87
	Low	28	17	22	8	16	15	17	19	14	23	19	21
	High	178	167	142	89	123	136	173	152	195	177	190	179

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	7 568		5.771		131
Lowest yearly mean			2 890	1973	
Highest yearly mean			8.199	1986	
Lowest monthly mean	2 277	Jul	0 668	Oct 1972	
Highest monthly mean	20 820	Jan	22 010	Feb 1990	
Lowest daily mean	1 522	28 Aug	0.241	9 Oct 1959	
Highest daily mean	122.200	14 May	147.200	6 Oct 1990	
Peak	182 600	14 May	220 000	6 Oct 1990	
10% exceedance	17.040		13 130		130
50% exceedance	3 109		2.918		107
95% exceedance	1.631		0 900		181
Annual total (million cu m)	238.70		182 10		131
Annual runoff (mm)	647		494		131
Annual rainfall (mm)	1043		897		116
1941-70 rainfall average (mm)			909		

Factors affecting runoff

- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from effluent returns

Station and catchment description

The recorder is well sited on a straight even reach with steep banks which have contained all recorded floods. Stable rating over the period of record. Weed growth in summer - some adjustment to stage is required. Low flows substantially affected by sewage effluent especially from Mid Calder. Abstraction at Almondell to feed a canal. A number of storage reservoirs are situated in the catchment. Geology - predominantly Carboniferous rocks. Land use - mainly rural. Livingston new town and several small mining towns in catchment.

021009 Tweed at Norham 1993

Measuring authority: TWRP
First year: 1962
Grid reference: 36 (NT) 898 477
Level stn. (m OD): 4.30
Catchment area (sq km): 4390.0
Max alt. (m OD): 839

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	54 520	95 450	28 930	54.950	67 080	61 940	24 830	20 890	14 620	30 990	30 820	71.520
2	51 440	88 840	28 980	43.950	63 730	83 440	23 350	20 260	14.570	56.580	29.580	97.580
3	49.130	82 020	29 350	37 770	57 540	71 060	21 560	20 410	15 790	99 780	29 490	110 300
4	48 900	74 950	30 600	40 550	50 850	56.470	21 390	24 380	14 720	73 210	33.970	302 600
5	105 100	69 140	34 630	93 470	47 120	47 600	21 110	45 260	13.760	61 010	33.540	138.800
6	91.150	64.750	42 830	204 000	45 290	42 190	19 500	44 130	13 790	292 500	31.160	122.200
7	73 180	60 240	33 600	112 000	41 800	38.460	18 670	29 660	13 930	525 600	30 240	199 700
8	90 250	56.550	30 040	82 820	51.260	35 120	20.590	27 710	14 630	306 500	29 180	241 400
9	275 800	53 520	27.580	185 800	51 450	33.410	23 770	25.970	30 450	439 500	31 260	400.300
10	264 500	50 460	25 850	255 700	43.250	50.700	22 430	28 050	29 600	503 800	54.920	291 600
11	180 300	47 820	25 660	138 700	41 060	44 890	20 580	25.570	37 220	252 500	40 690	200 500
12	123 800	44 920	27 450	108 300	37 350	53 640	19 200	39 930	30 900	195 700	34.680	179 200
13	147 200	42 900	27.250	94 140	46 610	48 970	18 360	29 900	24.770	155 600	41 480	376.100
14	130 500	41 280	28.220	79 010	365 800	40 420	18 300	25.620	31 120	130.800	110 000	291.700
15	550.500	39 070	24 900	68 010	427 400	36.790	21 100	24 880	108.800	109 300	76.540	298 800
16	309.400	39 470	29 610	61 180	392 700	33 500	27 290	23 650	83 030	91 460	60 670	214 100
17	264.600	38 660	30 520	56.700	609.300	32.220	40 200	22 870	59.620	78 730	55 040	153 400
18	206 200	36 450	30 970	109 800	360 600	40 840	26.770	20 910	42 040	69 660	46 800	351 500
19	319 100	35 560	28 430	250 000	195 100	57 450	22.050	19.870	34 330	63 000	42.830	484 200
20	265 200	32 590	24.910	177 900	146 400	44.680	21 260	18 340	36 750	59 390	38.170	215.700
21	237 600	31 500	38.890	161.100	130.500	35.980	22 060	17.490	43 370	55.990	36.950	155 200
22	215 800	29.900	36 870	124 800	107.700	32 170	20 270	17 010	54.340	51.160	35.330	135 800
23	297 400	29 630	32 880	127 500	91.430	30 650	21 230	16.920	38.760	47.280	33 580	119.000
24	403 700	28.560	35 840	113 200	77 500	29 080	23 280	17 540	31 750	43.930	31 310	112 100
25	225 400	28 000	38 270	144.900	67 190	28 000	23 650	17 190	29 600	41.240	30 490	95.410
26	198 400	39 090	31.760	148.100	60 280	30.190	22 710	18.260	26 770	38 830	36.460	83 050
27	168 800	33 980	28 970	111 800	54 890	28 710	22 740	18 090	24.630	36 600	34.210	75 130
28	164 000	29 350	27 690	94 330	49 730	25 370	22 800	15.910	22 800	34.980	40 480	71 670
29	141 600		27 620	82 130	46 830	23 950	23.490	15 360	21 900	33 410	42.860	288 600
30	121 900		91 980	73 540	51.920	23.260	21 730	15 130	21 710	31 950	55 290	202 000
31	108.100		82 160		87 400		20 430	14 970		31 140		139 600
Average	189 800	48 020	34 300	114 500	128 000	41 370	22 470	23 290	32 670	130 400	41 930	200 600
Lowest	48.900	28 000	24 900	37 770	37 350	23 260	18 300	14 970	13.760	30 990	29.180	71.520
Highest	550 500	95 450	91 980	255.700	609 300	83 440	40 200	45.260	108.800	525 600	110 000	484 200
Peak flow	847 60	101.10	174 10	325.20	637 90	99.50	46 71	80.13	123.90	706 60	140 90	636 30
Day of peak	15	1	30	10	17	2	17	5	15	10	14	19
Monthly total (million cu m)	508.30	116 20	91.86	296 90	342 80	107.20	60 19	62 39	84.68	349 20	108.70	537.30
Runoff (mm)	116	26	21	68	78	24	14	14	19	80	25	122
Rainfall (mm)	156	15	44	120	130	58	54	52	90	131	54	171

Statistics of monthly data for previous record (Jan 1962 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	128 800	106 300	102 800	72.570	52 630	34 830	32 030	44.570	55 540	78 440	109.700	116.300
	Low	50 320	37 180	26 290	25 190	17.950	15 550	11 650	9 881	10 990	10 170	24 710	40 690
	(year)	1973	1963	1973	1974	1980	1974	1984	1976	1972	1972	1973	1975
	High	249 700	274.200	236 400	165.800	153 300	66 200	85 330	146 300	179.900	176 300	271.700	197.900
	(year)	1982	1990	1963	1992	1967	1981	1985	1985	1985	1967	1963	1979
Runoff	Avg	79	59	63	43	32	21	20	27	33	48	65	71
	Low	31	20	16	15	11	9	7	6	6	6	15	25
	High	152	151	144	98	94	39	52	89	106	108	160	121
Rainfall	Avg	97	69	85	60	71	68	74	91	91	94	99	94
	Low	45	15	21	12	20	20	23	21	19	25	16	23
	High	165	176	139	99	181	129	186	188	164	163	224	175

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre 1993
Mean flow (m^3s^{-1})	84 600		77 780		109
Lowest yearly mean			33 920	1973	
Highest yearly mean			102 400	1963	
Lowest monthly mean	22 470	Jul	9 881	Aug 1976	
Highest monthly mean	200 600	Dec	274 200	Feb 1990	
Lowest daily mean	13 760	5 Sep	7 427	28 Aug 1976	
Highest daily mean	609 300	17 May	1169 000	1 Apr 1992	
Peak	847.600	15 Jan	1518 000	4 Jan 1982	
10% exceedance	213 600		165.700		129
50% exceedance	42.760		51 770		83
95% exceedance	18 190		14 350		127
Annual total (million cu m)	2668 00		2455 00		109
Annual runoff (mm)	608		559		109
Annual rainfall (mm)	1075		993		108
1941-70 rainfall average (mm)			1009		

Factors affecting runoff

- Reservoir(s) in catchment
- Abstraction for public water supplies.

Comment

The naturalised runoff total for 1993 is 621 mm

Station and catchment description

Lowest station on River Tweed. Velocity-area station at very wide natural section. Complex control. Moderate seasonal weed growth effects on rating. Reservoirs in headwaters have only a small impact on the flow regime - monthly naturalised flows available. Geology: mixed but principally impervious Palaeozoic formations. Moorland and hill pasture predominates; improved grasslands and arable farming below Melrose.

022001 Coquet at Morwick 1993

Measuring authority: NRA-NY
First year: 1963
Grid reference: 46 (NU) 234 044
Level stn. (m OD): 5.20
Catchment area (sq km): 569.8
Max alt. (m OD): 776

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.554	7.438	2.950	3.279	5.650	4.877	1.746	1.391	1.267	3.504	3.279	15.690
2	4.150	7.056	3.027	2.986	5.020	7.035	1.729	1.392	1.261	5.409	3.081	19.280
3	4.188	6.588	3.412	2.598	4.640	6.441	1.711	1.373	1.247	6.060	3.134	14.820
4	4.432	6.060	3.678	2.983	4.333	5.184	1.693	1.395	1.260	5.961	3.984	18.220
5	14.860	5.663	6.972	9.777	4.026	4.262	1.641	3.926	1.269	10.170	3.687	11.160
6	8.842	5.512	7.574	18.530	3.890	3.633	1.561	4.072	1.286	29.380	3.466	12.260
7	7.874	5.141	5.153	8.507	3.694	3.362	1.556	2.412	1.295	76.840	3.942	26.230
8	8.742	4.834	4.284	7.626	3.711	3.121	1.651	2.143	1.774	29.880	3.722	39.660
9	16.720	4.738	3.776	81.660	3.706	2.925	1.790	2.192	4.392	53.910	3.736	39.930
10	18.060	4.722	3.483	53.450	3.669	2.848	1.800	2.263	3.225	27.350	3.662	29.630
11	12.620	4.609	3.357	18.880	3.723	3.075	1.724	2.141	5.555	15.360	3.326	19.020
12	9.361	4.285	3.342	18.130	3.338	3.169	1.583	2.871	3.081	12.420	3.155	50.350
13	44.260	4.141	3.633	14.530	24.310	2.958	1.478	2.379	2.370	11.470	12.970	87.650
14	17.920	4.012	3.595	10.380	127.300	3.464	1.680	1.907	13.490	12.670	40.600	39.090
15	63.060	3.767	3.194	8.272	40.230	2.621	2.043	1.750	34.030	9.731	12.540	38.900
16	22.470	3.659	3.357	7.206	31.850	2.568	2.490	1.787	19.230	7.623	8.570	24.090
17	14.610	3.671	3.228	6.833	39.090	1.729	3.399	1.767	10.280	6.556	7.283	15.160
18	11.160	3.477	2.914	32.530	22.230	2.604	2.099	1.628	6.820	5.775	6.048	45.930
19	22.110	3.322	2.729	40.710	12.370	2.712	1.809	1.518	5.193	5.262	5.229	35.180
20	15.250	3.158	2.600	17.480	10.470	2.739	1.757	1.517	4.741	4.995	4.651	16.280
21	15.720	2.976	2.611	13.220	11.100	2.445	1.915	1.455	4.782	4.916	5.295	11.740
22	17.380	2.852	2.645	10.460	8.595	2.306	1.837	1.366	4.105	5.173	5.351	10.740
23	29.780	2.937	2.521	10.350	7.010	2.215	1.674	1.375	3.530	4.697	5.095	9.694
24	37.930	2.887	2.485	9.693	6.050	2.149	1.734	1.429	3.115	4.212	4.430	11.880
25	16.380	2.888	2.359	26.100	5.355	2.235	1.687	1.499	2.871	3.912	4.607	9.276
26	13.380	2.912	2.283	15.050	4.954	2.488	1.561	1.466	2.665	3.703	4.770	8.195
27	12.390	2.951	2.249	10.090	4.654	2.258	1.575	1.385	2.426	3.500	6.415	7.789
28	13.880	2.813	2.240	8.401	4.344	1.945	1.650	1.395	2.348	3.342	16.270	7.867
29	11.930		2.287	7.156	4.158	1.863	1.641	1.355	2.297	3.239	11.100	33.600
30	9.464		2.484	6.309	4.657	1.779	1.546	1.313	2.295	3.166	16.850	28.320
31	8.341		3.017		6.127		1.431	1.283		3.176		13.980
Average	16.510	4.252	3.337	16.110	13.690	3.100	1.780	1.843	5.117	12.370	7.342	24.250
Lowest	4.150	2.813	2.240	2.598	3.338	1.729	1.431	1.283	1.247	3.166	3.081	7.789
Highest	63.060	7.438	7.574	81.660	127.300	7.035	3.399	4.072	34.030	76.840	40.600	87.650
Peak flow	112.20	7.55	13.56	128.00	152.60	8.31	5.53	7.87	45.95	133.90	64.22	134.00
Day of peak	15	1	5	9	14	2	16	5	15	7	14	13
Monthly total (million cu m)	44.22	10.29	8.94	41.75	36.66	8.04	4.77	4.94	13.26	33.12	19.03	64.94
Runoff (mm)	78	18	16	73	64	14	8	9	23	58	33	114
Rainfall (mm)	109	15	28	127	111	36	49	53	95	103	63	146

Statistics of monthly data for previous record (Nov 1963 to Dec 1992—incomplete or missing months total 0.2 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	14.440	13.070	12.430	8.992	5.331	3.506	3.238	4.114	4.324	7.398	11.760	12.810
	Low	5.029	2.672	1.729	2.153	2.039	1.140	1.135	1.119	1.121	1.084	1.926	4.563
	(year)	1992	1973	1973	1990	1984	1970	1989	1990	1991	1972	1973	1971
	High	32.310	26.350	31.390	23.490	15.410	6.441	8.138	12.950	14.240	26.860	31.370	33.340
	(year)	1982	1978	1979	1992	1983	1987	1988	1986	1965	1976	1965	1978
Runoff:	Avg	68	56	58	41	25	16	15	19	20	35	54	60
	Low	24	11	8	10	10	5	5	5	5	5	9	21
	High	152	112	148	107	72	29	38	61	65	126	143	157
Rainfall (1966-1992)	Avg	86	63	79	56	62	56	66	75	73	78	86	82
	Low	27	15	18	8	18	8	13	18	15	19	19	31
	High	140	126	144	121	127	129	169	161	215	176	214	251

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	9.200		8.431		109
Lowest yearly mean			3.716	1973	
Highest yearly mean			11.380	1969	
Lowest monthly mean	1.780	Jul	1.084	Oct 1972	
Highest monthly mean	24.250	Dec	33.340	Dec 1978	
Lowest daily mean	1.247	3 Sep	0.721	20 Jun 1970	
Highest daily mean	127.300	14 May	261.500	1 Apr 1992	
Peak	152.600	14 May	341.200	1 Apr 1992	
10% exceedance	22.250		18.280		122
50% exceedance	4.154		4.770		87
95% exceedance	1.427		1.268		113
Annual total (million cu m)	290.10		266.10		109
Annual runoff (mm)	509		467		109
Annual rainfall (mm)	935		862		108
1941-70 rainfall average (mm)			884		

Factors affecting runoff

- Natural to within 10% at 95 percentile flow.

Station and catchment description

Velocity-area station with 34m wide concrete Flat V weir (informal design, approx. 1:20 cross-slope) made with pre-cast segments (installed 1973). Cableway. Fairly straight section with high banks. Replaced earlier station at Guyzance. Responsive natural regime. A predominantly upland catchment draining from the Cheviots with some afforestation. Largely Carboniferous Limestone and Devonian Igneous series.

025006 Greta at Rutherford Bridge 1993

Measuring authority: NRA-NY
First year: 1960

Grid reference: 45 (NZ) 034 122
Level stn. (m OD): 223.00

Catchment area (sq km): 86.1
Max alt. (m OD): 596

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.454	1.269	0.343	0.378	0.557	1.714	0.149	0.214	0.123	1.866	0.409	6.951
2	0.376	1.022	0.388	0.295	0.526	1.362	0.137	0.170	0.120	8.566	0.367	4.206
3	0.325	0.891	0.392	0.297	0.555	1.105	0.138	0.446	0.125	2.265	0.416	6.204
4	0.943	0.785	0.428	0.625	0.420	0.753	0.152	0.900	0.125	1.969	0.491	9.015
5	9.653	0.769	5.065	13.970	0.373	0.527	0.136	11.470	0.121	7.369	0.436	2.212
6	2.122	0.921	3.044	6.841	0.351	0.396	0.117	1.515	0.119	6.727	0.453	6.867
7	2.558	0.856	1.382	2.278	0.314	0.336	0.108	0.793	0.120	7.165	0.470	4.210
8	2.277	0.801	0.929	2.912	0.279	0.302	0.125	0.919	9.841	2.231	0.417	15.130
9	7.625	0.869	0.684	10.090	0.258	0.275	0.151	4.663	4.035	1.596	0.427	4.781
10	13.570	0.916	0.575	3.166	0.311	0.267	0.128	0.998	3.609	1.187	0.565	8.001
11	3.074	0.836	0.597	1.725	0.383	0.798	0.127	2.923	1.487	1.123	0.429	3.226
12	3.151	0.706	0.555	4.929	0.299	0.332	0.177	1.679	1.510	5.620	0.384	1.936
13	16.060	0.627	0.570	2.548	14.230	0.275	0.137	0.850	38.070	2.639	3.148	5.246
14	6.579	0.580	0.428	1.419	22.300	0.398	0.205	0.507	16.000	1.441	3.882	4.107
15	19.360	0.516	0.386	0.948	4.653	0.392	0.527	0.969	8.459	0.992	1.219	12.780
16	8.287	0.477	0.459	0.751	16.300	0.403	1.220	0.563	3.172	0.740	0.770	7.947
17	4.342	0.472	0.411	0.650	13.870	0.306	0.468	0.363	1.885	0.611	0.561	10.180
18	10.020	0.446	0.514	6.742	3.973	0.497	0.279	0.284	1.196	0.542	0.450	25.210
19	7.004	0.410	0.372	5.068	1.738	0.406	2.909	0.241	0.871	0.506	0.348	11.940
20	4.000	0.370	0.311	2.158	5.252	0.292	1.021	0.217	1.108	1.052	0.389	2.647
21	9.080	0.326	0.395	1.837	3.574	0.235	0.522	0.192	0.840	0.978	0.382	1.502
22	4.283	0.316	0.366	1.104	1.588	0.210	0.301	0.199	0.659	0.658	0.346	3.973
23	18.610	0.324	0.446	1.780	0.978	0.205	0.371	0.195	0.583	0.527	0.286	2.045
24	7.754	0.326	0.431	1.363	0.720	0.191	0.392	0.181	0.492	0.465	0.353	1.402
25	2.656	0.345	0.327	11.320	0.590	0.188	0.464	0.172	0.420	0.422	0.761	1.051
26	3.346	0.574	0.272	3.038	0.574	0.189	0.514	0.165	0.364	0.387	1.259	0.847
27	3.269	0.398	0.253	1.539	0.749	0.172	0.395	0.157	0.328	0.362	1.949	0.717
28	5.255	0.375	0.249	1.034	0.632	0.151	0.338	0.147	0.303	0.346	1.675	0.744
29	3.018		0.253	0.761	0.571	0.142	0.257	0.139	0.293	0.338	0.867	9.779
30	1.918		0.390	0.631	5.588	0.137	0.214	0.137	0.393	0.412	3.022	3.238
31	1.582		0.390		4.127		0.219	0.130		0.469		1.564
Average	5.889	0.626	0.697	3.073	3.440	0.415	0.400	1.048	3.226	1.986	0.898	5.795
Lowest	0.325	0.316	0.249	0.295	0.258	0.137	0.108	0.130	0.119	0.338	0.286	0.717
Highest	19.360	1.269	5.065	13.970	22.300	1.714	2.909	11.470	38.070	8.566	3.882	25.210
Peak flow	59.01	1.34	10.03	30.90	55.28	2.00	8.76	26.88	71.89	19.82	10.77	34.51
Day of peak	15	1	5	25	13	1	19	5	13	5	13	8
Monthly total (million cu m)	15.77	1.51	1.87	7.97	9.21	1.08	1.07	2.81	8.36	5.32	2.33	15.52
Runoff (mm)	183	18	22	93	107	13	12	33	97	62	27	180
Rainfall (mm)	195	19	31	138	160	32	74	87	156	72	55	189

Statistics of monthly data for previous record (Oct 1960 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	3.754	2.948	3.236	2.128	1.208	0.812	0.671	1.238	1.406	2.502	3.400	3.725
	Low	0.290	0.280	0.842	0.375	0.148	0.130	0.092	0.098	0.110	0.195	0.951	0.944
	(year)	1963	1963	1973	1982	1980	1970	1984	1976	1989	1972	1973	1971
	High	7.155	8.185	8.926	4.682	3.951	2.502	2.783	4.107	4.067	6.665	6.878	6.607
	(year)	1975	1990	1979	1969	1967	1980	1988	1971	1965	1967	1963	1990
Runoff	Avg.	117	84	101	64	38	24	21	39	42	78	102	116
	Low	9	8	26	11	5	4	3	3	3	6	29	29
	High	223	230	278	141	123	75	87	128	122	207	207	206
Rainfall	Avg	120	90	100	75	72	70	70	95	90	106	115	122
	Low	38	13	31	10	16	18	20	35	18	21	43	43
	High	206	248	220	136	164	188	194	200	206	269	219	296

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	2.306		2.251		102
Lowest yearly mean			1.447	1973	
Highest yearly mean			2.926	1979	
Lowest monthly mean	0.400	Jul	0.092	Jul 1984	
Highest monthly mean	5.889	Jan	8.926	Mar 1979	
Lowest daily mean	0.108	7 Jul	0.040	24 Aug 1976	
Highest daily mean	38.070	13 Sep	54.090	6 Mar 1963	
Peak	71.890	13 Sep	210.400	25 Aug 1986	
10% exceedance	6.887		5.734		120
50% exceedance	0.622		0.803		77
95% exceedance	0.138		0.120		115
Annual total (million cu m)	72.72		71.04		102
Annual runoff (mm)	845		825		102
Annual rainfall (mm)	1208		1125		107
1941-70 rainfall average (mm)			1259		

Factors affecting runoff

- Natural to within 10% at 95 percentile flow

Station and catchment description

Compound Crump profile weir, total width 19.2m, low flow crest 3m broad. Theoretical rating with check gaugings. Responsive, natural regime
An eastward-draining Pennine catchment developed largely on Millstone Grit.

027002 Wharfe at Flint Mill Weir 1993

Measuring authority: NRA-NY
First year: 1936
Grid reference 44 (SE) 422 473
Level stn. (m OD): 13.70
Catchment area (sq km) 758.9
Max alt. (m OD) 704

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	6.969	16.500	5.423	4.612	7.218	36.220	3.013	7.102	3.179	14.820	4.388	11.780
2	6.116	14.180	5.262	4.428	6.594	20.230	2.934	6.219	3.134	30.210	4.405	57.210
3	5.722	12.110	5.313	4.811	6.234	14.830	3.071	9.315	3.139	18.800	4.242	27.850
4	6.539	10.780	5.149	8.334	5.706	10.150	3.070	17.460	3.067	16.990	4.113	42.060
5	23.790	9.666	5.285	29.130	5.309	7.858	3.525	65.590	3.032	16.510	4.146	20.910
6	17.540	10.270	10.350	33.250	4.834	6.328	3.545	25.510	3.347	27.180	3.887	16.700
7	11.780	10.160	8.542	14.990	4.492	5.761	3.163	12.590	3.334	37.030	3.630	31.320
8	17.860	9.395	6.924	9.497	4.509	5.353	3.052	11.530	15.480	21.210	3.630	87.870
9	37.720	9.746	6.115	65.210	4.450	5.507	7.943	17.370	24.970	14.570	4.173	81.040
10	59.480	9.502	5.479	35.950	6.748	5.079	5.004	13.810	31.820	11.860	15.150	68.690
11	47.310	9.280	5.278	16.920	5.691	5.016	3.720	31.880	22.360	10.020	7.254	38.390
12	24.800	8.339	5.141	15.530	4.848	4.835	3.315	23.090	11.290	14.760	5.673	29.490
13	60.630	7.475	5.141	15.250	4.483	4.684	3.538	13.370	157.600	14.940	16.370	81.470
14	38.000	7.138	5.739	10.960	83.770	5.714	3.385	9.108	124.100	10.830	31.480	43.200
15	80.680	7.046	5.097	9.300	34.610	5.045	4.141	12.400	92.620	8.642	13.270	86.040
16	42.790	6.995	4.828	8.053	31.550	5.026	8.114	9.870	35.190	7.833	8.755	76.810
17	28.390	6.767	5.750	9.798	55.060	5.527	8.510	7.242	21.800	7.177	7.685	37.530
18	20.440	6.568	7.451	31.800	33.890	8.588	6.034	6.868	15.860	6.591	6.717	80.710
19	42.190	6.938	8.402	33.720	15.850	10.980	27.430	6.206	12.680	6.437	6.601	145.600
20	55.420	7.022	5.937	16.320	13.460	9.085	14.030	6.080	14.670	6.431	5.617	44.430
21	59.830	6.191	5.831	12.610	21.890	6.007	17.320	5.590	14.350	6.094	5.372	26.220
22	47.900	5.771	7.416	10.710	13.340	4.761	7.671	5.315	12.190	5.834	5.271	43.280
23	61.830	5.888	5.524	9.064	9.491	4.554	11.440	4.926	13.770	5.705	5.123	40.960
24	95.220	5.770	5.141	11.010	7.524	3.853	15.340	4.655	9.785	5.517	4.662	32.350
25	42.370	5.610	4.923	41.790	6.309	3.829	9.086	4.607	8.857	5.387	4.766	22.250
26	27.520	6.181	4.559	23.650	5.713	3.726	12.580	4.247	7.713	4.893	5.495	16.710
27	26.550	5.841	4.506	14.150	6.611	3.613	10.470	3.985	6.957	4.786	5.376	13.860
28	60.080	5.314	4.404	10.460	6.604	3.520	12.400	3.796	6.371	5.203	5.273	13.460
29	41.480		4.238	8.343	7.082	3.281	7.525	3.562	6.175	5.136	5.561	57.130
30	25.670		4.250	7.238	7.885	3.120	6.167	3.432	6.757	4.804	8.576	50.390
31	19.780		4.535		74.090		5.143	3.286		4.427		33.670
Average	36.850	8.302	5.740	17.560	16.320	7.403	7.603	11.610	23.190	11.630	7.222	47.080
Lowest	5.722	5.314	4.238	4.428	4.450	3.120	2.934	3.286	3.032	4.427	3.630	11.780
Highest	95.220	16.500	10.350	65.210	83.770	36.220	27.430	65.590	157.600	37.030	31.480	145.600
Peak flow	158.30	17.98	13.22	93.65	140.20	62.62	57.00	98.40	267.70	47.76	46.50	220.30
Day of peak	23	1	6	9	14	1	19	5	13	7	14	19
Monthly total (million cu m)	98.70	20.08	15.37	45.52	43.71	19.19	20.36	31.10	60.10	31.16	18.72	126.10
Runoff (mm)	130	26	20	60	58	25	27	41	79	41	25	166
Rainfall (mm)	178	21	24	125	134	43	97	93	170	55	53	234

Statistics of monthly data for previous record (Oct 1955 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg.	27.660	23.580	21.720	15.920	10.540	7.176	7.437	11.180	12.870	17.840	23.440	27.560
	Low	4.472	2.974	6.741	4.496	2.312	1.545	1.674	0.991	1.419	3.026	6.876	10.230
	(year)	1963	1963	1961	1974	1980	1957	1976	1976	1959	1972	1958	1963
	High	44.000	54.590	53.940	35.240	26.750	18.530	16.440	41.340	33.520	54.000	51.090	62.090
	(year)	1984	1966	1981	1970	1967	1972	1963	1956	1968	1967	1963	1965
Runoff:	Avg.	98	76	77	54	37	25	26	39	44	63	80	97
	Low	16	9	24	15	8	5	6	4	5	11	23	36
	High	155	174	190	120	94	63	58	146	115	191	174	219
Rainfall	Avg	115	87	93	75	73	76	83	100	100	110	113	124
	Low	41	14	28	8	13	18	20	18	8	32	33	41
	High	217	201	222	147	181	183	185	226	241	225	211	233

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	16.830		17.220		98
Lowest yearly mean			11.420	1975	
Highest yearly mean			23.300	1966	
Lowest monthly mean	5.740	Mar	0.991	Aug 1976	
Highest monthly mean	47.080	Dec	82.090	Dec 1965	
Lowest daily mean	2.934	2 Jul	0.425	23 Jun 1957	
Highest daily mean	157.600	13 Sep	292.100	23 Feb 1991	
Peak	267.700	13 Sep	362.800	3 Jan 1982	
10% exceedance	41.590		40.680		102
50% exceedance	7.953		9.496		84
95% exceedance	3.457		2.341		148
Annual total (million cu m)	530.80		543.40		98
Annual runoff (mm)	699		716		98
Annual rainfall (mm)	1227		1149		107
1941-70 rainfall average (mm)			1168		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater

Station and catchment description

Broad-crested masonry weir 47m wide with a current meter cableway 1.5km u/s (moved to new US station at Tadcaster in 1990). Insensitive at low flows. Level data only from 1936 to 1955. Recalibration(from 1965) completed but flows reprocessed from 1982 only. Pre-1965 data less reliable. Regulation effect of headwater reservoirs evident at low flows. Small net export of water (inc. Bradford supply). Mixed geology - mainly Carboniferous Limestone, grits and Coal Measures. Predominantly rural catchment with moorland headwaters.

027035 Aire at Kildwick Bridge 1993

Measuring authority NRA-NY
First year 1968

Grid reference 44 (SE) 013 457
Level stn. (m OD) 87.30

Catchment area (sq km) 282.3
Max alt (m OD) 593

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2 446	7.530	1 638	0 886	2 250	9 907	0 763	2 004	1 066	4 779	1 393	6 470
2	2.289	6 332	1.766	0 826	2 235	7 790	0.729	1 715	1.013	8 467	1 358	17.810
3	2 348	5 487	1.763	1 079	1 999	5 354	0 833	2.344	0 995	5 738	1 429	8 511
4	3 620	4 789	1 656	1 583	1.711	4.104	0 845	6 501	0 947	7 165	1 453	17 220
5	10 320	4 492	1.777	4 040	1.545	3 313	0.801	31 310	0 877	9 380	1 428	10 180
6	6 293	4 861	1 855	4.122	1 403	2 749	0.713	9 517	0.827	9 493	1 409	10 760
7	6 206	4 316	1 604	2 583	1.304	2 420	0 677	5 499	0 852	11 010	1 365	14 580
8	6.820	3 989	1 499	3.701	1 230	2 152	0 798	4.153	4.696	6 978	1 344	42 710
9	20 520	3 883	1 412	16 960	1 197	2 282	0 912	10 180	3 749	5 289	1.595	33 870
10	34 640	3.710	1.400	8.941	1 603	2 187	0 834	5 495	8 616	4 484	1.780	37 940
11	24.810	3.492	1.376	5 054	1 246	2 211	0.799	16 350	4 720	3 964	1 580	23 240
12	18 780	3.182	1 295	4 430	1 109	1.936	0 745	9 267	3.792	3.894	2 701	26.170
13	38.320	2.943	1.303	3.698	3 461	1.682	0 715	5.802	49.120	3 553	8 350	46.580
14	19 160	2 735	1.239	2.820	30 090	2 186	0.883	4 531	36 960	3 064	9 450	30 610
15	27 290	2.552	1 149	2.188	13.590	1 791	1.293	8 393	21.560	2 662	4.576	54 200
16	16 320	2.368	1.112	1.974	15 920	1.951	2 507	4 455	13 740	2 420	3.552	38 820
17	10 730	2 227	1.108	2.526	15 850	1.738	1 589	3.311	8 871	2 255	3.086	26 980
18	10 980	2 164	1 100	11 670	10.380	2 676	1 788	2.742	7 189	2.129	2.679	30 300
19	20 480	2.485	1.050	9.274	6 264	2.034	11 640	2.393	5 256	2 059	2 368	51 910
20	27 430	2.142	1.008	5 862	8.196	1.609	5.324	2.371	8 447	2.077	2 177	25 060
21	28.860	1.968	1.029	4.671	8 511	1 391	3 506	2 255	5.400	1.954	2 118	20 090
22	17 520	1.811	0 966	3.630	5 402	1.270	2.208	1 973	4 247	1 808	2 004	29 160
23	29.910	1.742	0.892	3.350	3 984	1 209	2 133	1 635	3 551	1 735	1 845	30.880
24	27 710	1.663	0 869	3 443	3.186	1.141	1.944	1 448	2 930	1 691	1.739	19 750
25	16 150	1 675	0.845	16 820	2.681	1 066	3 289	1.348	2 488	1 600	1 782	12 520
26	13 050	2 138	0 820	7 598	2.609	1 083	3 590	1 312	2 136	1.556	1 962	9 113
27	11.780	1 823	0 812	5.195	3 463	1 035	2.917	1 276	2.053	1 504	1 938	7 543
28	22 550	1 547	0 804	3 825	3.387	0 946	2 458	1.222	2 065	1 470	1 863	7 381
29	16 360		0 834	2 993	3 186	0 887	2 000	1.180	2 112	1 491	2 129	31 530
30	11 120		0 894	2 568	6 615	0 861	1.672	1 151	2 331	1 485	3.892	27 920
31	9 274		0 907		11 040		2.119	1 103		1 438		16 220
Average	16.580	3 216	1.219	4 944	5 698	2 432	2 033	4.975	7.087	3 826	2.545	24.710
Lowest	2 289	1 547	0 804	0 826	1 109	0 861	0.677	1 103	0 827	1.438	1 344	6 470
Highest	38 320	7.530	1 855	16.960	30 090	9 907	11.640	31 310	49.120	11 010	9 450	54 200
Peak flow	51 63	8 11	2 05	29 01	46 83	12 19	20 67	43 33	60 43	13 64	18 71	67 42
Day of peak	10	1	5	25	14	1	19	5	13	5	13	19
Monthly total (million cu m)	44 42	7.78	3 26	12 81	15.26	6 30	5.44	13 33	18 37	10.25	6 60	66 18
Runoff (mm)	157	28	12	45	54	22	19	47	65	36	23	234
Rainfall (mm)	183	18	19	101	131	43	97	88	126	43	47	249

Statistics of monthly data for previous record (Dec 1968 to Dec 1992—incomplete or missing months total 0.1 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	11 230	8.733	7 963	4 970	2 713	2 175	1.781	3 049	3 581	6.898	10 450	11 040
	Low	4 463	3 529	2 391	0 923	0 611	0 604	0.298	0 289	0 498	0 789	3.583	3 175
	(year)	1973	1986	1985	1974	1974	1970	1984	1976	1989	1972	1975	1971
	High	19 130	19 810	22 520	11 400	8 174	6 416	5 927	11 410	10 360	17 570	17 750	20 820
	(year)	1990	1990	1981	1986	1983	1982	1973	1985	1974	1981	1991	1979
Runoff	Avg	107	76	76	46	26	20	17	29	33	65	96	105
	Low	42	30	23	8	6	6	3	3	5	7	33	30
	High	181	170	214	105	78	59	56	108	95	167	163	198
Rainfall	Avg	122	81	104	69	68	77	75	94	103	115	127	123
	Low	45	13	44	3	10	23	17	17	22	37	55	42
	High	222	191	233	135	142	155	179	171	250	213	195	238

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	6 676		6.206		108
Lowest yearly mean			3 655	1971	
Highest yearly mean			8.161	1988	
Lowest monthly mean	1 219	Mar	0 289	Aug 1976	
Highest monthly mean	24.710	Dec	22 520	Mar 1981	
Lowest daily mean	0 677	7 Jul	0 180	23 Aug 1976	
Highest daily mean	54.200	15 Dec	79.900	27 Oct 1980	
Peak	67.420	19 Dec	98.130	5 Dec 1972	
10% exceedance	18.940		15 730		120
50% exceedance	2 571		3 094		83
95% exceedance	0 847		0 498		170
Annual total (million cu m)	210 50		195 90		107
Annual runoff (mm)	746		694		107
Annual rainfall (mm)	1145		1158		99
1941-70 rainfall average (mm)			1134		

Factors affecting runoff

- Reservoir(s) in catchment

Station and catchment description

Velocity-area station rated by current meter cableway 150m downstream. Low flow control is the sills of the bridge. Flows below one cumec underestimated - recalibration scheduled. Washland storage, minor reservoirs, and the Leeds-Liverpool Canal can influence the flow pattern but small overall impact; minor net export. Geology is mainly Carboniferous Limestone with some Millstone Grit series. Rural catchment draining part of the eastern Pennines.

027041 Derwent at Buttercrambe 1993

Measuring authority: NRA-NY
First year: 1973
Grid reference: 44 (SE) 731 587
Level stn. (m OD) 9 50
Catchment area (sq km): 1586.0
Max alt (m OD) 454

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	13 270	15 170	12 950	9 043	15.800	11 310	6 541	4 982	6 080	14 630	10.710	32.650
2	12.830	14.720	19 420	8.839	14 650	11.010	6 418	5 017	5 900	19 640	10 630	32 830
3	12 420	14.160	20 200	8 930	14.020	10 770	6 260	5.176	5 834	20 100	10 390	28 120
4	12.470	13 800	16 400	14.130	13 210	10.610	6.152	5 419	5.819	16 460	10 290	25.050
5	15 390	13 360	16 600	21.600	12.650	9 833	6 011	10 620	5 781	17.980	10 090	22.720
6	19 240	13.450	22 150	24 170	12.300	9 389	5 809	29.620	5 743	34 940	9.783	20 420
7	17.910	13 240	17.270	17.520	11.960	9.065	5 631	17 340	5 736	37 620	9 714	20 770
8	17.890	12.770	14 630	14.080	11 440	8 782	5.596	10.660	5 890	33 770	9 589	27 410
9	18.420	12 710	13.630	21.790	11 260	9.026	5 689	10 680	8.971	25 270	10 450	44 670
10	20 300	12.660	12 690	50 790	13.840	12 050	5.763	13.080	9.699	23.660	15 110	37.340
11	26 620	12.530	12 190	41 610	14.590	13 350	5 819	10.840	8 895	19 700	13.830	29 930
12	26 090	12 220	11.950	33 910	12 980	11.830	5 611	13 150	7 655	22 520	11 970	30 190
13	28 820	11.890	11 560	30 250	12.170	10 780	5 350	14.650	18 100	29 640	13 780	46.370
14	30.930	11.710	11 270	22 660	18.800	11 080	5.623	11.480	47 000	23.650	45 490	50 670
15	28 620	11 440	10 690	18 620	34 380	11.900	6 240	10 120	71 450	20 130	65 880	44 420
16	27.830	11.180	10 440	16 870	20.380	10 450	7.143	11.670	89 520	17 420	58 170	41 080
17	23.710	11 040	10 370	15 810	21 480	9.552	6 832	12 850	90 190	15 770	41.640	35.770
18	19 830	10 840	10.100	15.570	24 410	9.255	6.173	10 360	64 110	14.590	31.580	30.970
19	19 270	10.710	9 626	18 820	17.660	9 178	6 499	9.134	41 100	13.990	24 430	34.490
20	18.680	10 250	9 516	19.700	15 740	8 470	6.224	8.328	32.330	13.700	20 180	29 010
21	17 240	10.130	9 533	16 650	18.240	8 058	6.001	7.714	26 780	15 870	19 990	25.100
22	16.510	9 824	9.298	14 850	16 310	7.786	5.868	7 266	22 170	17.440	20 930	23.520
23	15 660	9.721	9 058	14.100	13.990	7.694	5 690	7 195	19.150	14 580	20 980	23.120
24	17.770	9 637	9 084	15.190	12.880	7 643	5.539	7 057	16 350	13 480	19 240	27.570
25	16.180	9 772	8.805	34 100	12.060	7 474	5 511	6 898	14 660	12.770	19 100	29 390
26	14 700	10 100	8.644	40 830	11 660	7.614	5 495	6 790	14.790	12 300	20 370	25 020
27	14 540	10.690	8 555	27 080	11.550	7 531	5 400	6.661	16 120	12.020	20 890	24.980
28	16 410	11.120	8 447	20 470	11.410	7 092	5.438	6.487	13.970	11 650	26.450	28.520
29	20.210		8 319	18.150	11.210	6 841	5 367	6 297	12.910	11 350	26.250	39 120
30	17.900		8 525	16 840	11 410	6.681	5 238	6 142	12 870	11 070	28 520	50 120
31	16 180		8 118		11 500		5 086	6.029		10 860		44 110
Average	19.160	11 820	11 940	21 430	15 030	9 403	5.872	9 668	23 520	18 660	21.880	32 430
Lowest	12.420	9.637	8 118	8.839	11.210	6 681	5.086	4.982	5.736	10 860	9.589	20 420
Highest	30.930	15.170	22 150	50 790	34.380	13 350	7.143	29.620	90 190	37.620	65 880	50 670
Peak flow	32.62	15.57	24 09	52 81	38.36	13 76	7 42	32 22	92.63	38 42	70 23	51.87
Day of peak	14	1	6	10	15	11	16	6	17	7	15	14
Monthly total (million cu m)	51 31	28 58	31 97	55 55	40 26	24 37	15 73	25.90	60 96	49 99	56 72	86 87
Runoff (mm)	32	18	20	35	25	15	10	16	38	32	36	55
Rainfall (mm)	52	27	14	109	67	51	47	99	131	58	83	89

Statistics of monthly data for previous record (Jan 1973 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	25.990	24 990	24 360	19 260	13.590	9 678	7 917	7 639	7 648	12 620	14 770	24 100
	Low	9.596	8.606	6 254	6.640	5 282	4 778	3.882	3.126	3 077	3 929	5 472	8 276
	(year)	1992	1973	1973	1990	1990	1992	1976	1990	1990	1991	1989	1991
	High	48.190	49.280	56 110	37 540	29.840	21.260	17 120	15.430	14.710	36.820	25 220	42.740
	(year)	1977	1978	1979	1986	1979	1979	1973	1980	1976	1976	1980	1978
Runoff:	Avg.	44	38	41	31	23	16	13	13	12	21	24	41
	Low	16	13	11	11	9	8	7	5	5	7	9	14
	High	81	75	95	61	50	35	29	26	24	62	41	72
Rainfall:	Avg.	72	52	70	51	53	57	60	64	67	78	67	79
	Low	20	5	7	11	13	11	18	10	18	21	28	24
	High	132	101	143	113	142	149	138	126	192	158	111	180

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	16 800		16 020		105
Lowest yearly mean			7 900	1989	
Highest yearly mean			25 320	1979	
Lowest monthly mean	5 872	Jul	3 077	Sep 1990	
Highest monthly mean	32 430	Dec	56 110	Mar 1979	
Lowest daily mean	4.982	1 Aug	2 697	23 Aug 1976	
Highest daily mean	90.190	17 Sep	121 400	29 Dec 1978	
Peak	92.630	17 Sep	124.800	5 Jan 1982	
10% exceedance	30.620		33.110		92
50% exceedance	13.060		11.580		113
95% exceedance	5 707		3.925		145
Annual total (million cu m)	529 80		505 60		105
Annual runoff (mm)	334		319		105
Annual rainfall (mm)	827		770		107
1941-70 rainfall average (mm)			784		

Factors affecting runoff

- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater.

Station and catchment description

Crump weir, 20m wide; high flow rating derived from limited number of gaugings. Pre-October 1973 data (monthly only) of poorer quality; derives from Stamford Br.(27015) - slightly smaller catchment area (1586.0 sq km). Peak flows from the headwaters upstream of Forge Valley (8% catchment) are diverted down the Sea Cut (27033). Minor net impact of artificial influences (spray irrigation is appreciable). Mixed geology of clays, shales and limestone. Rural catchment draining the North York Moors.

028009 Trent at Colwick 1993

Measuring authority: NRA-ST
First year: 1958
Grid reference: 43 (SK) 620 399
Level stn. (m OD): 16.00
Catchment area (sq km): 7486.0
Max alt. (m OD): 636

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	61.950	86.270	45.030	42.950	48.260	55.150	35.150	36.680	27.750	65.470	41.510	103.400
2	58.420	82.360	45.270	37.980	46.150	51.420	33.860	39.220	27.430	97.050	43.560	87.780
3	56.670	77.170	44.570	39.150	44.210	50.680	33.490	41.080	27.800	92.400	42.380	76.310
4	63.190	72.200	42.300	60.350	42.020	45.950	32.010	37.660	27.820	82.970	41.720	73.200
5	78.220	69.230	42.530	68.070	41.660	42.780	31.690	37.880	28.240	104.400	41.220	74.280
6	104.800	64.600	41.430	81.870	39.900	39.240	31.190	37.050	27.430	191.900	38.860	67.700
7	99.920	61.900	40.500	58.600	39.330	37.170	31.170	33.920	28.990	264.200	37.370	132.900
8	90.320	60.850	40.550	51.050	39.240	36.520	31.200	33.860	66.390	200.200	38.400	226.300
9	84.630	62.240	41.160	137.800	39.110	41.400	46.640	36.680	91.340	177.000	46.430	365.400
10	102.000	62.390	40.270	231.200	40.400	51.650	57.720	41.930	74.690	126.800	75.420	299.300
11	178.900	60.590	40.800	141.700	51.490	169.500	43.600	45.400	55.850	135.600	70.760	194.300
12	174.700	58.100	37.490	160.600	45.070	251.800	39.190	52.210	56.740	223.800	59.650	273.300
13	215.800	54.730	37.870	188.200	40.790	236.600	39.060	49.080	132.700	259.500	177.500	404.200
14	341.700	51.870	37.240	119.300	40.880	177.800	60.890	42.230	139.300	253.300	355.900	420.800
15	331.700	52.600	36.500	85.500	41.870	170.300	67.680	40.910	121.900	187.000	347.200	336.600
16	243.800	53.020	36.490	71.620	38.800	116.300	88.190	37.010	106.600	116.900	250.500	326.000
17	164.900	52.510	36.280	63.620	40.330	92.420	75.090	35.790	103.900	91.360	141.300	277.800
18	128.600	50.720	35.450	59.730	41.820	90.040	57.400	33.790	77.920	78.280	107.200	209.500
19	113.000	50.320	33.190	64.210	38.650	76.990	56.540	33.950	60.340	69.910	90.170	246.500
20	104.900	46.550	34.780	58.000	38.940	62.330	58.590	31.790	57.360	65.970	79.400	246.200
21	96.190	44.130	35.250	52.650	61.960	54.860	51.000	33.670	65.990	61.760	73.990	281.200
22	91.100	44.380	41.840	50.410	51.050	50.000	43.980	48.090	60.250	58.060	68.910	330.600
23	97.240	46.640	39.380	49.660	40.240	46.320	40.290	48.300	54.100	52.450	65.380	362.700
24	109.200	44.990	36.390	54.910	36.550	44.330	46.600	37.960	50.140	49.510	62.600	345.300
25	101.200	45.290	33.240	99.370	35.470	41.970	48.670	34.880	49.510	48.410	68.190	272.400
26	93.460	52.640	33.460	95.450	42.140	40.380	43.990	31.660	45.580	48.210	76.400	196.300
27	130.100	48.630	33.450	74.650	139.400	39.550	46.380	30.190	44.670	47.240	81.740	153.900
28	121.800	44.100	33.800	63.060	145.800	37.720	44.560	28.710	48.310	45.230	73.780	169.000
29	115.700		33.210	56.240	108.300	36.670	50.050	27.390	47.690	45.070	69.760	266.500
30	103.900		33.710	51.840	81.020	35.690	48.440	28.700	48.940	42.680	99.640	336.600
31	93.220		35.600		67.480		40.730	28.470		40.570		267.500
Average	127.500	57.180	38.030	82.320	53.170	77.450	46.940	37.290	61.860	110.400	95.560	239.500
Lowest	56.670	44.100	33.190	37.980	35.470	35.690	31.170	27.390	27.430	40.570	37.370	67.700
Highest	341.700	86.270	45.220	231.200	145.800	251.800	88.190	52.210	139.300	264.200	355.900	420.800
Peak flow	364.40	89.66	50.43	253.80	163.50	255.50	100.50	64.51	178.40	279.00	364.30	440.40
Day of peak	15	1	2	10	27	12	16	22	13	7	14	14
Monthly total (million cu m)	341.40	138.30	101.90	213.40	142.40	200.80	125.70	99.89	160.30	295.80	247.70	641.40
Runoff (mm)	46	18	14	29	19	27	17	13	21	40	33	86
Rainfall (mm)	72	10	15	84	70	77	86	45	98	73	67	133

Statistics of monthly data for previous record (Oct 1958 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	138.800	129.500	111.000	91.870	68.750	54.090	44.430	45.810	48.160	65.050	88.620	123.900
	Low	52.910	47.130	47.190	35.220	32.090	24.690	19.460	18.440	23.070	25.260	34.170	46.240
	(year)	1963	1992	1976	1976	1990	1976	1976	1976	1959	1959	1975	1975
	High	216.400	384.000	227.600	179.500	175.100	103.100	104.100	76.480	121.100	187.000	231.800	351.600
	(year)	1988	1977	1981	1966	1969	1987	1968	1966	1965	1960	1960	1965
Runoff	Avg	50	42	40	32	25	19	16	16	17	23	31	44
	Low	19	16	17	12	11	9	7	7	8	9	12	17
	High	77	124	81	62	63	36	37	27	42	67	80	126
Rainfall	Avg	72	53	61	58	57	62	58	70	64	67	73	77
	Low	23	8	13	9	11	14	18	21	3	12	38	15
	High	138	175	116	116	144	148	125	120	149	141	145	173

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre 1993
Mean flow (m^3s^{-1})	85.900		83.970		102
Lowest yearly mean			47.030	1976	
Highest yearly mean			124.000	1966	
Lowest monthly mean	37.290	Aug	18.440	Aug 1976	
Highest monthly mean	239.500	Dec	384.000	Feb 1977	
Lowest daily mean	27.390	29 Aug	14.700	23 Aug 1976	
Highest daily mean	420.800	14 Dec	854.900	26 Feb 1977	
Peak	440.400	14 Dec	956.700	25 Feb 1977	
10% exceedance	193.400		168.900		115
50% exceedance	53.270		59.190		90
95% exceedance	32.100		27.260		118
Annual total (million cu m)	2709.00		2650.00		102
Annual runoff (mm)	362		354		102
Annual rainfall (mm)	830		772		108
1941-70 rainfall average (mm)			771		

Factors affecting runoff

- Reservoir(s) in catchment
- Flow influenced by groundwater abstraction and/or recharge
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater.
- Augmentation from effluent returns.

Station and catchment description

Velocity-area station in the navigable Trent. Main channel approx. 62m; cableway span 99m. Holme sluices 750m u/s affect water levels up to medium flows. Bypassed at high flows on rb when gravel workings inundated. Very substantial flow modifications owing to imports, WRW's, cooling water and industrial usage. Predominantly impervious - glacial clay and Triassic Marl, but some sandstone and limestone. Extensive terrace gravels and alluvium maintain baseflow.

028085 Derwent at St. Marys Bridge 1993

Measuring authority: NRA-ST
First year: 1936

Grid reference: 43 (SK) 355 368
Level stn. (m OD): 44.00

Catchment area (sq km): 1054.0
Max alt. (m OD): 636

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	13.630	20.140	8.381	6.473	8.914	6.888	6.126	8.350	5.064	15.460	8.342	13.120
2	12.520	19.210	8.189	6.097	8.789	6.950	6.088	8.039	5.302	22.790	8.383	12.180
3	11.430	17.900	8.037	8.456	8.474	6.619	5.754	7.522	5.160	18.000	8.215	11.590
4	12.410	15.970	7.944	8.715	8.194	6.070	5.471	8.180	5.483	17.960	8.230	12.410
5	17.410	14.990	7.793	14.160	8.007	5.727	5.177	6.692	5.482	27.390	8.083	11.890
6	15.840	13.090	7.620	11.390	8.015	5.514	4.974	8.184	5.497	48.820	7.690	14.500
7	14.730	12.470	7.543	7.343	8.006	5.298	4.615	6.577	4.967	52.780	7.870	39.610
8	13.950	12.770	7.927	9.232	7.707	5.002	4.872	6.711	9.208	30.480	7.657	74.370
9	14.770	13.490	7.797	28.220	7.435	8.840	6.189	8.852	9.118	24.860	9.456	95.670
10	23.440	12.920	7.746	20.730	8.699	9.091	5.272	8.912	7.080	20.990	9.776	53.020
11	31.170	12.300	7.265	18.310	7.807	28.970	5.074	10.700	5.679	23.390	8.971	49.780
12	22.500	11.980	7.242	19.320	7.487	20.710	5.913	10.560	12.080	29.920	9.100	73.810
13	46.060	10.230	7.136	18.090	7.368	12.450	5.650	8.535	37.410	30.910	37.890	96.970
14	33.830	9.998	7.012	14.030	8.245	21.840	7.690	7.241	28.100	22.510	44.900	70.060
15	33.820	10.800	6.922	13.260	7.631	15.670	14.260	7.049	44.130	18.830	23.130	69.470
16	28.410	10.860	6.835	11.900	7.612	12.200	12.400	7.138	27.030	16.780	18.330	96.020
17	24.650	10.610	6.904	11.070	8.132	12.390	8.454	6.843	22.730	15.840	15.900	63.150
18	21.830	10.330	6.832	11.640	7.816	11.180	8.526	7.077	19.140	14.270	14.170	55.230
19	21.170	10.300	6.620	13.210	7.268	9.628	13.210	7.013	17.450	12.450	13.390	72.730
20	21.820	8.680	6.644	11.440	6.987	9.094	10.130	6.468	17.250	11.860	12.770	55.170
21	20.000	8.660	6.737	10.670	7.160	8.236	8.954	5.412	16.400	11.310	12.690	51.690
22	19.030	9.521	6.999	10.140	6.494	7.872	7.725	6.318	16.540	10.690	12.230	82.580
23	23.640	9.732	6.644	9.968	6.345	7.461	7.113	6.333	15.450	10.300	11.800	82.400
24	23.180	9.884	6.357	10.910	5.189	7.471	6.524	6.059	15.060	9.983	11.410	65.180
25	23.700	9.631	6.320	17.440	5.135	7.225	6.511	5.864	14.440	9.774	12.300	47.910
26	23.700	9.420	6.128	13.850	5.338	7.073	8.526	5.759	13.500	9.528	12.850	39.970
27	24.590	8.831	6.338	11.490	15.410	6.809	9.124	5.461	13.440	9.319	11.740	33.890
28	22.630	8.440	6.270	10.830	10.160	6.591	8.827	4.726	13.200	9.048	10.970	34.090
29	22.890		6.199	9.983	8.853	6.521	9.926	4.569	12.040	8.895	12.400	77.360
30	21.040		6.104	9.490	8.679	6.028	9.257	5.422	11.990	8.533	15.620	59.670
31	20.270		6.327		8.513		8.543	5.103		8.530		48.930
Average	21.940	11.900	7.058	12.600	7.931	9.714	7.841	7.022	14.510	18.780	13.540	53.690
Lowest	11.430	8.440	6.104	6.097	5.135	5.002	4.615	4.569	4.967	8.530	7.657	11.590
Highest	46.060	20.140	8.381	28.220	15.410	28.970	14.260	10.700	44.130	52.780	44.900	96.970
Peak flow	74.88	20.93	8.87	37.85	17.94	40.97	23.37	11.18	63.89	91.09	67.71	123.80
Day of peak	13	1	2	9	27	11	15	11	15	7	13	9
Monthly total (million cu m)	58.76	28.78	18.91	32.65	21.24	25.18	20.47	18.81	37.62	50.30	35.10	143.80
Runoff (mm)	56	27	18	31	20	24	19	18	36	48	33	136
Rainfall (mm)	98	12	16	106	73	78	110	55	133	70	66	219

Statistics of monthly data for previous record (Jan 1936 to Dec 1992—incomplete or missing months total 0.9 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg	29.630	28.090	22.840	17.910	12.470	10.010	8.557	8.877	10.120	13.430	21.170	26.220
	Low	9.749	8.084	9.110	7.252	4.709	4.646	4.211	3.647	3.955	4.155	4.304	8.480
	(year)	1963	1963	1976	1990	1990	1990	1976	1976	1959	1959	1975	1975
	High	67.000	76.780	69.530	39.590	26.410	20.220	28.660	33.840	32.940	35.130	54.320	88.690
	(year)	1939	1977	1947	1966	1967	1987	1958	1956	1946	1960	1940	1965
Runoff:	Avg	75	65	58	44	32	25	22	23	25	34	52	67
	Low	25	19	23	18	12	11	11	9	10	11	11	22
	High	170	176	177	97	67	50	73	86	81	89	134	225
Rainfall:	Avg	104	78	77	66	67	71	76	83	80	90	104	102
	Low	33	8	16	8	13	15	16	10	3	17	16	20
	High	215	236	185	132	163	188	158	185	199	178	232	246

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	15.590		17.390		90
Lowest yearly mean			9.625	1976	
Highest yearly mean			25.200	1966	
Lowest monthly mean	7.022	Aug	3.647	Aug 1976	
Highest monthly mean	53.690	Dec	88.690	Dec 1965	
Lowest daily mean	4.569	29 Aug	1.663	28 Aug 1984	
Highest daily mean	96.970	13 Dec	334.200	10 Dec 1965	
Peak	123.800	9 Dec			
10% exceedance	30.570		36.050		85
50% exceedance	9.855		11.850		83
95% exceedance	5.410		4.679		116
Annual total (million cu m)	491.60		548.80		90
Annual runoff (mm)	466		521		90
Annual rainfall (mm)	1036		998		104
1941-70 rainfall average (mm)			1016		

Factors affecting runoff

- Reservoir(s) in catchment
- Flow influenced by groundwater abstraction and/or recharge.
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater.
- Augmentation from effluent returns.

Station and catchment description

Ten-channel, interleaved cross path US gauge in the centre of Derby, 1.75km ds of Longbridge Weir (28010). Record continuous with 28010. Peaks from 1976 only. Derby may flood but bypassing small. Substantial flow modification owing to Derwent reservoirs, milling and PWS abstractions. Large, predominantly upland catchment draining Millstone Grit and Carb. Lst. Lower reaches drain Coal Measures on the lb and Triassic sandstones and marls on the rb. Peat moorland headwaters, forestry, pasture and some arable.

030001 Witham at Claypole Mill 1993

Measuring authority: NRA-A
First year: 1959

Grid reference 43 (SK) 842 480
Level stn (m OD): 16.90

Catchment area (sq km): 297.9
Max alt (m OD): 158

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.225	2 445	1 830	1 289	1 238	1 203	0 875	0.740	0 605	4 482	2.210	5 219
2	2.183	2 429	1 889	1 240	1.257	1 226	0 881	0 735	0 610	2 975	2 170	4 206
3	2 112	2 338	1 722	1 394	1 207	1 148	0 850	0 865	0 635	2 201	2.099	3 619
4	2.239	2.242	1 603	1 664	1 128	1 022	0 774	0 738	0 614	2 213	1.968	3.298
5	2 719	2 209	1 573	1 944	1 147	0.985	0 755	0 740	0 601	4 646	1 887	2 951
6	3 215	2.174	1 520	1 627	1 106	0.952	0 788	0 667	0 576	6.918	1.859	2 917
7	3 027	2 078	1 488	1 399	1 096	0 866	0.735	0.625	0 634	6 835	1.845	3 226
8	2 739	2 026	1 445	1 288	1.072	0 815	0 700	0 673	1 160	3 924	1 811	5.344
9	2 644	2 026	1 460	2 616	1 071	1 805	1 101	0 857	0 811	2 912	2 035	6 202
10	3.296	2 026	1 390	4 646	1 153	3.379	0 992	0.901	0 796	2 598	2.126	4 170
11	4.156	1.928	1 341	3 347	1 010	5 268	0 739	0 806	0 706	5.241	2.036	3.470
12	3 227	1 904	1 325	2.140	0 949	5.266	0.729	0 780	1 048	9 884	1 972	9 760
13	7.443	1.904	1 291	1 880	0 969	2 843	0 760	0 758	3 610	14 270	8 354	10 470
14	9 391	1 721	1 261	1 595	0 991	3.874	1.354	0 652	2 758	8.876	11 040	6 355
15	5.959	1.694	1 267	1 441	0.918	3 692	1 547	0 771	2 670	5 489	5 862	6.719
16	4 655	1.692	1 287	1 367	0.857	2.138	1 275	0 646	5 604	4 378	4.129	5 454
17	3 870	1.729	1 094	1 327	0 908	1 787	1 352	0 658	5 863	3 801	3.497	4.675
18	3 473	1 692	1 205	1 261	0 900	1 728	1 204	0 657	2 530	3.525	3 142	4 647
19	3 331	1 670	1 193	1 271	0 825	1 502	1 163	0 663	1 801	3 343	2 854	6 079
20	3.163	1 649	1 211	1 723	1 243	1 373	1.059	0 643	1.714	3 283	2.796	6 556
21	3 076	1.638	1 310	1 176	1 113	1 298	0 959	0 642	1 608	2 942	2 881	8.920
22	2 941	1 550	1 405	1 220	1 022	1 237	0 866	1.907	1 429	2 879	2 801	9 199
23	3 140	1 544	1 239	1 272	0 948	1 159	0 977	1 074	1 334	2.790	2 866	6 899
24	3 009	1 536	1 227	1 290	0 898	1 203	1 269	0 847	1 284	2 689	2.763	6 107
25	2 875	1.524	1 198	2 421	0 858	1 189	1 056	0 741	1 235	2.519	3 272	5 373
26	2 756	1 841	1 192	2.119	0 880	1.202	1.055	0 722	1.164	2.539	4.129	4.831
27	2 719	1.561	1 200	1 754	4 157	1 063	1 148	0 704	1 894	2 466	3 885	4 633
28	2 746	1 547	1 203	1 476	2.436	0 972	0.881	0 644	2.222	2 423	3.348	5 845
29	2 712		1 169	1 457	1 690	0 941	0 935	0 630	1 831	2 362	3 338	9 369
30	2 596		1 071	1 340	1 502	0 928	0 817	0 612	2 308	2 284	5 491	7 449
31	2.502		1 192		1 255		0 846	0 603		2 201		5 657
Average	3 424	1 868	1 348	1.716	1 219	1.802	0 982	0 765	1 722	4 190	3.349	5 794
Lowest	2 112	1.524	1 071	1.176	0 825	0 815	0 700	0 603	0.576	2 201	1 811	2 917
Highest	9.391	2 445	1 889	4 646	4 157	5 268	1 547	1 907	5 863	14 270	11 040	10.470
Peak flow	11 29	2 48	2 13	6.36	6 39	6 23	1.87	2 96	8.22	15 24	12 48	16 11
Day of peak	14	1	1	10	27	11	15	22	16	13	14	12
Monthly total (million cu m)	9.17	4.52	3 61	4 45	3 27	4 67	2.63	2.05	4 46	11 22	8 68	15.52
Runoff (mm)	31	15	12	15	11	16	9	7	15	38	29	52
Rainfall (mm)	54	13	16	67	57	71	72	47	115	64	67	80

Statistics of monthly data for previous record (May 1959 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	2.774	3.163	2 846	2 358	1 708	1 102	0 778	0 758	0 721	0 978	1 403	2 099
	Low	0 673	0 492	0 453	0 365	0 311	0 184	0 063	0 136	0 232	0 218	0 278	0 312
	(year)	1965	1976	1976	1976	1976	1976	1976	1976	1959	1959	1959	1964
	High	5.857	10 690	6 995	5 748	4 695	3 141	2.118	2.376	2 886	3.906	6 525	7.879
	(year)	1988	1977	1979	1979	1983	1985	1968	1980	1968	1960	1960	1965
Runoff	Avg	25	26	26	21	15	10	7	7	6	9	12	19
	Low	6	4	4	3	3	2	1	1	2	2	2	3
	High	53	87	63	50	42	27	19	21	25	35	57	71
Rainfall	Avg	54	40	48	50	49	53	52	60	51	50	55	55
	Low	20	3	8	10	11	3	9	5	3	5	24	13
	High	117	140	92	103	130	148	132	127	127	137	115	142

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	2 354		1.717		137
Lowest yearly mean			0 594	1976	
Highest yearly mean			2 807	1979	
Lowest monthly mean	0 765	Aug	0 063	Jul 1976	
Highest monthly mean	5 794	Dec	10 690	Feb 1977	
Lowest daily mean	0 576	6 Sep	0.021	24 Jul 1976	
Highest daily mean	14 270	13 Oct	31 600	11 Feb 1977	
Peak	16.110	12 Dec	37 540	11 Feb 1977	
10% exceedance	5 165		3 723		139
50% exceedance	1 648		1.036		159
95% exceedance	0 661		0.349		189
Annual total (million cu m)	74 24		54.19		137
Annual runoff (mm)	249		182		137
Annual rainfall (mm)	723		617		117
1941-70 rainfall average (mm)			631		

Factors affecting runoff

- Abstraction for public water supplies.
- Augmentation from surface water and/or groundwater.
- Augmentation from effluent returns

Station and catchment description

An old weir at three levels with a total width of 24.99m converted into a standard Lea designed broad crested weir. It is rated theoretically and there is no bypassing or drowning. Low flows moderately influenced by transfer of water from Rutland Water (Feb. 1977 to Apr. 1986). Abstractions for public supply at Saltersford. The catchment is clay (50%) with limestone (40%) and gravel, and is largely rural.

032004 Ise Brook at Harrowden Old Mill 1993

Measuring authority: NRA-A
First year: 1943
Grid reference: 42 (SP) 898 715
Level stn. (m OD): 45.30
Catchment area (sq km): 194.0
Max alt. (m OD): 197

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1.178	1.380	0.813	0.408	0.738	0.495	0.565	0.376	0.239	1.154	0.597	2.334
2	1.140	1.232	0.798	0.489	0.682	0.532	0.541	0.366	0.270	2.044	0.574	1.876
3	1.109	1.169	0.772	0.757	0.650	0.467	0.523	0.359	0.269	1.526	0.535	1.676
4	1.303	1.151	0.794	0.700	0.612	0.439	0.493	0.433	0.262	1.290	0.524	2.134
5	2.151	1.097	0.853	0.871	0.611	0.414	0.465	0.412	0.262	2.614	0.509	1.850
6	3.199	1.058	0.847	0.730	0.588	0.406	0.454	0.348	0.268	3.393	0.493	1.646
7	3.086	1.023	0.754	0.574	0.567	0.369	0.436	0.350	0.389	2.863	0.515	1.602
8	2.267	1.018	0.613	0.547	0.559	0.345	0.680	0.337	0.885	1.740	0.776	6.682
9	2.170	0.998	0.597	5.014	0.560	1.216	1.815	0.391	0.605	1.329	1.417	5.252
10	6.198	1.062	0.598	4.289	0.565	2.650	1.093	0.322	0.495	1.168	2.125	2.844
11	4.896	1.092	0.589	1.900	0.542	11.210	0.761	0.361	0.455	2.086	1.775	2.153
12	2.936	1.080	0.446	3.263	0.551	11.300	0.630	0.439	0.767	2.437	1.301	8.819
13	9.168	1.289	0.469	2.602	0.528	3.458	0.808	0.342	0.762	6.640	9.268	11.630
14	10.820	1.156	0.379	1.391	0.549	3.688	0.708	0.312	0.845	4.601	16.040	5.645
15	4.773	0.961	0.499	1.330	0.561	3.044	0.748	0.317	0.684	1.585	6.947	5.998
16	4.258	0.977	0.674	1.366	0.549	2.158	0.703	0.298	1.176	1.531	3.140	4.050
17	3.533	0.957	0.522	1.066	0.566	2.050	0.557	0.287	0.788	1.287	2.407	3.289
18	3.125	0.949	0.345	0.954	0.513	2.028	0.583	0.275	0.655	1.136	2.006	3.204
19	2.298	0.804	0.288	0.893	0.403	1.498	0.539	0.281	0.517	1.054	1.751	3.989
20	2.063	0.623	0.317	0.807	0.725	1.137	0.513	0.272	0.553	1.004	1.631	8.320
21	1.943	0.786	0.476	0.764	0.560	0.994	0.481	0.496	0.491	0.949	1.576	7.677
22	1.815	0.919	0.605	0.610	0.492	0.892	0.447	0.908	0.493	0.885	1.435	6.911
23	1.972	0.953	0.495	0.616	0.820	0.847	0.486	0.469	0.525	0.775	1.353	6.179
24	1.998	0.863	1.047	0.838	0.439	0.779	0.985	0.371	0.465	0.533	1.317	4.759
25	1.703	0.812	0.481	1.281	0.380	0.734	0.642	0.371	0.433	0.513	1.404	3.665
26	1.663	0.904	0.470	1.261	0.721	0.719	0.590	0.391	0.412	0.970	1.452	3.072
27	1.871	0.634	0.466	1.068	1.536	0.672	0.569	0.303	0.674	0.462	1.361	2.750
28	2.002	0.715	0.463	0.931	1.204	0.625	0.503	0.290	0.529	0.499	1.258	3.305
29	1.836		0.340	0.835	0.868	0.600	0.512	0.280	0.571	0.608	1.638	8.650
30	1.720		0.282	0.784	0.681	0.569	0.439	0.283	0.688	0.594	2.647	5.663
31	1.602		0.397		0.552		0.402	0.276		0.588		3.734
Average	2.961	0.988	0.564	1.298	0.641	1.878	0.635	0.365	0.548	1.608	2.326	4.495
Lowest	1.109	0.623	0.282	0.408	0.380	0.345	0.402	0.272	0.239	0.462	0.493	1.602
Highest	10.820	1.380	1.047	5.014	1.536	11.300	1.815	0.908	1.176	6.640	16.040	11.630
Peak flow	14.11	1.55	3.96	8.30	2.25	12.38	2.97	2.29	2.09	8.79	16.61	14.68
Day of peak	14	1	24	10	27	12	9	22	16	13	14	13
Monthly total (million cu m)	7.93	2.39	1.51	3.36	1.72	4.87	1.70	0.98	1.42	4.31	6.03	12.04
Runoff (mm)	41	12	8	17	9	25	9	5	7	22	31	62
Rainfall (mm)	56	10	17	69	54	94	78	35	82	64	70	94

Statistics of monthly data for previous record (Dec 1943 to Dec 1992—incomplete or missing months total 0.8 years).

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	2.440	2.554	2.198	1.528	1.080	0.731	0.555	0.531	0.536	0.763	1.389	1.916
	Low	0.459	0.324	0.219	0.330	0.143	0.128	0.166	0.110	0.128	0.185	0.176	0.219
	(year)	1944	1944	1944	1948	1944	1944	1945	1944	1949	1947	1947	1947
	High	6.441	6.948	7.984	3.835	3.606	2.421	3.018	2.656	2.584	4.384	5.330	5.827
	(year)	1959	1977	1947	1979	1967	1981	1958	1980	1992	1960	1960	1965
Runoff	Avg	34	32	30	20	15	10	8	7	7	11	19	26
	Low	6	4	3	4	2	2	2	2	2	3	2	3
	High	89	87	110	51	50	32	42	37	35	61	71	80
Rainfall	Avg	55	42	49	46	52	56	52	64	54	53	59	58
	Low	15	3	5	8	8	5	5	3	3	5	10	13
	High	112	115	127	109	130	141	112	139	127	137	132	123

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	1.530		1.346		114
Lowest yearly mean			0.422	1944	
Highest yearly mean			2.337	1960	
Lowest monthly mean	0.365	Aug	0.110	Aug 1944	
Highest monthly mean	4.495	Dec	7.984	Mar 1947	
Lowest daily mean	0.239	1 Sep	0.048	11 Aug 1944	
Highest daily mean	16.040	14 Nov	21.360	15 Aug 1980	
Peak	16.610	14 Nov	28.390	17 Mar 1947	
10% exceedance	3.328		2.980		112
50% exceedance	0.796		0.727		110
95% exceedance	0.307		0.194		158
Annual total (million cu m)	48.25		42.48		114
Annual runoff (mm)	249		219		114
Annual rainfall (mm)	723		840		113
1941-70 rainfall average (mm)			631		

Factors affecting runoff

- Reservoir(s) in catchment
- Flow reduced by industrial and/or agricultural abstractions.

Station and catchment description

Flume with low flow notch and side weir to 1965, compound Crump profile weir to April 1976, and theoretically-rated Flat V weir with 5.94m crest since. Crump weir modular to 15.6 cumecs, but bypassed at 14.2m. Flat V also bypassed. Two small storage reservoirs with minor influence on low flows. Underlain by clay (59%) and sandstone (24%), mostly rural but includes Kettering.

033002 Bedford Ouse at Bedford 1993

Measuring authority: NRA-A
First year: 1933
Grid reference: 52 (TL) 055 495
Level stn (m OD): 24.70
Catchment area (sq km): 1460.0
Max alt (m OD): 247

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	12.400	16.300	7.100	15.300	9.100	6.000	3.700	3.300	2.600	6.800	5.700	15.300
2	12.000	15.100	7.100	36.700	8.400	5.700	3.500	3.200	2.600	13.000	5.700	15.100
3	11.400	14.000	6.900	18.000	7.900	6.000	3.400	3.100	2.600	15.700	5.400	13.000
4	10.700	13.500	6.700	18.900	6.700	5.600	3.300	3.100	2.600	13.000	5.300	13.000
5	12.100	13.100	6.500	18.600	6.800	5.100	3.200	3.200	2.600	11.400	5.200	16.100
6	30.720	12.600	6.500	21.300	6.700	5.000	3.200	3.600	2.600	23.700	5.100	14.100
7	50.000	12.300	6.700	14.300	6.400	5.000	3.000	3.400	2.800	38.400	5.100	13.000
8	44.900	11.900	6.800	12.400	6.400	4.900	3.200	3.300	4.000	35.100	5.100	20.200
9	31.400	11.600	6.800	25.800	6.400	4.900	4.400	3.300	7.200	20.800	5.100	34.800
10	41.800	11.500	6.800	55.900	8.000	8.400	7.600	3.400	6.300	14.400	10.300	28.000
11	61.800	11.000	6.700	64.500	7.600	17.400	5.800	3.700	4.600	12.600	25.400	18.200
12	75.900	10.600	6.400	54.100	6.300	30.400	4.400	3.900	4.500	18.000	22.300	21.600
13	83.900	10.400	6.400	40.900	6.000	19.600	4.100	5.000	5.100	46.000	28.400	50.600
14	67.200	10.200	6.400	31.700	6.000	16.700	5.200	4.000	6.500	51.800	52.800	59.500
15	72.800	10.000	6.400	19.800	6.000	28.200	5.900	3.400	6.800	60.500	60.800	63.100
16	67.800	9.800	6.300	15.500	5.700	19.900	5.600	3.100	5.900	47.400	63.900	53.100
17	41.100	9.800	6.200	13.700	5.300	21.800	5.700	3.000	5.600	23.300	34.800	32.000
18	30.500	9.500	5.900	12.800	5.000	15.900	4.800	2.800	5.400	16.200	22.000	24.400
19	25.900	9.100	5.800	11.700	5.000	10.900	4.200	2.700	4.400	18.600	16.400	32.400
20	23.800	8.900	5.800	11.000	5.700	8.900	4.100	2.700	4.200	13.500	14.400	51.300
21	22.500	8.100	6.000	10.400	9.300	7.900	4.200	2.900	4.200	7.100	12.400	58.200
22	23.100	7.800	8.000	9.600	8.500	7.200	3.900	3.300	4.800	13.300	12.600	62.600
23	23.400	7.700	8.200	9.400	6.500	5.800	3.800	5.400	4.300	9.100	14.100	57.900
24	23.400	6.700	6.700	10.400	5.900	5.000	3.700	4.300	3.700	7.400	11.900	56.900
25	22.600	6.700	6.200	12.800	5.400	4.800	4.000	3.500	3.000	7.100	10.000	47.000
26	18.100	7.300	5.800	15.900	5.400	4.800	4.000	3.100	3.300	6.700	9.400	31.800
27	22.000	7.400	5.900	13.400	8.500	4.400	3.800	2.800	3.300	6.500	9.400	25.400
28	28.800	6.800	6.200	12.000	11.100	4.300	3.600	2.700	3.500	6.400	9.100	25.100
29	25.500		6.000	10.600	11.200	4.000	3.600	2.700	4.000	6.300	9.000	38.200
30	20.400		5.700	9.600	9.600	3.800	3.600	2.700	4.400	5.900	11.200	42.200
31	17.700		6.400		7.800		3.600	2.700		5.800		44.700
Average	34.050	10.350	6.494	20.900	7.116	9.943	4.197	3.332	4.247	18.770	16.940	34.800
Lowest	10.700	6.700	5.700	9.400	5.000	3.800	3.000	2.700	2.600	5.800	5.100	13.000
Highest	83.900	16.300	8.200	64.500	11.200	30.400	7.600	5.400	7.200	60.500	63.900	63.100
Peak flow	92.40	17.00	9.30	66.00	11.70	33.30	8.80	5.90	7.40	62.60	64.80	64.80
Day of peak	13	1	23	11	29	12	10	23	9	16	16	22
Monthly total (million cu m)	91.21	25.03	17.39	54.17	19.06	25.77	11.24	8.93	11.01	50.27	43.92	93.21
Runoff (mm)	62	17	12	37	13	18	8	6	8	34	30	64
Rainfall (mm)	74	9	23	80	55	68	57	36	83	87	59	94

Statistics of monthly data for previous record (Jan 1933 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	19.410	19.940	16.910	11.290	7.111	4.630	3.298	2.872	3.098	5.709	11.340	15.470
	Low	2.608	2.232	2.410	1.996	1.411	0.483	0.100	0.040	0.268	0.454	1.152	1.531
	(year)	1934	1965	1944	1976	1934	1934	1934	1934	1934	1934	1934	1964
	High	55.190	53.300	62.020	31.470	28.280	14.280	19.080	14.400	19.760	30.420	43.800	40.400
	(year)	1939	1977	1947	1951	1983	1985	1968	1980	1992	1987	1960	1960
Runoff	Avg	36	33	31	20	13	8	6	5	6	10	20	28
	Low	5	4	4	4	3	1	0	0	0	1	2	3
	High	101	88	114	56	52	25	35	26	35	56	78	74
Rainfall (1934-1992)	Avg	58	42	49	45	54	53	54	60	54	60	63	60
	Low	14	3	5	3	6	8	5	3	3	4	10	13
	High	124	111	140	96	113	119	120	138	110	147	178	134

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	14.310		10.040		143
Lowest yearly mean			2.401	1934	
Highest yearly mean			18.890	1937	
Lowest monthly mean	3.332	Aug	0.040	Aug 1934	
Highest monthly mean	34.800	Dec	62.020	Mar 1947	
Lowest daily mean	2.600	1 Sep	0.008	31 Aug 1934	
Highest daily mean	83.900	13 Jan	278.100	15 Mar 1947	
Peak	92.400	13 Jan			
10% exceedance	35.660		26.220		136
50% exceedance	7.639		4.684		163
95% exceedance	3.042		0.958		318
Annual total (million cu m)	451.30		316.80		142
Annual runoff (mm)	309		217		142
Annual rainfall (mm)	725		652		111
1941-70 rainfall average (mm)			648		

Factors affecting runoff

- Reservoir(s) in catchment.
- Flow influenced by groundwater abstraction and/or recharge.
- Abstraction for public water supplies
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from effluent returns.

Station and catchment description

3 broad-crested weirs, 30m, 20m and 12m wide supplemented by 3 vertical sluice gates which are either fully open or shut. High flow rating confirmed by current meter measurements. Records before 1959 based on daily gauge board readings and gate openings. (Improved flow record, from 1972, d/s at 33039). Significant surface and groundwater abstractions in catchment for PWS. Milton Keynes' effluent now significant. Geology - predominantly clay. Land use - agricultural with substantial urban development over last 15 years.

033034 Little Ouse at Abbey Heath 1993

Measuring authority: NRA-A
First year: 1968
Grid reference: 52 (TL) 851 844
Level stn (m OD): 7 20
Catchment area (sq km): 699.3
Max alt (m OD): 98

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3 714	4 943	5 321	3 896	3 259	2 536	1 469	1 570	1 246	2 880	3 676	8 228
2	3.684	4 829	8 471	4 047	3 111	2.534	1 402	1 480	1 238	3 637	3 620	7 280
3	3 648	5 135	8 323	3 815	2.950	2 912	1 365	1 420	1 225	3 612	3 546	6 580
4	3 667	4 875	6 288	3 744	2 816	2 641	1.365	1 510	1 220	2 849	3 484	6 213
5	3.976	4 804	5 506	3 851	2 739	2 429	1.372	1 470	1 206	2 804	3 399	5.699
6	5 501	4 485	5 149	3 862	2 689	2 249	1 305	1 370	1 233	2 737	3 336	5 374
7	9.697	4 393	4 811	3 530	2.626	2 035	1.241	1 370	1 260	2 680	3 341	5.467
8	8 917	4 274	4 545	3 393	2 567	1.984	1 218	1 340	1 244	2 380	3.373	6 312
9	7.656	4.277	4 203	3 400	2 650	1 912	1 419	1 450	1 225	2 524	3 408	9 450
10	7 816	4 401	4 284	3 840	2 640	2 019	1 351	1 340	1 232	2 552	4 206	8.177
11	11 180	4 193	4 002	3 920	2 564	2 089	1 474	1 480	1 222	2 991	6 170	7 081
12	11.770	3.890	3 894	3 800	2 494	2 062	1 446	1 720	1 498	5 421	6 120	7 915
13	9 592	3 978	3.871	3 440	2 466	2 048	1 598	1.721	1 485	10 870	7 650	14 360
14	11 130	4.033	3 745	3 560	2 241	2 215	1 557	1 870	1 624	13.270	14 470	16 330
15	9 722	4 028	3.652	3 330	2 378	2 091	1 761	1.553	1 682	16 300	17 290	15 260
16	7 979	3 853	3 661	3 210	2 304	2 248	1 878	1 507	1 977	14 800	20 340	11 960
17	6 953	3 870	3.574	3 210	2 522	2 260	1 828	1 489	1.741	11 120	19 830	9.029
18	5 955	3.838	3 514	3 400	2 486	2 264	1 729	1 435	1 944	7 154	15 580	7 854
19	5 732	3 618	3 144	3 520	2 470	2 135	1 967	1 425	1 590	5 850	11 080	8 661
20	5 580	3 657	3 303	3 400	2 584	2 039	1 861	1 269	1 390	5 188	8 192	9.937
21	5.405	3 791	3 720	3 140	2.768	1.917	1 734	1 469	1 286	4 798	7 316	14 420
22	5 259	3 880	4 111	2 840	2 259	1 890	1 556	1 537	1 295	5 251	6.702	17 020
23	5.074	3 815	4 162	2 959	2 337	1 858	1 496	1 531	1 427	5 011	6 373	16 340
24	5 173	3 677	3 651	3 448	2 208	1 790	1 574	1 589	1 292	4 710	6 146	15 560
25	4.904	3 647	3 474	5 337	2 168	1.737	1 589	1 547	1 315	4 440	5 955	16 250
26	4 814	3.747	3 418	6.433	2 370	1 684	1 549	1 525	1 682	4 248	5 796	14 690
27	5.326	4 255	3 377	4 574	3 197	1 664	1 561	1 481	2 270	4 062	5 665	11 990
28	5 627	4 573	3 372	3 866	4 227	1 644	1 545	1.467	3 748	4 027	5 528	10 770
29	5 763		3 293	3 648	3 472	1 587	1 810	1 416	4 314	3 998	5 497	11 760
30	5 662		3 292	3 410	3 042	1 519	1 900	1 413	3.368	3 836	6 848	11 920
31	5.083		3 397		2 725		1 710	1 424		3.719		11 910
Average	6.515	4 170	4 275	3.727	2 688	2.066	1 569	1 488	1 683	5 475	7 465	10 640
Lowest	3 648	3 618	3 144	2 840	2 168	1 519	1 218	1 269	1 206	2 380	3 336	5 374
Highest	11 770	5 135	8 471	6 433	4 227	2 912	1 967	1 870	4 314	16 300	20 340	17 020
Peak flow	13 60	7.59	9 95		6 09	3 67			4 71			17 35
Day of peak	12	28	3		21	3			29			22
Monthly total (million cu m)	17 45	10 09	11 45	9 66	7.20	5 36	4 20	3 99	4 36	14 66	19 35	28 49
Runoff (mm)	25	14	16	14	10	8	6	6	6	21	28	41
Rainfall (mm)	60	27	20	56	57	37	69	56	100	94	82	92

Statistics of monthly data for previous record (Apr 1968 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	5 840	6.095	5 575	4 776	3 733	2 805	2 111	1 944	1 937	2 514	3 251	4 356
	Low	2 026	1.728	1 931	2 063	1 767	1 165	0 798	0 621	0 902	1 154	1 264	1.500
	(year)	1992	1992	1973	1973	1991	1976	1976	1976	1976	1991	1990	1991
	High	11 270	12 010	10 240	8 286	7 677	6 851	3 603	5 210	6 635	10 200	9 033	7 093
	(year)	1988	1979	1988	1979	1969	1985	1985	1987	1968	1987	1974	1982
Runoff:	Avg	22	21	21	18	14	10	8	7	7	10	12	17
	Low	8	6	7	8	7	4	3	2	3	4	5	6
	High	43	42	39	31	29	25	14	20	25	39	33	27
Rainfall:	Avg	55	38	48	44	46	55	50	49	51	53	62	53
	Low	16	9	12	10	6	10	9	8	2	4	24	27
	High	114	78	100	84	97	137	99	116	138	123	147	98

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	4.321		3 733		116
Lowest yearly mean			1 735	1991	
Highest yearly mean			5 670	1969	
Lowest monthly mean	1 488	Aug	0 621	Aug 1976	
Highest monthly mean	10 640	Dec	12 010	Feb 1979	
Lowest daily mean	1 206	5 Sep	0 482	28 Aug 1976	
Highest daily mean	20 340	16 Nov	24 320	13 Oct 1987	
Peak			25 290	13 Oct 1987	
10% exceedance	8.720		7 030		124
50% exceedance	3 440		2 812		122
95% exceedance	1 324		1 132		117
Annual total (million cu m)	136.30		117 80		116
Annual runoff (mm)	195		168		116
Annual rainfall (mm)	750		604		124
1941-70 rainfall average (mm)			618		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from effluent returns.

Station and catchment description

Rectangular section Crump profile weir with crest tapping. Replaced 33008 in 1968. Weir subject to drowning and spills on rare occasions Since the late 1980s, low flows augmented from groundwater in drought conditions Geology - Chalk with approx. 85% Boulder Clay cover Land use - predominately agricultural with large areas of forest and heathland

034006 Waveney at Needham Mill 1993

Measuring authority NRA-A
First year 1963

Grid reference 62 (TM) 229 811
Level stn (m OD) 16 50

Catchment area (sq km): 370.0
Max alt. (m OD): 65

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1 089	1 867	3 931	1 072	0 779	0 545	0 338	0.303	0 278	2.238	1.060	5 871
2	1 016	1 740	6.600	1 449	0 705	0.755	0 330	0 304	0 283	4.109	0.976	4 138
3	0.951	1 500	4 347	1 185	0 622	0 878	0 316	0.305	0 256	2.751	0 966	3 218
4	1 031	1 500	2 716	1 120	0 571	0.572	0 302	0 305	0 296	1.900	0.916	2 867
5	1 372	1 424	2 279	1 279	0 539	0 472	0.295	0 310	0 272	1.481	0 857	2.140
6	6.421	1 320	1 839	1 347	0 524	0 421	0.288	0 311	0.255	2.249	0 791	1.929
7	11 280	1 248	1 665	1 028	0 504	0.403	0 298	0 297	0 263	2 024	0.773	2 076
8	7 586	1.214	1 514	0 855	0 478	0 413	0.271	0 275	0 278	2.343	0 773	4.419
9	5 388	1.280	1 375	0 903	0 487	0 421	0 376	0.272	0 281	2.006	0.802	8 034
10	6.920	1 331	1 270	1.261	0 532	0 430	0.434	0 280	0 269	1.436	2 169	4.583
11	10 800	1 281	1 133	1 323	0 514	0 439	0 417	0.299	0 263	1.385	4 605	3 581
12	8 734	1 180	1 090	1 357	0 477	0 447	0 380	0 562	0.297	13 850	3 099	7 957
13	6 949	1 090	1 085	1 296	0 465	0 456	0 388	0 831	0 618		9 075	18 410
14	9 080	1 074	1 023	1 063	0 466	0 465	0 439	0 540	0.850			18 390
15	6 257	1 041	0 986	0.889	0.423	0 469	0.516	0 416	0 782	14.050		11.250
16	4 329	0 997	0 956	0 801	0 382	0 506	0 580	0 374	0 709	5.281		6.151
17	3.375	1 018	0 935	0 771	0.373	0 593	0 728	0 349	0 986	3 162	9 738	3 965
18	2.307	1 006	0 887	0 841	0 382	0 560	0 474	0 313	0 842	2 312	5.556	3 839
19	2 305	1 021	0 827	0 832	0 436	0 491	0 319	0 303	0 557	2 043	4 040	6.337
20	2.292	0 916	0 775	0 730	0 458	0 431	0 417	0.326	0 453	1.739	3 473	8 011
21	2 025	0.914	0 861	0 700	0 435	0 401	0 439	0 331	0 413	2 153	3 073	19.160
22	1.933	0 940	1 169	0 703	0 383	0 406	0 384	0 370	0 385	2.760	2 695	18 850
23	1 742	0 911	1 039	0 643	0 370	0.390	0 417	0 505	0.365	2 333	2 701	13.370
24	1 818	0 858	0 849	0 765	0 354	0 380	0 506	0 471	0 357	1.906	2 803	13 240
25	1 514	0 866	0 779	2 481	0 377	0 372	0 506	0 230	0.352	1 636	2.694	15 650
26	1 488	1 171	0 725	2 329	0 381	0 372	0 488	0 343	0 391	1 533	3 046	10 720
27	2 410	1 808	0 698	1 400	1 565	0 351	0.530	0 327	1.579	1 428	2 750	6.372
28	2 787	2 230	0 702	1 067	1 824	0.331	0 516	0 320	3.512	1 368	2.367	6 271
29	2 788		0 695	0 953	1 030	0 333	0 6	0 302	2 629	1 282	2 143	7.545
30	2 575		0 616	0 855	0 818	0 331	0 45	0 294	1.633	1 161	5.550	7 398
31	2 194		0 681		0 658		0 35	0 273		1 091		9.170
Average	3.960	1 241	1 485	1.110	0 591	0 461	0.422	0 356	0 690			8 223
Lowest	0 951	0 858	0 616	0 643	0 354	0 331	0 271	0.230	0 255			1.929
Highest	11 280	2 230	6 600	2.481	1 824	0 878	0.728	0 831	3 512			19.160
Peak flow	12 19	3 03	7 97	3 47	2 49	1.01		0 91	4 17			22 09
Day of peak	7	28	2	25	27	3		13	28			21
Monthly total (million cu m)	10 61	3 00	3 98	2 88	1 58	1.19		0 95	1.79			22 02
Runoff (mm)	29	8	11	8	4	3		3	5			60
Rainfall (mm)	53	23	18	52	49	36	F	49	103	10		93

Statistics of monthly data for previous record (Dec 1963 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg	3 908	3 232	2 617	1 956	1 097	0.763	0 522	0 696	0 811	1.135	1.801	2.690
	Low	0 609	0 587	0 591	0 487	0 369	0 285	0 242	0 281	0 261	0 330	0 386	0 492
	(year)	1973	1992	1973	1974	1974	1974	1990	1973	1964	1989	1989	1964
	High	14 260	10 670	7.665	5 646	3 254	4.302	1 197	6 958	9.753	10 260	8 852	8 379
	(year)	1988	1979	1981	1983	1969	1985	1987	1987	1968	1987	1974	1965
Runoff	Avg	28	21	19	14	8	5	4	5	6	8	13	19
	Low	4	4	4	3	3	2	2	2	2	2	3	4
	High	103	70	55	40	24	30	9	50	68	74	62	61
Rainfall:	Avg.	52	37	45	45	45	52	48	49	51	53	62	53
	Low	16	10	10	9	5	10	11	7	2	4	25	18
	High	122	76	96	86	97	132	93	110	161	118	150	100

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})			1 763		
Lowest yearly mean			0.537	1973	
Highest yearly mean			3 366	1987	
Lowest monthly mean	0 356	Aug	0 242	Jul 1990	
Highest monthly mean	8 223	Dec	14 260	Jan 1988	
Lowest daily mean	0 230	25 Aug	0 165	30 Jul 1990	
Highest daily mean	19 160	21 Dec	89 760	16 Sep 1968	
Peak	22 090	21 Dec	113 300	16 Sep 1968	
10% exceedance			3 991		
50% exceedance			0 764		
95% exceedance			0 307		
Annual total (million cu m)			55.64		
Annual runoff (mm)			150		
Annual rainfall (mm)	725		592		
1941-70 rainfall average (mm)			603		

Factors affecting runoff

- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater.

Comment

Daily flow estimated for: 29-31 July
Data unavailable for spates in October and November

Station and catchment description

A compound Crump weir 8.5 m wide in the main channel with a single crested Crump in the mill bypass. Sluice action at a mill 2.4 km upstream is infrequent but is evident in flow records. Surface water abstractions, and the use of river gravels as an aquifer, influence flows but the overall impact is minimal. Record affected by the Waveney Groundwater Scheme between 1975 and 1979. Predominantly a Boulder Clay catchment with largely rural land use.

038001 Lee at Feildes Weir 1993

Measuring authority: NRA-T
First year: 1951
Grid reference: 52 (TL) 390 092
Level stn. (m OD): 27.70
Catchment area (sq km): 1036.0
Max alt. (m OD): 229

Daily mean naturalised discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5 670	6 640	3.790	15.200	5 220	3.910	3.650	3 030	2 470	16 900	5 400	6 140
2	5.520	6 590	4.990	17 300	4 880	4 310	3 570	3 090	2 200	20 600	5 300	5 740
3	5.480	6.360	5 080	14 200	4 830	4 310	3 520	3 570	2 390	10.400	5 180	5 530
4	5 640	6 310	5 090	14 100	4 720	3.940	3.490	3.260	2.290	8.270	5 090	5.760
5	6 870	6.230	4.890	8.940	4.780	3 610	3 480	3 390	2 180	6 610	4 940	5 480
6	16.700	6 200	4 930	9 780	4 710	3.640	3.510	3 170	2.190	8.400	4.880	5 180
7	21 600	6.080	4.800	9.290	4 630	3.580	3 420	2.950	2 500	9 390	4 850	5 600
8	10 600	6.070	4.790	8 830	4 600	2.650	3 160	2.870	3.440	6.730	4.770	8.440
9	9.800	6.120	4.740	18 400	4.780	2.740	4.230	2 820	2 990	5 740	5.120	9 750
10	29.800	6.100	4.810	20 400	4.330	8 330	4 070	2.870	2.770	5 220	7 310	6 890
11	27.500	5.930	4.810	15.700	3 930	11.800	3 490	2 860	2.540	8 680	6 440	5 990
12	13 100	5.760	4.660	14.600	3 890	9.680	3 320	5 250	3.800	39.700	5.560	12 100
13	27 000	5.670	4.690	6 700	3 380	7 070	3 870	4 310	7.140	100 000	14 000	17 300
14	21 200	5 610	4.590	4 640	3 400	7.890	5 330	3.290	6.320	42.200	25.700	15 500
15	14.100	5.610	4.710	4 310	3 350	6.780	4 740	2 990	4 470	17 000	13.800	22 600
16	11.100	5.230	3.910	4 320	3 210	10 400	4.750	2 800	3 970	11 800	8 500	12 400
17	8 980	5 350	4.740	4 580	3.830	7.730	4 030	2 870	3 830	9 330	7.190	8 480
18	7.960	4 790	4 690	4 630	2 850	5 990	3 390	2 850	3 230	8 520	6 610	8 790
19	8 010	5 510	4 600	4 860	3 410	5.030	3.150	2 780	2.670	7.930	6 160	16.700
20	7 140	5.380	4 640	4 860	5.470	4 630	3 560	2 630	3 310	7 630	5 870	23.500
21	7 200	5.290	4.790	4 830	5.350	4.500	3.540	2 650	4.650	7.120	5.790	20 100
22	7.860	5.150	5.350	4.630	4 420	4 340	3.300	3 950	3 650	6 790	5 710	14 000
23	7.820	5 040	5 070	5 520	3 990	4 260	3 290	3 450	3 190	6 330	5 470	14.800
24	7 630	4 270	4 760	11 000	3 890	4.180	3 430	2 840	2.880	6 000	5 500	12 600
25	6 960	4 490	4.650	21.100	3.920	4.050	3.390	2 840	2.820	5.850	5 250	9 890
26	7.560	5 370	4 640	16 100	4.720	3.930	3.240	2 820	2.790	5.780	5 160	8.470
27	8 460	5.300	4.550	7.930	6 210	3.800	3.360	2 810	3 740	5.740	5 060	7 770
28	9 080	5.030	4.520	7 340	5.720	3 810	3.210	2.790	5 580	5 800	4 850	9 240
29	6 600		4 570	4 800	4 420	3 760	3 090	2 620	4 470	5 690	5 230	19 300
30	7.390		4 620	5 220	4 230	3 740	3.090	2 620	8.420	5.600	6 710	22.500
31	6 970		5.770		4 010		3.110	2 300		5 420		31 700
Average	11.200	5.624	4 750	9 804	4 357	5 280	3 606	3 075	3 630	13 460	6.913	12 200
Lowest	5 480	4.270	3.790	4.310	2 850	2 650	3 090	2 300	2 180	5 220	4.770	5 180
Highest	29.800	6.640	5.770	21.100	6 210	11.800	5 330	5 250	8 420	100 000	25.700	31 700
Monthly total (million cu m)	30 01	13 61	12.72	25.41	11.67	13.68	9.66	8.24	9.41	36.04	17 92	32 68
Nat'ised runoff (mm)	29	13	12	25	11	13	9	8	9	35	17	32
Rainfall (mm)	67	10	17	79	49	70	51	41	107	108	49	87

Statistics of monthly data for previous record (Oct 1883 to Dec 1992 – incomplete or missing months total 2.2 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean nat'ised flows:	Avg	8 325	8.349	7.533	5 959	4 955	3.758	3.116	2 911	2.882	3.845	5 431	6 988
	Low	1.718	1.525	1.607	1 640	1 408	1 072	1 019	0 801	0 840	1 074	1 369	1 564
	(year)	1992	1992	1944	1944	1944	1949	1949	1949	1949	1934	1934	1991
	High	22 830	25.730	30.700	19 270	13 810	9.592	7 420	8 707	8 218	17 320	16 730	19 130
	(year)	1928	1919	1947	1919	1919	1903	1889	1917	1968	1903	1916	1929
nat'ised runoff:	Avg	22	20	19	15	13	9	8	8	7	10	14	18
	Low	4	4	4	4	4	3	3	2	2	3	3	4
	High	59	60	79	48	36	24	19	23	21	45	42	49
Rainfall (1936-1992)	Avg	57	41	47	44	49	51	55	57	54	61	65	57
		10	3	3	5	7	5	8	3	3	4	8	15
		132	117	135	104	112	137	104	124	129	157	173	129

Summary statistics
(naturalised flows)

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	7 015		5.324		132
Lowest yearly mean			1 617	1934	
Highest yearly mean			11 510	1919	
Lowest monthly mean	3.075	Aug	0 801	Aug 1949	
Highest monthly mean	13.460	Oct	30 700	Mar 1947	
Lowest daily mean	2.180	5 Sep	0 579	4 Sep 1949	
Highest daily mean	100 000	13 Oct	119 000	17 Mar 1947	
10% exceedance	13 790		9 332		148
50% exceedance	5.107		3 693		138
95% exceedance	2.770		1 583		175
Annual total (million cu m)	221.20		168 00		132
Annual runoff (mm)	214		162		132
Annual rainfall (mm)	735		638		115
1941-70 rainfall average (mm)			636		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge.
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from effluent returns.

Station and catchment description
Thin-plate weir (insensitive - 29m wide) and 3 vertical-lift sluices; completed 1978 to improve range and precision of flow measurement. Model rated. All flows (bar lockages) now contained but Ryemeads STW effluent bypasses. Pre-1978: barrage of gates/sluices; no peak flows prior to 1965, low flows probably under-estimated. Gauging instigated by Beardsmore in 1850s. Significant g/w abstraction; net export from catchment. Naturalised flows (New Gauge abstraction only) from 1883. A mainly pervious (Chalk) catchment. Predominantly rural headwaters, significant urban growth in lower valleys.

038003 Mimram at Panshanger Park 1993

Measuring authority: NRA-T
First year: 1952

Grid reference: 52 (TL) 282 133
Level stn. (m OD): 47.10

Catchment area (sq km): 133 9
Max alt. (m OD): 195

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0 598	0.736	0 698	1 170	0 580	0 529	0 558	0 522	0 442	0 855	0 836	0 783
2	0.594	0 742	0 685	0 718	0 577	0.687	0.549	0 515	0 442	0.663	0 827	0.770
3	0 593	0 739	0 680	0 726	0 575	0 586	0.549	0 494	0 456	0 583	0 823	0 763
4	0.615	0 731	0 672	0 667	0.571	0 528	0.533	0 519	0 441	0.556	0 813	0.777
5	0.706	0.727	0 675	0 757	0 566	0 507	0 532	0.510	0 438	0 555	0 804	0 754
6	0 849	0 726	0 667	0 646	0 569	0 502	0 522	0 481	0 441	0 976	0 792	0 771
7	0 695	0 729	0 668	0 652	0 565	0 495	0.518	0 469	0.591	0 671	0.794	0 785
8	0.650	0 732	0 666	0 621	0 561	0 490	0 517	0 466	0 531	0 603	0.790	0 942
9	0 659	0 733	0 663	0 934	0.633	0 488	0 656	0 473	0 467	0.577	0 852	0.783
10	1.170	0 726	0 662	0 746	0 594	0 739	0 537	0 465	0 460	0 610	0 940	0.779
11	0.872	0 720	0 657	0 718	0 573	1 270	0 534	0.522	0 450	0 902	0 808	0.756
12	0.775	0 716	0 648	0 691	0 551	0 880	0 527	0 794	0 793	1 860	0 810	0 990
13	1 110	0 709	0 635	0 673	0 554	0 790	0 632	0 507	0 839	2 430	1 200	0.902
14	0.839	0 713	0 633	0 657	0 559	0 863	0 577	0 485	0 564	1 510	0 959	1 020
15	0 806	0 714	0 633	0 631	0 558	0 758	0 604	0 478	0 498	1 100	0 841	0.948
16	0 761	0 712	0 629	0 629	0 552	0.870	0 616	0 467	0 539	1 020	0 810	0 850
17	0 748	0 707	0 624	0 628	0 717	0 692	0.549	0 458	0 491	0.963	0 797	0.823
18	0 753	0 708	0 620	0 626	0 562	0 664	0 545	0 453	0.464	0 935	0 791	0.971
19	0.751	0 701	0 616	0 623	0 547	0 638	0 562	0 449	0 456	0.917	0 784	0 949
20	0 743	0 694	0 616	0 616	0 778	0 626	0 621	0 446	0 577	0 912	0 798	1.120
21	0.750	0 694	0 650	0 616	0 588	0.620	0 552	0 462	0 508	0 896	0.805	0 925
22	0 806	0.695	0 682	0 621	0 564	0 625	0 535	0 541	0 472	0.889	0 797	0.937
23	0 786	0 686	0 627	0 713	0 549	0 645	0 565	0 459	0 461	0 873	0 792	0 928
24	0.755	0 684	0 619	0 804	0 541	0 622	0 558	0 457	0 454	0.881	0 788	0.906
25	0.737	0 686	0 612	0 789	0 534	0 598	0 543	0 461	0 452	0 871	0 781	0.879
26	0 793	0 743	0 615	0.702	0.713	0 589	0 534	0 460	0 457	0 862	0 773	0 874
27	0 774	0 691	0 614	0 622	0 623	0 579	0 545	0 454	0 561	0.856	0 770	0.870
28	0 818	0 688	0 617	0 600	0 573	0.571	0 523	0 450	0.537	0 853	0 768	0 984
29	0 746		0 619	0 602	0 565	0.564	0 545	0 448	0 544	0 845	0 857	0.947
30	0 734		0 641	0 589	0 543	0 564	0 544	0 445	0 839	0 837	0 817	1 120
31	0.739		0 715		0 526		0 528	0 443		0 849		1 080
Average	0.765	0 714	0 647	0 693	0 583	0 653	0 555	0 486	0 522	0 926	0.827	0 893
Lowest	0.593	0 684	0 612	0 589	0 526	0 488	0 517	0 443	0 438	0.555	0 768	0.754
Highest	1 170	0 743	0 715	1 170	0 778	1.270	0 656	0 794	0 839	2 430	1.200	1 120
Peak flow	1 85	0 79	0 91	2 02	1 30	2 36	0 99	1 26	1 37	3 82	1 50	1 70
Day of peak	10	26	31	1	20	11	9	12	12	12	13	14
Monthly total (million cu m)	2 05	1 73	1 73	1 80	1 56	1 69	1 49	1.30	1 35	2 48	2 14	2 39
Runoff (mm)	15	13	13	13	12	13	11	10	10	19	16	18
Rainfall (mm)	74	9	20	89	50	92	56	45	111	115	52	95

Statistics of monthly data for previous record (Dec 1952 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	0 566	0 628	0 650	0 640	0 600	0 545	0 474	0 434	0 407	0 403	0 441	0 499
	Low	0.222	0 220	0 221	0 222	0 216	0 187	0.163	0 145	0 195	0 176	0 176	0.189
	(year)	1992	1992	1992	1992	1976	1976	1976	1976	1973	1973	1973	1973
	High	1 102	1.167	1 119	1 050	1 084	0 971	0 803	0 765	0 632	0 638	0 739	1 005
	(year)	1961	1961	1961	1979	1979	1979	1979	1979	1968	1968	1960	1960
Runoff	Avg	11	11	13	12	12	11	9	9	8	8	9	10
	Low	4	4	4	4	4	4	3	3	4	4	3	4
	High	22	21	22	20	22	19	16	15	12	13	14	20
Rainfall	Avg	56	42	48	47	50	58	55	57	56	61	61	61
	Low	11	3	3	5	4	5	5	7	5	5	20	13
	High	121	99	116	105	115	122	123	127	121	171	151	141

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	0 690		0 523		132
Lowest yearly mean			0 231	1973	
Highest yearly mean			0 767	1961	
Lowest monthly mean	0 486	Aug	0 145	Aug 1976	
Highest monthly mean	0 926	Oct	1 167	Feb 1961	
Lowest daily mean	0 438	5 Sep	0 135	19 Aug 1976	
Highest daily mean	2 430	13 Oct	2 050	29 Jan 1988	
Peak	3 820	12 Oct	3 570	29 May 1992	
10% exceedance	0 893		0 791		113
50% exceedance	0 659		0 496		133
95% exceedance	0 457		0 221		207
Annual total (million cu m)	21.75		16 51		132
Annual runoff (mm)	162		123		132
Annual rainfall (mm)	808		652		124
1941-70 rainfall average (mm)			641		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge.
- Flow reduced by industrial and/or agricultural abstractions.

Station and catchment description

Critical-depth flume; 5m overall width. Theoretical calibration confirmed by gaugings. All flows contained. Appreciable net export of water (considerable groundwater abstraction in headwaters). Very high baseflow component. A predominantly permeable catchment (Upper Chalk - overlain by glacial deposits near headwaters), mainly rural but some urbanisation in the lower valley.

039001 Thames at Kingston 1993

Measuring authority: NRA-T
First year: 1883
Grid reference: 51 (TQ) 177 698
Level stn (m OD): 4.70
Catchment area (sq km): 9948.0
Max alt. (m OD): 330

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	88.800	123.000	55.300	132.000	40.800	44.800	13.400	11.200	21.400	62.700	36.400	63.500
2	84.700	110.000	52.300	171.000	40.200	51.300	11.500	13.400	18.800	113.000	35.300	67.500
3	74.800	107.000	54.000	99.000	41.100	45.900	10.700	19.300	19.300	129.000	37.000	48.800
4	93.800	105.000	53.800	77.900	32.200	46.600	11.700	23.000	18.000	58.000	36.500	47.800
5	96.000	97.000	49.000	108.000	26.800	47.000	10.100	18.900	13.200	53.400	27.700	49.100
6	130.000	92.400	50.100	130.000	28.900	32.800	8.190	18.000	9.590	111.000	31.000	53.800
7	178.000	85.800	47.200	88.000	30.700	30.200	11.000	18.400	12.400	135.000	30.500	65.900
8	163.000	93.300	47.300	65.300	28.700	28.000	9.490	13.700	19.900	107.000	34.300	90.200
9	149.000	92.100	37.200	114.000	28.300	26.100	12.400	10.400	25.200	93.700	36.800	117.000
10	209.000	87.100	39.500	216.000	36.000	28.400	12.000	10.100	26.600	96.500	46.900	104.000
11	303.000	79.900	42.600	227.000	34.000	33.900	14.600	9.960	23.800	98.500	49.600	75.900
12	283.000	76.700	38.600	183.000	36.700	54.000	15.000	10.800	27.000	135.000	58.200	86.800
13	286.000	76.900	39.300	157.000	28.600	48.200	12.700	11.600	43.800	244.000	68.300	153.000
14	301.000	72.000	38.600	128.000	27.000	55.700	20.100	12.700	51.500	261.000	136.000	160.000
15	288.000	83.800	38.200	88.600	30.600	52.600	27.200	9.130	22.800	220.000	141.000	183.000
16	284.000	78.000	32.300	73.300	27.100	71.800	36.900	9.750	24.100	152.000	110.000	185.000
17	270.000	77.700	34.400	70.000	32.700	88.800	24.700	14.600	12.900	117.000	96.900	144.000
18	261.000	72.600	34.400	65.900	30.800	54.600	18.600	17.500	10.100	87.200	89.200	135.000
19	242.000	65.100	28.500	59.900	29.500	49.500	21.300	20.500	10.000	78.500	57.500	195.000
20	199.000	61.800	30.700	53.200	33.900	31.700	20.800	17.400	16.200	54.800	51.900	266.000
21	175.000	60.800	31.600	58.500	61.100	36.500	19.500	19.300	16.900	65.900	50.300	293.000
22	177.000	61.400	38.300	56.900	46.400	30.100	18.300	21.400	15.800	58.100	48.100	247.000
23	190.000	51.800	41.200	60.000	42.400	25.700	10.700	15.700	11.600	48.500	48.100	215.000
24	169.000	58.600	41.600	67.400	22.600	28.300	13.400	10.200	10.300	52.300	47.100	205.000
25	165.000	54.600	40.200	71.300	29.200	25.700	12.300	10.400	9.520	50.900	43.800	187.000
26	144.000	57.300	30.100	74.000	43.500	23.400	11.700	9.950	10.700	42.300	41.500	169.000
27	157.000	60.500	29.500	74.900	101.000	25.500	14.400	8.280	10.400	48.200	39.800	135.000
28	154.000	57.300	35.700	56.800	96.500	21.400	14.600	7.860	11.500	47.100	38.400	131.000
29	153.000		31.600	45.600	82.100	17.900	13.500	11.000	13.900	39.400	41.400	155.000
30	143.000		31.700	41.000	62.400	16.400	12.000	16.300	32.600	40.000	52.300	199.000
31	123.000		39.600		54.800		12.200	19.000		39.000		263.000
Average	185.000	78.550	39.820	97.120	41.500	39.090	15.320	14.180	18.990	94.810	55.390	144.800
Lowest	74.800	51.800	28.500	41.000	22.600	16.400	8.190	7.860	9.520	39.000	27.700	47.800
Highest	303.000	123.000	55.300	227.000	101.000	88.800	36.900	23.000	51.500	261.000	141.000	293.000
Peak flow	336.00	137.00	76.50	249.00	122.00	99.60	48.50	68.00	79.50	295.00	190.00	305.00
Day of peak	14	9	10	10	27	17	16	21	16	14	15	21
Monthly total (million cu m)	495.40	190.00	106.70	251.70	111.20	101.30	41.04	37.99	49.23	253.90	143.60	388.00
Runoff (mm)	50	19	11	25	11	10	4	4	5	26	14	39
Rainfall (mm)	91	7	26	84	65	54	56	32	100	109	48	109

Statistics of monthly data for previous record (Jan 1883 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg.	125.000	122.800	103.500	74.530	52.780	36.600	23.220	21.560	23.210	38.330	71.640	100.700
	Low	18.570	12.290	9.426	8.975	4.391	3.302	2.079	1.912	0.688	3.144	4.248	8.350
	(year)	1976	1976	1976	1976	1976	1976	1921	1976	1976	1934	1990	1990
	High	325.300	342.000	359.500	188.800	171.700	171.600	72.290	79.330	123.900	179.800	334.000	333.900
	(year)	1915	1904	1947	1916	1932	1903	1968	1931	1927	1903	1894	1929
Runoff:	Avg.	34	30	28	19	14	10	6	6	6	10	19	27
	Low	5	3	3	2	1	1	1	1	0	1	1	2
	High	88	86	97	49	46	45	19	21	32	48	87	90
Rainfall:	Avg	65	49	53	48	54	53	58	64	58	72	72	72
	Low	14	3	3	3	7	3	8	3	3	5	8	13
	High	137	127	142	104	137	137	130	147	157	188	188	185

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	69.260		65.900		105
Lowest yearly mean			20.410	1934	
Highest yearly mean			120.000	1951	
Lowest monthly mean	14.180	Aug	0.688	Sep 1976	
Highest monthly mean	185.000	Jan	359.500	Mar 1947	
Lowest daily mean	7.860	28 Aug	0.010	9 Oct 1976	
Highest daily mean	303.000	11 Jan	1059.000	18 Nov 1894	
Peak	336.000	14 Jan			
10% exceedance	166.600		160.000		104
50% exceedance	47.290		41.320		114
95% exceedance	10.600		8.593		123
Annual total (million cu m)	2184.00		2080.00		105
Annual runoff (mm)	220		209		105
Annual rainfall (mm)	781		718		109
1941-70 rainfall average (mm)			724		

Factors affecting runoff

- Reservoir(s) in catchment.
- Flow influenced by groundwater abstraction and/or recharge.
- Abstraction for public water supplies
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater.
- Augmentation from effluent returns.

Station and catchment description

Ultrasonic station commissioned in 1974; multi-path operation from 1986. Full range. No peak flows pre-1974 when dmfs derived from Teddington weir complex (70m wide); significant structural improvements since 1883. Some underestimation of pre-1951 low flows. Baseflow sustained mainly from the Chalk and the Oolites. Runoff decreased by major PWS abstractions - naturalised flows available. Diverse topography, geology and land use which - together with the pattern of water utilisation - has undergone important historical changes.

039001 Thames at Kingston 1993

Measuring authority: NRA-T
First year: 1883
Grid reference: 51 (TQ) 177 698
Level stn (m OD): 4.70
Catchment area (sq km): 9948.0
Max alt. (m OD): 330

Daily mean naturalised discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	107 000	139 000	75 200	153 000	63 800	65 700	42 100	33 100	27 100	96 100	57 100	80 500
2	107 000	125 000	70 000	192 000	62 900	72 600	41 400	32 300	25 300	146 000	56 100	84 100
3	96 400	124 000	71 100	120 000	62 600	65 000	41 000	32 300	26 400	162 000	57 000	68 400
4	112 000	122 000	70 400	98 600	54 500	66 200	41 900	32 600	25 200	91 300	56 400	68 300
5	115 000	118 000	66 000	128 000	54 300	66 600	40 300	30 400	23 100	83 300	49 100	69 700
6	149 000	113 000	67 000	150 000	55 800	52 200	34 500	33 600	23 500	138 000	53 300	71 600
7	199 000	106 000	64 000	108 000	55 700	51 600	34 100	32 000	28 700	162 000	52 900	83 400
8	188 000	112 000	64 500	85 100	53 900	50 700	34 300	27 500	43 300	134 000	51 800	109 000
9	174 000	107 000	55 100	134 000	53 600	49 900	36 500	29 800	46 900	121 000	52 700	136 000
10	233 000	104 000	58 300	236 000	59 500	51 500	40 300	30 100	44 400	124 000	66 200	125 000
11	324 000	97 200	60 300	248 000	59 500	56 200	41 600	30 000	39 800	126 000	67 000	96 700
12	302 000	97 400	58 300	204 000	56 800	75 700	43 600	39 800	44 100	163 000	78 400	106 000
13	306 000	97 700	59 600	176 000	51 800	69 700	40 900	32 600	61 000	266 000	88 600	168 000
14	320 000	92 700	58 800	147 000	50 300	77 300	46 500	37 700	64 400	286 000	156 000	177 000
15	312 000	98 100	58 300	111 000	53 300	72 600	54 000	33 500	43 200	245 000	158 000	200 000
16	305 000	88 700	53 400	98 100	49 600	92 100	62 600	29 400	54 900	179 000	127 000	202 000
17	289 000	88 600	53 500	93 900	54 600	104 000	51 700	31 300	48 300	142 000	114 000	166 000
18	278 000	91 600	55 200	89 300	53 100	76 600	45 200	30 800	39 400	116 000	107 000	156 000
19	260 000	85 800	49 300	82 900	52 400	71 800	47 900	26 000	28 500	103 000	77 600	217 000
20	217 000	83 500	51 300	78 200	56 900	54 100	47 400	26 200	39 400	78 400	73 200	285 000
21	194 000	82 400	52 100	79 700	83 700	58 700	46 200	29 100	44 900	88 200	71 700	312 000
22	201 000	80 200	59 500	76 300	69 300	52 000	44 800	34 500	42 200	79 600	65 800	266 000
23	214 000	72 900	62 100	78 500	66 000	47 900	36 000	32 600	38 900	71 800	65 600	233 000
24	193 000	77 100	59 600	85 400	46 400	51 100	37 800	31 400	37 700	77 100	64 100	226 000
25	183 000	75 600	57 100	88 700	53 500	47 200	37 200	27 800	30 500	73 200	59 700	207 000
26	162 000	78 100	46 900	87 900	67 500	43 400	38 400	30 600	32 500	61 300	61 100	189 000
27	173 000	81 000	46 300	98 400	125 000	46 300	39 700	28 400	33 200	67 200	60 400	155 000
28	170 000	77 900	52 000	80 200	114 000	45 800	39 700	27 900	37 300	64 100	59 000	151 000
29	175 000		51 700	70 900	102 000	42 800	38 300	23 400	39 900	58 100	58 700	175 000
30	162 000		52 600	67 800	82 800	42 200	37 000	26 200	65 000	59 700	69 300	219 000
31	141 000		60 600		74 700		37 200	28 500		58 700		283 000
Average	205 200	97 020	58 710	118 200	64 510	60 650	41 940	30 690	39 300	120 000	74 490	164 100
Lowest	96 400	72 900	46 300	67 800	46 400	42 200	34 100	23 400	23 100	58 100	49 100	68 300
Highest	324 000	139 000	75 200	248 000	125 000	104 000	62 600	39 800	65 000	286 000	158 000	312 000
Monthly total (million cu m)	549 60	234 70	157 30	306 50	172 80	157 20	112 30	82.20	101.90	321.50	193 10	439 40
Naturised runoff (mm)	55	24	16	31	17	16	11	8	10	32	19	44
Rainfall (mm)	91	7	26	84	65	54	56	32	100	109	48	109

Statistics of monthly data for previous record (Jan 1883 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean naturised flows	Avg	137 600	134 600	115 000	86 220	64 660	48 490	35 130	32 470	34 420	49 780	83 040	112 000
	Low	32 210	25 100	27 320	26 510	18 200	13 470	10 760	11 040	11 230	15 120	17 750	22 480
	(year)	1905	1905	1944	1976	1944	1944	1921	1976	1898	1934	1921	1921
	High	332 900	348 100	370 900	199 800	181 300	178 700	88 840	88 780	139 400	185 300	339 600	343 900
	(year)	1915	1904	1947	1951	1932	1903	1968	1931	1968	1903	1894	1929
naturised runoff	Avg	37	33	31	22	17	13	9	9	9	13	22	30
	Low	9	6	7	7	5	4	3	3	3	4	5	8
	High	90	88	100	52	49	47	24	24	36	50	88	93
Rainfall (1883 1992)	Avg	65	49	53	48	54	53	58	64	58	72	72	72
	Low	14	3	3	3	7	3	8	3	3	5	8	13
	High	137	127	142	104	137	137	130	147	157	188	188	185

Summary statistics
(naturalised flows)

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	90 130		77 35		116
Lowest yearly mean			30 940	1934	
Highest yearly mean			131 800	1951	
Lowest monthly mean	30 690	Aug	10 760	Jul 1921	
Highest monthly mean	205.200	Jan	370.900	Mar 1947	
Lowest daily mean	23.100	5 Sep	7 370	9 Jul 1934	
Highest daily mean	324 000	11 Jan	1065 000	18 Nov 1894	
10% exceedance	188 200		170 700		110
50% exceedance	66 320		52 910		125
95% exceedance	29 470		18 470		160
Annual total (million cu m)	2842 00		2446 00		116
Annual runoff (mm)	286		246		116
Annual rainfall (mm)	781		718		109
1941-70 rainfall average (mm)			724		

Factors affecting runoff

- Reservoir(s) in catchment.
- Flow influenced by groundwater abstraction and/or recharge
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater.
- Augmentation from effluent returns.

Station and catchment description
Ultrasonic station commissioned in 1974; multi-path operation from 1986. Full range. No peak flows pre-1974 when dmfs derived from Teddington weir complex (70m wide); significant structural improvements since 1883. Some underestimation of pre-1951 low flows. Baseflow sustained mainly from the Chalk and the Oolites. Runoff decreased by major PWS abstractions - naturalised flows available. Diverse topography, geology and land use which - together with the pattern of water utilisation - has undergone important historical changes.

039020 Coln at Bibury 1993

Measuring authority: NRA-T
First year: 1963
Grid reference: 42 (SP) 122 062
Level stn. (m OD): 100.60
Catchment area (sq km): 106.7
Max alt. (m OD): 330

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.710	3.490	1.820	1.130	1.310	1.200	1.180	0.806	0.612	0.554	0.977	1.120
2	2.640	3.400	1.790	1.090	1.290	1.220	1.140	0.814	0.602	0.571	0.961	1.090
3	2.580	3.310	1.750	1.130	1.270	1.190	1.130	0.803	0.592	0.563	0.958	1.070
4	2.520	3.220	1.670	1.190	1.280	1.190	1.120	0.778	0.601	0.563	0.944	1.090
5	2.530	3.180	1.660	1.230	1.240	1.180	1.080	0.765	0.591	0.610	0.922	1.080
6	2.520	3.100	1.650	1.150	1.220	1.180	1.070	0.757	0.595	0.623	0.906	1.080
7	2.470	3.010	1.620	1.110	1.190	1.150	1.060	0.744	0.587	0.603	0.899	1.100
8	2.410	2.940	1.600	1.110	1.160	1.150	1.080	0.737	0.646	0.620	0.883	1.140
9	2.460	2.850	1.570	1.340	1.200	1.120	1.130	0.735	0.622	0.677	0.893	1.160
10	2.720	2.770	1.550	1.340	1.200	1.320	1.080	0.710	0.604	0.684	0.912	1.180
11	2.760	2.700	1.510	1.360	1.160	1.250	1.060	0.716	0.594	0.709	0.901	1.200
12	2.980	2.630	1.480	1.440	1.150	1.360	1.070	0.709	0.605	0.739	0.893	1.380
13	3.530	2.570	1.460	1.480	1.130	1.410	1.080	0.703	0.609	0.788	0.951	1.510
14	3.950	2.510	1.440	1.460	1.110	1.520	1.060	0.698	0.591	0.828	0.998	1.670
15	4.310	2.450	1.410	1.500	1.100	1.590	1.060	0.690	0.593	0.875	1.010	1.850
16	4.410	2.390	1.370	1.520	1.080	1.670	1.040	0.681	0.594	0.955	1.050	2.000
17	4.390	2.310	1.340	1.560	1.100	1.660	1.020	0.680	0.588	1.000	1.060	2.120
18	4.360	2.280	1.340	1.560	1.070	1.650	1.020	0.637	0.587	1.070	1.100	2.260
19	4.350	2.220	1.310	1.550	1.030	1.590	1.020	0.653	0.591	1.100	1.130	2.340
20	4.270	2.180	1.300	1.550	1.120	1.550	0.935	0.637	0.592	1.080	1.140	2.440
21	4.160	2.130	1.320	1.530	1.200	1.530	0.905	0.654	0.598	1.090	1.150	2.460
22	4.120	2.090	1.310	1.520	1.120	1.510	0.890	0.658	0.582	1.100	1.150	2.640
23	4.110	2.050	1.280	1.510	1.060	1.470	0.891	0.656	0.583	1.070	1.150	2.740
24	4.050	2.000	1.220	1.500	1.030	1.440	0.903	0.642	0.565	1.070	1.150	2.800
25	4.010	2.000	1.210	1.500	1.040	1.400	0.882	0.635	0.559	1.050	1.150	2.830
26	4.030	1.960	1.200	1.470	1.160	1.380	0.866	0.631	0.569	1.050	1.140	2.860
27	3.970	1.890	1.170	1.440	1.160	1.320	0.862	0.609	0.569	1.030	1.130	2.870
28	3.890	1.850	1.140	1.400	1.120	1.300	0.847	0.613	0.563	1.020	1.110	2.940
29	3.820		1.120	1.360	1.130	1.240	0.843	0.609	0.584	1.010	1.140	2.880
30	3.700		1.130	1.350	1.210	1.210	0.823	0.621	0.565	0.995	1.150	2.940
31	3.570		1.160		1.230		0.813	0.605		0.982		2.990
Average	3.494	2.553	1.416	1.379	1.157	1.365	0.999	0.690	0.591	0.861	1.030	1.962
Lowest	2.410	1.850	1.120	1.090	1.030	1.120	0.813	0.605	0.559	0.554	0.883	1.070
Highest	4.410	3.490	1.820	1.560	1.310	1.670	1.180	0.814	0.646	1.100	1.150	2.990
Peak flow	4.45	3.54	1.94	1.69	1.39	1.86	1.28	0.89	0.80	1.29	1.24	3.24
Day of peak	16	1	4	24	1	10	1	2	28	18	16	27
Monthly total (million cu m)	9.36	6.18	3.79	3.57	3.10	3.54	2.68	1.85	1.53	2.31	2.67	5.26
Runoff (mm)	88	58	36	34	29	33	25	17	14	22	25	49
Rainfall (mm)	117	11	26	81	100	72	79	31	95	83	65	139

Statistics of monthly data for previous record (Oct 1963 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg.	2.008	2.314	2.124	1.753	1.295	1.072	0.822	0.662	0.585	0.650	1.009	1.590
	Low	0.374	0.380	0.383	0.371	0.334	0.290	0.243	0.207	0.202	0.259	0.332	0.375
	(year)	1976	1976	1976	1976	1976	1976	1976	1976	1976	1976	1990	1975
	High	3.196	4.414	3.385	3.415	2.599	2.290	1.397	1.085	0.908	1.299	2.714	3.492
	(year)	1982	1990	1977	1979	1983	1979	1985	1985	1968	1968	1967	1992
Runoff:	Avg.	50	53	53	43	33	26	21	17	14	16	25	40
	Low	9	9	10	9	8	7	6	5	5	7	8	9
	High	80	100	85	83	65	56	35	27	22	33	66	88
Rainfall:	Avg.	76	59	67	53	64	61	59	67	67	67	76	84
	Low	13	8	15	5	5	9	15	13	17	8	30	20
	High	142	159	143	109	161	158	120	149	149	171	163	159

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	1.458		1.319		111
Lowest yearly mean			0.400	1976	
Highest yearly mean			1.771	1966	
Lowest monthly mean	0.591	Sep	0.202	Sep 1976	
Highest monthly mean	3.494	Jan	4.414	Feb 1990	
Lowest daily mean	0.554	1 Oct	0.190	19 Aug 1976	
Highest daily mean	4.410	16 Jan	5.310	11 Feb 1990	
Peak	4.450	16 Jan	5.480	11 Feb 1990	
10% exceedance	2.820		2.583		109
50% exceedance	1.150		1.054		109
95% exceedance	0.591		0.394		150
Annual total (million cu m)	45.98		41.63		110
Annual runoff (mm)	431		390		110
Annual rainfall (mm)	899		800		112
1941-70 rainfall average (mm)			819		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge.
- Augmentation from effluent returns.

Station and catchment description

Crump weir (9.1m broad). Modular throughout the range. Some overspill onto floodplain before design capacity reached. Limited impact of artificial influences on river flows - net import (sewage effluent). Baseflow dominated flow regime. Pervious (Oolitic Limestone) catchment on the dip-slope of the Cotswolds; predominantly rural

040003 Medway at Teston 1993

Measuring authority: NRA-S
First year: 1956
Grid reference: 51 (TQ) 708 530
Level stn. (m OD): 7.00
Catchment area (sq km): 1256.1
Max alt. (m OD): 267

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	6.086	10.690	4.953	18.260	18.140	4.055	2.356	2.060	1.697	52.110	4.426	11.000
2	5.781	10.220	4.430	18.380	19.040	3.749	2.345	1.842	2.051	68.970	4.637	8.343
3	5.371	9.298	4.113	8.003	8.753	3.605	2.315	1.812	1.527	51.840	4.505	7.329
4	5.622	8.841	3.873	6.554	6.534	3.179	2.332	2.033	1.676	24.810	4.321	7.137
5	7.704	8.033	3.841	20.240	5.981	2.933	2.134	1.896	1.689	25.500	4.262	6.273
6	18.850	8.140	3.318	18.100	5.194	3.179	2.093	1.829	1.615	21.200	4.136	5.813
7	24.680	7.780	3.743	9.885	4.944	3.036	2.047	1.970	2.179	25.630	4.069	21.500
8	19.870	7.429	3.820	7.292	4.697	2.905	2.412	1.910	2.661	23.050	2.584	24.310
9	17.160	7.689	3.742	15.940	5.354	2.844	3.046	2.395	2.295	20.260	5.704	23.150
10	38.890	6.538	3.669	23.220	6.507	2.862	3.099	2.118	2.773	20.270	11.280	13.520
11	51.250	5.937	3.546	24.910	4.412	3.273	2.881	2.063	2.692	51.190	9.717	9.879
12	39.970	5.695	2.861	18.560	4.875	4.295	2.741	2.717	4.369	109.900	6.425	33.790
13	26.870	5.774	3.572	10.340	4.856	3.868	2.769	2.453	7.914	111.600	29.060	49.830
14	24.630	6.768	3.387	8.304	4.693	5.765	3.451	2.166	5.529	54.250	65.470	25.790
15	24.310	6.580	5.355	6.243	4.734	5.707	4.647	2.034	3.613	21.280	23.190	67.870
16	19.200	6.365	3.221	5.659	4.025	13.320	3.346	1.816	5.328	12.640	11.880	32.210
17	15.530	5.594	3.188	5.657	5.311	10.850	3.205	1.752	3.917	9.551	9.049	14.500
18	12.130	4.660	1.546	5.627	5.564	4.688	2.413	1.700	2.972	8.638	8.124	23.170
19	13.080	5.158	2.828	5.109	4.505	3.936	5.998	1.675	2.219	7.513	7.264	100.100
20	15.680	4.765	2.787	4.836	8.598	3.766	4.272	1.790	1.482	6.425	6.443	123.700
21	15.420	4.769	2.602	4.573	9.798	3.188	2.693	2.002	2.144	7.289	6.270	99.590
22	36.040	4.611	2.988	4.387	4.256	3.249	2.370	3.902	2.828	5.494	6.352	56.450
23	34.310	4.570	3.189	5.949	3.921	3.125	2.201	2.881	2.830	5.193	6.466	35.500
24	22.640	4.447	3.488	13.040	3.438	3.099	2.114	1.882	2.408	4.864	6.142	24.940
25	15.650	4.498	1.977	24.050	3.743	3.061	2.325	1.956	2.289	4.649	5.922	21.160
26	14.980	5.512	2.436	24.030	4.512	3.013	2.164	1.813	2.371	4.510	6.039	16.110
27	24.510	6.067	2.125	21.450	4.610	2.882	2.494	1.832	3.122	4.546	5.793	13.720
28	23.480	4.863	2.023	12.390	5.281	2.688	2.518	1.881	5.151	4.827	5.437	18.060
29	21.450		2.147	8.968	5.174	2.442	2.247	1.838	4.875	4.664	5.322	34.460
30	16.250		2.583	7.618	6.224	2.460	2.342	1.768	10.730	4.482	11.930	115.000
31	13.820		5.561		4.256		2.326	1.614		4.395		171.300
Average	20.360	6.475	3.320	12.250	6.191	4.034	2.764	2.045	3.298	25.210	9.741	39.210
Lowest	5.371	4.447	1.546	4.387	3.438	2.442	2.047	1.614	1.482	4.395	2.584	5.813
Highest	51.250	10.690	5.561	24.910	19.040	13.320	5.998	3.902	10.730	111.600	65.470	171.300
Peak flow												
Day of peak												
Monthly total (million cu m)	54.54	15.66	8.89	31.76	16.58	10.46	7.40	5.48	8.55	67.53	25.25	105.00
Runoff (mm)	43	12	7	25	13	8	6	4	7	54	20	84
Rainfall (mm)	79	9	22	86	65	49	55	34	109	122	51	134

Statistics of monthly data for previous record (Oct 1956 to Dec 1992—incomplete or missing months total 1.5 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	22.120	19.350	14.180	10.590	6.677	4.669	3.037	3.236	4.569	8.127	15.020	18.290
	Low	3.287	4.781	3.385	2.328	1.751	1.141	1.118	0.578	1.068	1.401	2.339	3.670
	(year)	1992	1992	1976	1976	1976	1976	1976	1976	1959	1972	1978	1988
	High	48.240	59.480	31.600	23.550	20.820	21.690	7.553	9.968	30.090	53.220	66.830	37.330
	(year)	1988	1990	1975	1983	1978	1964	1980	1985	1968	1987	1960	1965
Runoff	Avg	47	38	30	22	14	10	6	7	9	17	31	39
	Low	7	10	7	5	4	2	2	1	2	3	5	8
	High	103	115	67	49	44	45	16	21	62	113	138	80
Rainfall	Avg	74	50	56	51	50	54	53	57	67	77	81	79
	Low	13	3	3	7	3	8	9	10	5	5	14	15
	High	187	130	113	108	112	127	103	122	183	198	169	168

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	11.560		10.780		107
Lowest yearly mean			6.079	1989	
Highest yearly mean			19.330	1960	
Lowest monthly mean	2.045	Aug	0.578	Aug 1976	
Highest monthly mean	39.210	Dec	66.830	Nov 1960	
Lowest daily mean	1.482	20 Sep	0.383	22 Aug 1976	
Highest daily mean	171.300	31 Dec	269.300	4 Nov 1960	
Peak			294.500	4 Nov 1960	
10% exceedance	24.470		24.350		100
50% exceedance	5.000		4.768		105
95% exceedance	1.843		1.445		128
Annual total (million cu m)	364.60		340.20		107
Annual runoff (mm)	290		271		107
Annual rainfall (mm)	815		749		109
1941-70 rainfall average (mm)			755		

Factors affecting runoff

- Reservoir(s) in catchment.
- Flow influenced by groundwater abstraction and/or recharge.
- Abstraction for public water supplies.
- Augmentation from surface water and/or groundwater.

Station and catchment description

Crump profile weir plus sharp-crested weir superseded insensitive broad-crested weir. Flows greater than 27 cumecs measured at well calibrated river section 2km d/s (East Farleigh), updating of primary record incomplete. Responsive regime. Complex water utilisation. Significant artificial disturbance; low flow augmentation from Bewl Water (via River Teise); > 20 yrs of naturalised flows available. Mixed geology; impervious formations constitute up to 50% of the catchment. Diverse land use with significant areas of woodland and orchard.

040011 Great Stour at Horton 1993

Measuring authority: NRA-S
First year: 1964
Grid reference: 61 (TR) 116 554
Level stn. (m OD): 12.50
Catchment area (sq km): 345.0
Max alt. (m OD): 205

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.634	3 982	2 978	2 871	2 163	1 437	1 233	1 103	0 982	2 561	1 848	3 661
2	2 593	3 724	2 871	2 861	2.542	1 422	1 167	1 091	0 989	5 114	1 842	3 050
3	2 519	3 477	2 795	2 343	2 319	1 343	1 096	1 120	0 936	3 403	1 789	2 803
4	2 590	3 325	2 610	2 607	2 099	1 306	1 054	1 076	1 143	2 749	1 732	2.600
5	2 778	3 249	2 649	3 447	1.953	1 048	1 093	1 068	1 002	2 823	1 685	2 404
6	4 300	3 141	2 675	3 300	1 881	1.257	1 165	1 067	0 944	2 667	1 627	2 252
7	7 304	3 111	2 672	2 574	1 795	1 205	1 017	1 051	1 009	5 536	1 628	3 759
8	5 258	3.073	2 556	2 421	1 795	1 177	1 156	1 066	1 336	6 019	1 634	5 306
9	4 570	3 020	2 511	2.759	1 859	1 145	1 298	1 080	1 142	5 355	1 671	5 389
10	11.130	3 013	2 452	3 276	1 985	1 153	1 434	1 131	1 181	5.088	4 064	3.731
11	14 230	2 942	2 394	3.317	1 740	1.264	1 566	1 170	1 182	3 826	3.928	3 096
12	9 740	2 888	2.335	2 829	1 670	1 387	1 622	1.313	1 428	8 872	2 962	4 939
13	7.769	2.875	2 277	2.710	1 730	1 647	1 400	1 301	1 864	11 990	4 730	9 435
14	6 444	2 930	2.221	2 576	1 776	1 801	1 448	1 170	2 462	10 700	11 850	6 306
15	5 118	2.900	2 164	2 403	1 724	2 158	1 487	1 123	1 934	8.046	7 714	8.244
16	4 416	2 847	2 127	2 243	1 492	2 457	1 616	1 111	2 195	5 021	4 896	6 327
17	4 022	2 852	2 086	2 212	1 591	2 897	1 416	1 124	1.753	3 318	3 526	4 313
18	3 700	2 773	2 034	2 275	1 543	2 004	1 210	1 117	1 349	2 887	2 959	4 281
19	3 589	2 746	1 979	2 316	1 809	1 715	1 806	1 106	1 289	2 511	2 653	10 170
20	3 539	2 675	1 989	2 209	1 962	1 511	1.746	1 046	1 234	2.259	2 467	12 630
21	3 478	2 656	2 015	2 242	1.905	1 546	1 408	0 914	1 159	2 164	2 574	12 420
22	5.125	2 667	2 088	2 186	1 623	1 469	1 294	1 772	1 108	2 138	2.442	9 588
23	5 895	2 715	2 034	2 182	1 412	1 458	1 297	1 717	1 367	2 068	2.410	8.493
24	4 570	2 634	1 976	2 562	1 552	1 433	1 183	1 303	1 195	1 914	2.299	7 240
25	3.869	2.673	1 976	3 811	1 458	1.453	1 146	1 156	1 068	1 925	2.258	5 850
26	4 096	3 331	2 018	4.585	1 463	1 410	1 229	1 029	1 049	1 941	2 268	4 659
27	6.043	3.765	2 000	4 002	1 523	1 261	1 293	1 018	1 464	2 258	2 235	4 106
28	5.487	3 095	1 970	2 919	1 904	1 260	1 317	1 002	1 612	2 275	2 150	4 902
29	6 601		1 898	2 524	1 586	1 259	1 308	0 917	1 663	2 262	2 128	7.494
30	5 095		1 932	2 347	1 503	1 263	1 255	0 901	1.580	2 034	3 979	16 770
31	4 308		2.198		1 452		1 330	0 984		1 918		25 350
Average	5.252	3 039	2.274	2 764	1 768	1 505	1 325	1 134	1 354	3.988	3 065	6 825
Lowest	2 519	2 634	1 898	2 182	1 412	1 048	1 017	0 901	0 936	1 914	1 627	2 252
Highest	14 230	3 982	2 978	4 585	2 542	2 897	1 806	1.772	2.462	11 990	11 850	25 350
Peak flow					3 10	4 60	2.59	2 54	3 73	13 32	13 80	27 33
Day of peak					9	17	19	23	20	13	14	31
Monthly total (million cu m)	14 07	7 35	6 09	7 16	4 74	3 90	3 55	3 04	3 51	10 68	7 94	18 28
Runoff (mm)	41	21	18	21	14	11	10	9	10	31	23	53
Rainfall (mm)	74	16	12	69	44	52	59	38	96	134	64	140

Statistics of monthly data for previous record (Oct 1964 to Dec 1992—incomplete or missing months total 0 2 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	5 086	4 666	4 234	3 416	2 701	2 020	1 809	1 702	1 793	2 588	3 609	4 350
	Low	1.777	2 026	1 812	1 655	1 314	0 976	0 965	0 877	0 842	1 057	1 329	1 687
	(year)	1989	1989	1973	1976	1990	1992	1976	1976	1990	1989	1978	1971
	High	10 940	8.189	9 086	7 143	5 810	3 221	3 231	3 092	3 626	8 687	8 195	9 088
	(year)	1988	1988	1975	1975	1983	1971	1980	1987	1968	1987	1974	1966
Runoff	Avg.	39	33	33	26	21	15	14	13	13	20	27	34
	Low	14	14	14	12	10	7	7	7	6	8	10	13
	High	85	59	71	54	45	24	25	24	27	67	62	71
Rainfall	Avg	73	50	58	52	49	52	59	55	66	79	85	73
	Low	22	17	4	11	2	10	14	12	13	6	18	15
	High	192	104	141	117	105	120	132	106	169	224	175	146

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	2 901		3 158		92
Lowest yearly mean			1 808	1973	
Highest yearly mean			4 717	1966	
Lowest monthly mean	1 134	Aug	0 842	Sep 1990	
Highest monthly mean	6 825	Dec	10 940	Jan 1988	
Lowest daily mean	0 901	30 Aug	0 658	19 Sep 1990	
Highest daily mean	25 350	31 Dec	28 850	5 Nov 1967	
Peak	27 330	31 Dec	38 290	9 Apr 1979	
10% exceedance	5 235		5 947		88
50% exceedance	2 180		2 294		95
95% exceedance	1 061		1 078		98
Annual total (million cu m)	91.49		99 67		92
Annual runoff (mm)	265		289		92
Annual rainfall (mm)	798		751		106
1941-70 rainfall average (mm)			761		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge
- Augmentation from effluent returns.

Station and catchment description

Broad-crested weir (width: 10 7m, insensitive) in trapezoidal section plus a VA section for flows > 20 cumecs. EM installed 1992. All flows contained. Minor impact of artificial influences on runoff (import of 0 03 cumecs in 1988), modest PWS and irrigation abstractions in lower valley. Flood storage reservoirs above Ashford (constructed 1990-2). U/s mill regulation evident on the hydrographs. The E.& W. branches of the Stour flow over Weald Clay; below the confluence (at Ashford) Chalk dominates. A rural catchment with mixed land use.

042010 Itchen at Highbridge+Allbrook··· 1993···

Measuring authority: NRA-S
First year: 1958

Grid reference: 41 (SU) 467 213
Level stn (m OD): 17.10

Catchment area (sq km): 360.0
Max alt. (m OD): 208

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	6.893	7.974	6.651	9.486	5.827	4.927	3.922	3.706	3.196	4.924	5.989	6.300
2	6.811	7.911	6.600	7.226	5.754	5.084	3.922	3.685	3.169	5.853	5.960	6.100
3	6.728	7.856	6.544	6.653	5.710	5.059	3.864	3.612	3.167	4.862	5.920	5.900
4	6.764	7.876	6.432	6.348	5.655	4.889	3.854	3.645	3.133	4.722	5.900	5.974
5	6.951	7.815	6.277	6.750	5.645	4.702	3.779	3.717	3.125	6.255	5.880	5.744
6	7.233	7.799	6.259	6.251	5.660	4.592	3.722	3.659	3.147	6.878	5.860	5.724
7	7.289	7.757	6.203	6.151	5.558	4.542	3.566	3.596	3.383	5.700	5.840	6.098
8	7.012	7.703	6.087	6.027	5.472	4.423	3.618	3.504	3.786	6.245	5.820	6.375
9	7.141	7.616	6.081	6.973	5.469	4.463	3.903	3.539	3.571	6.602	5.800	6.047
10	9.370	7.568	6.009	6.617	5.504	4.510	3.930	3.545	3.480	6.045	5.800	6.044
11	8.863	7.610	6.072	6.606	5.370	4.750	3.850	3.527	3.444	6.335	5.900	5.896
12	7.805	7.519	6.005	6.343	5.371	5.072	3.843	4.014	4.069	7.083	6.000	6.652
13	8.295	7.426	5.917	6.281	5.364	5.007	4.120	3.780	4.363	7.777	6.300	6.616
14	8.225	7.392	5.883	6.109	5.408	4.971	4.397	3.594	3.775	7.164	6.500	6.538
15	8.464	7.328	5.835	5.989	5.382	4.729	4.668	3.494	3.763	6.869	6.100	6.821
16	8.076	7.258	5.785	5.936	5.445	5.543	4.424	3.446	3.890	6.731	6.000	6.560
17	7.934	7.202	5.757	5.958	5.426	5.399	4.213	3.421	3.818	6.737	5.900	6.609
18	7.876	7.243	5.697	5.905	5.316	5.189	4.209	3.380	3.689	6.641	5.700	6.974
19	7.935	7.140	5.600	5.874	5.170	5.043	4.325	3.320	3.598	6.665	5.600	7.665
20	8.161	7.101	5.579	5.826	5.548	4.884	4.322	3.338	3.803	6.587	5.600	8.480
21	8.346	6.988	5.595	5.668	5.696	4.732	4.261	3.337	3.813	6.545	5.500	7.714
22	8.748	6.923	5.873	5.808	5.282	4.671	4.090	3.570	3.741	6.662	5.500	7.448
23	8.580	6.836	5.687	6.412	5.142	4.578	3.931	3.656	3.682	6.546	5.400	7.694
24	8.373	6.756	5.589	6.410	4.997	4.550	3.924	3.524	3.602	6.490	5.300	7.782
25	8.269	6.820	5.522	6.208	5.252	4.478	3.977	3.455	3.583	6.425	5.200	7.727
26	8.289	6.914	5.426	6.468	6.630	4.312	4.089	3.381	3.507	6.371	5.100	7.659
27	8.365	6.738	5.364	6.197	5.695	4.261	4.167	3.318	3.536	6.332	5.100	7.623
28	8.397	6.609	5.326	6.023	5.403	4.134	4.099	3.280	3.570	6.334	5.000	8.186
29	8.329		5.390	5.983	5.135	4.014	4.030	3.322	3.659	6.344	5.200	8.199
30	8.167		5.540	5.916	5.112	3.967	3.911	3.280	4.025	6.232	6.100	9.086
31	8.031		5.902		5.039		3.784	3.258		6.099		8.887
Average	7.926	7.346	5.887	6.347	5.466	4.716	4.023	3.513	3.603	6.357	5.726	7.002
Lowest	6.728	6.609	5.326	5.668	4.997	3.967	3.566	3.258	3.125	4.722	5.000	5.724
Highest	9.370	7.974	6.651	9.486	6.630	5.543	4.668	4.014	4.363	7.777	6.500	9.086
Peak flow												
Day of peak												
Monthly total (million cu m)	21.23	17.77	15.77	16.45	14.64	12.22	10.78	9.41	9.34	17.03	14.84	18.76
Runoff (mm)	59	49	44	46	41	34	30	26	26	47	41	52
Rainfall (mm)	112	7	45	102	58	59	60	37	124	150	66	138

Statistics of monthly data for previous record (Oct 1958 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	6.348	7.081	6.866	6.397	5.597	4.742	4.043	3.737	3.606	4.006	4.680	5.563
	Low	3.527	3.571	3.517	3.203	3.093	2.581	2.474	2.331	2.670	2.702	2.840	3.136
	(year)	1989	1992	1992	1976	1976	1976	1976	1976	1973	1959	1973	1973
	High	10.520	11.060	9.923	8.521	7.311	6.549	5.219	5.244	5.127	7.867	9.858	10.860
	(year)	1969	1990	1977	1969	1966	1979	1979	1979	1968	1960	1960	1960
Runoff	Avg	47	48	51	46	42	34	30	28	26	30	34	41
	Low	26	25	26	23	23	19	18	17	19	20	20	23
	High	78	74	74	61	54	47	39	39	37	59	71	81
Rainfall (1959-1992)	Avg	89	59	71	55	56	58	56	63	72	84	88	94
	Low	12	5	3	2	8	10	14	13	5	6	27	19
	High	159	173	172	113	145	128	109	120	201	234	218	229

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	5.660		5.212		109
Lowest yearly mean			3.614	1992	
Highest yearly mean			6.594	1960	
Lowest monthly mean	3.513	Aug	2.331	Aug 1976	
Highest monthly mean	7.926	Jan	11.060	Feb 1990	
Lowest daily mean	3.125	5 Sep	2.167	24 Aug 1976	
Highest daily mean	9.486	1 Apr	12.800	29 Jan 1969	
Peak					
10% exceedance	7.751		7.676		101
50% exceedance	5.783		4.764		121
95% exceedance	3.427		2.913		118
Annual total (million cu m)	178.50		164.50		109
Annual runoff (mm)	496		457		109
Annual rainfall (mm)	958		845		113
1941-70 rainfall average (mm)			873		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge
- Abstraction for public water supplies
- Augmentation from surface water and/or groundwater.

Comment

Flows estimated 2/11-3/12 (see below)

Station and catchment description

Crump weir 7.75m broad (which can drown), superseded, in 1971, a rated section with weedgrowth problems. Plus thin-plate weir (Allbrook). All flows contained (rare bypassing resulted from wrong sluice settings). Flows for Allbrook for Nov/Dec 1993 were estimated due to construction of a fish path. Flow augmentation from GW during droughts. GW catchment exceeds topographical catchment. Artificial influences have minor, but increasing, impact on baseflow dominated regime, small net export of water. Very permeable catchment (90% Chalk). Land use is mainly arable with scattered settlements.

043005 Avon at Amesbury 1993

Measuring authority: NRA-SW
First year: 1965
Grid reference 41 (SU) 151 413
Level stn (m OD): 67 10
Catchment area (sq km): 323 7
Max alt (m OD) 294

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	6 689	7 227	4 716	5 407	4.101	3 466	2 401	1 823	1 399	1.915	3 434	3 508
2	6.622	7 048	4 649	4 560	4 055	3 446	2.335	1 818	1 415	1 966	3.446	3 382
3	6 466	6 942	4 613	4 129	4 026	3 555	2 307	1 836	1 407	1 856	3 434	3 337
4	6.419	6 849	4 516	4 094	4 001	3 459	2.291	1 827	1 376	1 815	3.430	3 400
5	6 721	6.762	4 466	4 883	3 979	3 301	2.248	1 801	1 375	2 142	3 415	3 373
6	7 105	6 513	4 459	4 667	3 939	3.177	2 182	1 755	1 378	2 920	3 383	3 361
7	7 310	6.437	4 444	4 331	3 891	3 072	2 088	1 736	1 389	3 310	3 367	3 519
8	6 931	6 376	4 408	4 399	3 884	3 000	2 038	1 714	1 517	3 824	3.251	3 709
9	6 802	6 312	4 368	5 657	3 898	2 956	2 093	1.703	1 696	4 580	3 373	4 208
10	9 559	6 203	4 317	5 840	3 902	2 963	2 098	1 684	1 758	3 587	3.486	3 875
11	12 450	6.096	4 261	5 340	3 858	3 141	2 082	1 721	1 703	3 126	3 552	3 688
12	10 080	5 991	4 237	5.705	3 901	3 203	2 058	1 831	1 867	3 717	3 477	3.860
13	11 710	5 885	4 203	5 416	3 994	3 188	2 133	1 787	1 992	5 737	3 796	4 186
14	14 600	5.781	4 146	4 884	3 903	3.222	2 224	1 715	1 919	6.830	4 264	4 111
15	11.780	5 704	4.052	4 644	3 845	3 112	2 547	1 675	1 836	5 270	4 005	4 629
16	10 650	5 663	4 051	4 426	3 828	3 398	2 624	1 630	1.773	4 476	3 661	4 835
17	10 200	5 614	4.024	4 444	3 803	3 466	2 483	1 569	1 718	4 147	3.573	4 521
18	9 665	5.522	3 958	4 355	3 731	3 254	2 310	1 528	1 669	3 952	3 468	4 856
19	9 660	5.440	3 856	4 356	3 655	3 100	2 255	1 510	1 631	3 817	3.428	6 057
20	9 646	5.309	3 871	4 329	4.118	2 989	2 183	1 500	1 664	3.785	3 390	7 282
21	9 148	5.275	3 912	4 318	4 652	2.925	2 142	1 506	1 651	3.725	3 355	8 395
22	10 020	5 178	3 989	4 311	4 252	2 883	2 054	1 543	1 630	3 652	3 310	7.143
23	10 050	5 027	3 843	4 511	3 852	2 831	2 014	1 592	1 602	3 615	3.280	7 305
24	9 192	4.906	3 749	4 532	3 569	2 792	2 063	1 564	1 564	3.526	3 278	7 117
25	8 591	4 946	3 666	4 465	3 473	2 739	2 112	1 518	1.562	3 474	3 241	6.833
26	8 433	4 969	3 644	4 541	3.872	2 688	2 080	1 504	1 540	3 473	3 204	6 573
27	8 391	4 820	3 628	4 471	3 929	2 614	2 049	1 493	1 525	3 345	3 185	6 348
28	8 180	4 741	3 597	4.279	3 692	2 541	1 988	1 455	1 589	3 559	3 168	6 857
29	7 837		3 546	4 226	3 541	2.488	1 972	1 438	1 572	3 474	3 275	7 054
30	7 624		3 563	4 179	3 508	2.460	1 931	1 430	1 663	3 451	3 544	7 869
31	7 391		3 796		3 486		1 880	1 419		3 443		9 656
Average	8 901	5 841	4 082	4 657	3 875	3 048	2 170	1 633	1 613	3 597	3.449	5 318
Lowest	6 419	4.741	3 546	4 094	3.473	2 460	1 880	1 419	1 375	1.815	3 168	3 337
Highest	14 600	7 227	4 716	5 840	4 652	3 555	2 624	1 836	1 992	6 830	4 264	9 656
Peak flow	15 91	7 32	4 76	6 68	4 73	3 63	2 72	1 98	2 08	7 52	4 47	10 16
Day of peak	14	1	2	10	21	17	16	13	13	14	15	31
Monthly total (million cu m)	23 84	14 13	10 93	12 07	10 38	7 90	5 81	4.37	4 18	9 63	8 94	14 24
Runoff (mm)	74	44	34	37	32	24	18	14	13	30	28	44
Rainfall (mm)	96	5	41	82	75	52	63	34	94	108	43	122

Statistics of monthly data for previous record (Feb 1965 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg	5 021	6 044	5 370	4 499	3 428	2 608	1 945	1 634	1 542	1 833	2 516	3 941
	Low	1.199	1 188	1.158	1 039	0 834	0 626	0 475	0 372	0 645	0 973	1 090	1.366
	(year)	1976	1976	1976	1976	1976	1976	1976	1976	1976	1989	1973	1990
	High	8.556	16 000	8 352	7.586	5 146	4 259	3 022	2.362	2 528	3 521	6 440	9 947
	(year)	1982	1990	1972	1979	1979	1979	1971	1979	1974	1966	1974	1992
Runoff	Avg	42	46	44	36	28	21	16	14	12	15	20	33
	Low	10	9	10	8	7	5	4	3	5	8	9	11
	High	71	120	69	61	43	34	25	20	20	29	52	82
Rainfall	Avg	78	55	66	47	55	58	51	62	65	69	74	84
	Low	14	6	14	1	8	3	15	16	11	4	31	17
	High	134	147	150	100	121	143	113	152	179	161	185	160

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	4 009		3 351		120
Lowest yearly mean			1 430	1976	
Highest yearly mean			4 476	1977	
Lowest monthly mean	1 613	Sep	0 372	Aug 1976	
Highest monthly mean	8 901	Jan	16 000	Feb 1990	
Lowest daily mean	1 375	5 Sep	0 175	22 Aug 1976	
Highest daily mean	14 600	14 Jan	26 000	4 Feb 1990	
Peak	15 910	14 Jan	28 540	4 Feb 1990	
10% exceedance	6 898		6 459		107
50% exceedance	3.627		2 691		135
95% exceedance	1 527		1 107		138
Annual total (million cu m)	126 40		105 70		120
Annual runoff (mm)	391		327		120
Annual rainfall (mm)	815		764		107
1941-70 rainfall average (mm)			768		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge

Station and catchment description

Crump profile weir (crest 9 14m broad) flanked by broad-crested weirs. Small bypass channel approx. 2m u/s of weir - included in rating. Full range station. Bankfull is 1 37m. During summer flows are naturally augmented from groundwater draining from northern half of River Bourne catchment. Some groundwater pumping also takes place within the catchment. Predominantly permeable (Chalk) catchment with a small inlier of Upper Greensand and Gault. Land use - rural. Topographical and groundwater catchments do not coincide.

045001 Exe at Thorverton 1993

Measuring authority: NRA-SW
First year: 1956
Grid reference: 21 (SS) 936 016
Level stn. (m OD) 25 90
Catchment area (sq km) 600.9
Max alt. (m OD) 519

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	7 488	17.170	4.870	3 881	5.274	10 130	4.465	6 747	3 301	23.190	4 587	11 440
2	7.128	15 060	4 775	3 647	4 966	15.280	4 221	6 691	3 427	22.670	4 340	11 710
3	6 982	13.400	4 560	8 075	4 674	12 360	3 933	6.373	3 311	18 130	5 208	11.150
4	7 630	12 070	4 324	6.576	4.508	10 520	3 699	6 284	3.205	17 100	4 590	15 860
5	12.600	10 940	4.301	16 910	4 279	9.319	3.457	6 160	3 066	23 350	4.223	14 430
6	15.700	10 060	4 303	9 307	4 087	8 383	3 319	5 090	2 978	50 440	4 229	16.740
7	15.370	9.385	4.252	9.271	3 978	7 662	3 463	4.775	3 944	38 210	3 909	33 370
8	16 510	8 800	4.163	10 020	3.902	7 244	3.500	4 514	7 369	35 240	3 712	57.850
9	22 450	8 168	4.107	21 730	3 961	7 270	4 133	5.111	16 850	29 330	6 025	42 650
10	72.520	7 675	4 046	16.600	3.917	6.941	3 857	4 687	15.110	25 910	8 967	37.000
11	57.050	7 223	3.973	19.860	3 786	24.930	3 447	5 840	10 670	42 670	7 019	31 960
12	47 330	6.918	3.913	18 140	3.790	34 650	3 200	5 899	20 850	42 670	7 104	103.000
13	71.750	6 504	3.861	20 030	3 653	22.980	4 298	4.922	21 640	36 340	39 690	91 450
14	54 760	6.164	3.761	17.280	4.080	26 490	5 866	4 585	17 050	29.600	30 400	74.380
15	46 160	5 871	3.634	15 800	4 130	19.910	11.650	4.312	14 740	24 110	23 210	70.470
16	36 730	5 643	3.523	14.590	4 212	28.530	8.920	4 010	12 970	19 800	19 420	70 270
17	31 670	5 428	3.458	14 020	7.858	20.140	5 859	3.795	11 230	16.490	16 400	83.650
18	26 660	5 300	3.347	12 720	7 421	19 080	5.590	3.595	9 828	14 100	14 080	78.510
19	29 600	5 064	3.321	11 140	5.344	15.760	7 819	3 496	8 975	12 700	12 320	144.800
20	87.270	4.880	3.428	10.180	4.537	13.350	5 654	3 377	10.710	11 040	10 860	170.600
21	75 910	4 682	3.789	9.360	4 293	11.500	5.175	3.350	10 620	9 809	9 871	101.200
22	64 990	4.569	4 823	9 006	4.216	10 130	4 631	3 473	9 320	8.753	8 794	95.150
23	50 390	4 447	3.863	9 503	4 129	9.266	4.764	11.550	8 275	7 964	8 147	87 770
24	40 450	4 278	3.286	8 247	4 387	8 119	8 614	5.531	7 894	7 309	9 967	63 170
25	32 660	7 033	3.183	7.368	6 490	7.223	5.927	4 822	7 769	6 763	9 672	51 260
26	29.540	7 178	3 318	7 560	13 670	6 874	6 059	4 408	7 812	6 342	8 346	38 920
27	36 370	5 500	3 305	7 015	11.310	6 338	12 590	4 090	7 023	6.017	7 684	33.630
28	29 930	4.944	3.299	6 361	8 102	5 659	8 788	3 872	6 611	5 815	7 356	50 720
29	25 940		3.340	5 914	8.066	5.239	9.959	3 684	6.858	5 438	12.770	38.830
30	22 330		3 482	5.718	12.850	4 823	8 359	3.535	7 735	5.076	13 610	70 070
31	19 480		3.985		10 090		7.288	3.326		4 871		67.050
Average	35 530	7 656	3.858	11 190	5 805	13.200	5 823	4 900	9 371	19 590	10 880	60 290
Lowest	6 982	4.278	3 183	3.647	3 653	4 823	3 200	3 326	7 978	4 871	3.712	11 150
Highest	87 270	17.170	4 870	21.730	13.670	34 650	12 590	11 550	21.640	50 440	39 690	170 600
Peak flow	114 50	19 00	5 39	31.56	21 25	43 87	18.18	24.94	35 16	63 16	59 96	210 40
Day of peak	10	1	22	5	30	12	15	23	13	12	13	20
Monthly total (million cu m)	95.16	18 52	10 33	29.02	15 55	34 22	15 60	13 12	24 29	52 47	28 21	161.50
Runoff (mm)	158	31	17	48	26	57	26	22	40	87	47	269
Rainfall (mm)	190	23	28	96	104	97	118	52	137	113	92	310

Statistics of monthly data for previous record (May 1958 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	28 840	25 510	19 010	12 990	8 356	5 420	4 681	6 337	8 906	16 570	22 800	29.510
	Low	5 438	6 450	6.376	4 341	2 594	1 978	1 151	0 693	1 699	1 560	5 297	12 460
	(year)	1963	1965	1962	1974	1976	1975	1976	1976	1972	1978	1978	1963
	High	57 190	51 730	49 640	28 800	29 380	15 870	19.770	20 550	35 830	59 830	46 170	68 440
	(year)	1984	1990	1981	1966	1983	1958	1968	1985	1974	1960	1986	1965
Runoff	Avg	129	104	85	56	37	23	21	28	38	74	98	132
	Low	24	26	28	19	12	9	5	3	7	7	23	56
	High	255	208	221	124	131	68	88	92	155	267	199	305
Rainfall	Avg	142	104	104	75	73	74	81	97	109	128	132	150
	Low	30	7	18	7	10	9	19	28	13	13	48	51
	High	297	239	222	163	175	160	174	185	254	300	243	321

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	15 940		15 710		101
Lowest yearly mean			9 692	1964	
Highest yearly mean			22.600	1960	
Lowest monthly mean	3 858	Mar	0.693	Aug 1976	
Highest monthly mean	60 290	Dec	68 440	Dec 1965	
Lowest daily mean	2.978	6 Sep	0 440	27 Aug 1976	
Highest daily mean	170 600	20 Dec	282.200	4 Dec 1960	
Peak	210.400	20 Dec	492.600	4 Dec 1960	
10% exceedance	38.940		37 610		104
50% exceedance	7.734		9.332		83
95% exceedance	3 403		1.901		179
Annual total (million cu m)	502 70		495 80		101
Annual runoff (mm)	837		825		101
Annual rainfall (mm)	1360		1269		107
1941-70 rainfall average (mm)			1303		

Factors affecting runoff

- Reservoir(s) in catchment.
- Flow influenced by groundwater abstraction and/or recharge
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions
- Augmentation from surface water and/or groundwater
- Augmentation from effluent returns.

Station and catchment description

Velocity-area station with cableway. Flat V Crump profile weir constructed in 1973 due to unstable bed condition. Minor culvert flow through mill u/s of station included in rating. Wimbleball Reservoir has significant effect upon low flows. Station is control point for Wimbleball Reservoir operational releases. Headwaters drain Exmoor. Geology predominantly Devonian sandstones and Carboniferous Culm Measures, with subordinate Permian sandstones in the east. Moorland, forestry and a range of agriculture.

050001 Taw at Umberleigh 1993

Measuring authority: NRA-SW
First year: 1958
Grid reference: 21 (SS) 608 237
Level stn. (m OD): 14.10
Catchment area (sq km): 826.2
Max alt. (m OD): 604

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	7 032	16.760	4.487	3 963	5.505	10 340	4 588	12 390	2.690	84 340	4 846	12 940
2	6 663	14 650	4.416	4.758	5 080	16.150	4 207	11.390	2.618	74.790	4.823	12 440
3	6 638	13 020	4.064	12.200	4.659	12 470	3 948	10.270	2.593	54.530	6 034	11.990
4	8 445	11 800	3.814	8.170	4 379	10.010	3 713	10.750	2 476	39 940	5 206	16.100
5	18.930	10 630	3.759	20 070	4.190	8 510	3.394	9 628	2 361	51.460	4.665	13 450
6	30 240	9.709	3 769	9.788	4 000	7.468	3.092	7 780	2 299	75.250	4 380	18 450
7	28.320	9.042	3.691	10 520	3 829	6 710	2.986	7 067	2 700	55.980	4.154	52 480
8	26 540	8 499	3.607	9.634	3.751	6.142	2 932	6.453	6.793	56 830	3.990	77 790
9	34 000	8 112	3 505	18.060	3.792	11.720	3.825	7.594	21 110	41 360	6 496	51 560
10	136.100	7.596	3 410	12 680	3 695	14.520	3.493	6.365	15 960	36.550	12.160	45.650
11	80 370	7 154	3.298	21.880	3 525	76 500	3 453	6 620	9.433	83 080	14 390	41.820
12	63.260	6.790	3.269	18 620	3.625	108 300	2.808	7 032	31 420	64.840	12 110	112.000
13	100.300	6 394	3.215	18.800	4 077	53.380	2.943	5.771	39 560	48 280	56 130	120 500
14	66.690	6.039	3.109	14 900	4 621	58.750	7.193	5 386	18 940	34 140	43.980	88.890
15	57.240	5.671	2.980	12.790	4.136	39.530	24.340	5 110	14 850	26.240	31 110	89.250
16	41 420	5.391	2 964	11.540	3 792	60 520	16.320	4 745	12.350	21.000	24 700	79.390
17	34.120	5 195	2.899	12 060	13.450	38 050	9 263	4.393	10 840	17.180	20 030	85.760
18	27.880	5.072	2.806	10 620	8 592	31.880	9.435	4 192	9.314	14 610	16 630	88 640
19	31.930	4.785	2.680	9 242	7.212	24 030	18.520	4 006	8 438	12.780	14.170	133.300
20	92.730	4.465	2.662	8.534	4 950	18.630	10.470	3 889	11.200	11.540	12 240	225 200
21	76.760	4 378	3.120	7.861	4 273	15.190	8 939	3 801	24 020	10 310	11 000	114 200
22	74 960	4.242	5.818	7 567	4 151	12 820	8.055	4.507	17.790	9.097	9.598	111 500
23	55.340	4 085	3.814	8.054	4 032	10.920	7 572	6 890	14.690	8 264	8 835	101 700
24	42 820	3.849	3 069	14 290	4.177	9 303	13.670	4.208	13 210	7 559	13 010	70 580
25	32.210	5.248	2.817	10 460	7.541	8.153	12 140	3.746	12 430	6.954	11 510	59 610
26	27.720	7.220	2.678	9 051	53.230	7.593	10 860	3.510	12 550	6 500	9 478	42.310
27	38 920	5.992	2 652	8 365	26.950	6.917	30 150	3.333	10 270	6.173	8 700	37 030
28	31.510	4 701	2.706	7.152	13 940	6.023	20 600	3.213	9 439	5 876	8.149	52 190
29	27.120		2.741	6.342	11 530	5 488	20 750	3 107	13 920	5 530	15 500	41.700
30	22.780		2.684	5 880	19.460	5 007	17.290	3 076	15 630	5 213	17 950	104 900
31	19.250		3.938		12.200		14 430	2.903		5 036		84.610
Average	43 490	7.375	3 369	11 130	8 483	23 370	9 851	5 907	12.400	31 650	13 870	70.900
Lowest	6.638	3.849	2.652	3.963	3.525	5 007	2 808	2.903	2.299	5 036	3 990	11.990
Highest	136.100	16 760	5.818	21 880	53.230	108 300	30 150	12.390	39.560	84 340	56 130	225 200
Peak flow	198 00	18.73	7.16	36 06	79.33	148.20	45 69	13.95	79 50	148 50	85 67	306 80
Day of peak	10	1	22	5	27	12	27	1	13	1	13	20
Monthly total (million cu m)	116 50	17.84	9 02	28 84	22 67	60.57	26 38	15 82	32 13	84 78	35 94	189 90
Runoff (mm)	141	22	11	35	27	73	32	19	39	103	44	230
Rainfall (mm)	172	19	29	81	105	114	136	44	135	115	84	268

Statistics of monthly data for previous record (Oct 1958 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg	35 350	28.840	20 940	13 960	8.928	4 942	4 671	5 738	7 609	18 910	29 640	35.790
	Low	6 657	3.235	7.449	3 888	1.982	1 329	0 794	0 423	0 857	1 043	3 654	13 200
	(year)	1963	1959	1984	1974	1990	1984	1976	1976	1959	1978	1978	1963
	High	62.100	68 000	52.140	32 800	37 000	16.630	23 390	19 130	47.670	77 360	58 500	73 670
	(year)	1984	1990	1981	1966	1983	1972	1968	1985	1974	1960	1963	1965
Runoff:	Avg.	115	85	68	44	29	16	15	19	24	61	93	116
	Low	22	9	24	12	6	4	3	1	3	3	11	43
	High	201	199	169	103	120	52	76	62	150	251	184	239
Rainfall:	Avg	130	90	91	71	67	68	73	88	92	119	129	135
	Low	28	3	18	8	12	10	23	24	14	14	53	41
	High	242	225	183	145	146	164	156	175	247	278	239	271

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	20 470		17.900		114
Lowest yearly mean			11 310	1964	
Highest yearly mean			27 590	1960	
Lowest monthly mean	3 369	Mar	0 423	Aug 1976	
Highest monthly mean	70 900	Dec	77 360	Oct 1960	
Lowest daily mean	2.299	6 Sep	0 202	28 Aug 1976	
Highest daily mean	225.200	20 Dec	363 800	4 Dec 1960	
Peak	306 800	20 Dec	644 900	4 Dec 1960	
10% exceedance	56 960		46.830		122
50% exceedance	9.426		9.054		104
95% exceedance	2.898		1.203		241
Annual total (million cu m)	645.50		564.90		114
Annual runoff (mm)	781		684		114
Annual rainfall (mm)	1302		1153		113
1941-70 rainfall average (mm)			1193		

Factors affecting runoff

- Abstraction for public water supplies.

Station and catchment description

Velocity-area station, main channel 34m wide, cableway span 54.9m. Rock step downstream forms control. Bypassing begins at about 3.7m on right bank, but a good rating accommodates this. Significant modification to flows owing to PWS abstraction. Some naturalised flow data available. Large rural catchment - drains Dartmoor (granite) in south and Devonian shales and sandstones of Exmoor in north. Central area underlain mainly by Culm shales and sandstones (Carboniferous). Agriculture conditioned by grade 3 and 4 soils.

052005 Tone at Bishops Hull 1993

Measuring authority: NRA-SW
First year: 1961

Grid reference: 31 (ST) 206 250
Level stn. (m OD): 16 20

Catchment area (sq km): 202 0
Max alt. (m OD): 409

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.473	3 383	1 631	1 403	1 424	1.790	1 003	0 777	0 571	2 498	1 358	1 884
2	2 431	3 061	1.540	1 380	1.331	2 016	0 954	0.799	0.522	2 055	1 390	2 299
3	2 072	3 017	1 468	2.223	1 290	1 653	0.945	0 767	0.514	1.551	1.569	2 237
4	2.183	2.875	1.426	1.736	1 273	1.541	0 927	0.889	0.504	1 577	1.393	2 336
5	2 969	2.713	1 441	3.895	1 245	1 475	0.860	0 789	0.511	3.470	1 334	2 142
6	3 847	2.597	1 434	1 872	1.248	1 424	0.847	0 759	0 508	9 806	1 299	2 355
7	3.660	2 501	1.421	1 749	1.214	1.421	0 844	0.710	0 671	4 236	1 276	3 883
8	3 291	2.429	1 408	2 391	1.224	1 318	0.858	0 702	1 461	4 871	1.243	5.213
9	4 206	2 341	1.376	7 515	1.317	1.278	1 093	0.755	1 742	3.929	1 456	3 854
10	20.550	2.244	1 362	3.534	1 281	1.363	0 894	0 698	1.070	3 368	1 660	3.716
11	8 431	2.196	1.359	4.118	1 212	3 427	0 870	0.793	0 840	5 694	1 477	3 433
12	8 072	2 159	1 351	3 593	1.215	2.803	0 812	0 812	2 701	7 782	1.469	14 180
13	21.140	2.086	1.355	5.230	1 189	1.844	1 077	0 692	2 231	7 256	5 595	8 923
14	10 160	2 021	1.312	4.228	1 153	1.870	1.136	0 697	1 274	4 321	3.097	9 429
15	9 802	1.955	1.296	3 541	1.131	1.666	2.119	0 676	1 259	3.564	2.385	11 840
16	7 634	1.919	1.296	3.155	1.238	4 062	1 524	0 645	1 392	3 082	2 229	9 413
17	6 543	1.890	1 281	2 844	2 012	2.290	1 002	0 536	1 093	2.713	2 110	9 740
18	5 811	1.861	1 253	2.636	1 420	2 001	0.968	0 535	0 967	2.474	2 004	9 230
19	5 651	1.772	1 209	2 474	1.200	1.784	1 026	0.542	0 934	2.338	1 896	12 980
20	8 555	1.730	1.248	2.352	1.144	1 632	0.896	0 524	1.422	2 213	1.804	59 080
21	8 739	1.679	1 417	2.183	1.098	1 512	0.851	0 543	1.225	2 010	1.745	15.360
22	8.631	1 654	1 625	2 154	1.098	1.467	0 829	1.053	2 112	1.865	1 653	24 740
23	7 586	1.618	1 281	2 208	1 072	1.384	0 831	1.157	1 414	1 754	1.614	26.120
24	6.677	1 576	1 220	2 080	1.156	1.334	1 193	0.676	1 143	1 680	1 879	13 920
25	5 627	2 341	1.195	1.920	1 710	1 283	0 862	0 601	1 045	1 611	1.751	13 230
26	5 383	2 025	1.217	2 066	3 478	1.271	0 902	0 584	0 997	1 567	1.805	9 269
27	5 093	1 706	1.239	1.750	2.111	1 208	1.157	0 570	0 990	1 498	1.682	8 093
28	4 745	1 629	1 231	1 607	1.468	1 127	0 905	0.569	0.975	1 480	1 615	14 110
29	4.354		1 223	1 540	1 478	1 092	0 852	0 573	1 284	1 424	3 561	8 651
30	4 015		1 342	1 495	1 814	1 032	0 790	0 605	2 621	1 370	3 488	24 810
31	3 705		1.539		1 495		0.773	0 586		1 342		12 950
Average	6 582	2 178	1 355	2.696	1 411	1 712	0.987	0 697	1.200	3 110	1 961	11 260
Lowest	2.072	1 576	1.195	1.380	1 072	1.032	0 773	0.524	0 504	1 342	1 243	1 884
Highest	21 140	3 383	1 631	7.515	3 478	4 062	2.119	1 157	2.701	9 806	5 595	59 080
Peak flow	46 11	3.58	2 07	11 76	6 33	7.30	3 25	2.51	5 66	12 63	9 78	88 54
Day of peak	10	1	22	9	26	16	15	22	12	6	13	20
Monthly total (million cu m)	17 63	5.27	3 63	6 99	3 78	4 44	2 64	1 87	3 11	8 33	5 08	30 15
Runoff (mm)	87	26	18	35	19	22	13	9	15	41	25	149
Rainfall (mm)	130	15	26	92	82	72	78	37	125	93	66	231

Statistics of monthly data for previous record (Feb 1961 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	5 923	6 027	4 291	2 975	2 022	1 337	1 137	0 921	1 180	1 988	3.369	5 029
	Low	1 246	1 746	1 552	1 176	0 734	0 456	0 326	0 266	0 501	0 580	0 651	1 821
	(year)	1976	1965	1962	1976	1976	1976	1976	1976	1964	1978	1978	1975
	High	14 560	14 160	9 259	6 655	6.562	2 770	5 628	1 685	4 892	9 873	7.611	11 280
	(year)	1984	1990	1981	1966	1983	1972	1968	1965	1974	1976	1982	1965
Runoff	Avg	79	73	57	38	27	17	15	12	15	26	43	67
	Low	17	21	21	15	10	6	4	4	6	8	8	24
	High	193	170	123	85	87	36	75	22	63	131	98	150
Rainfall	Avg	112	83	83	62	62	60	59	69	80	94	98	110
	Low	25	6	5	6	9	8	16	19	8	8	31	34
	High	250	194	170	150	137	147	144	131	202	249	192	205

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	2.946		3.003		98
Lowest yearly mean			1 600	1964	
Highest yearly mean			4.084	1974	
Lowest monthly mean	0 897	Aug	0.268	Aug 1976	
Highest monthly mean	11 260	Dec	14 560	Jan 1984	
Lowest daily mean	0 504	4 Sep	0.179	22 Aug 1976	
Highest daily mean	59 080	20 Dec	84 200	23 Feb 1978	
Peak	88 540	20 Dec	112 700	11 Jul 1968	
10% exceedance	6.520		6.471		101
50% exceedance	1 586		1.758		90
95% exceedance	0.648		0.596		109
Annual total (million cu m)	92 91		94 77		98
Annual runoff (mm)	460		469		98
Annual rainfall (mm)	1047		972		108
1941-70 rainfall average (mm)			995		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies.

Station and catchment description

Crump profile weir (breadth 12.2m) with crest tapping (not operational). Prior to March 68 velocity area station with flows unreliable below 1.42 cumec. Full range station. Clatworthy and smaller Luxhay Reservoir in headwaters. Compensation flow maintains low flows. Reservoirs not large enough to influence fairly rapid response to rainfall. Minor surface water abstractions for PWS. Catchment geology - predominantly sandstones and marls. Land use - rural.

053018 Avon at Bathford 1993

Measuring authority: NRA-SW
First year: 1969
Grid reference: 31 (ST) 786 671
Level stn. (m OD): 18.00
Catchment area (sq km): 1552.0
Max alt. (m OD): 305

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	14.810	20.260	8.965	18.890	8.460	8.148	3.512	3.329	1.886	11.700	9.651	15.090
2	14.720	18.680	8.672	11.900	8.067	11.990	3.646	3.277	1.988	8.464	9.169	13.430
3	14.110	17.730	8.256	10.450	7.470	12.580	3.733	3.733	2.717	6.186	9.363	13.590
4	14.490	16.880	8.004	12.870	7.557	8.670	3.398	3.515	2.311	7.060	10.440	15.690
5	18.010	15.860	7.758	36.360	7.388	7.347	3.361	5.300	2.431	19.560	10.290	14.570
6	35.500	15.410	7.738	19.040	7.083	6.499	3.055	3.338	2.301	36.270	10.030	16.300
7	41.950	14.780	7.605	15.370	6.609	5.959	2.937	3.000	2.577	28.980	9.796	24.370
8	31.000	14.240	7.670	15.300	6.645	5.714	2.871	2.744	3.656	24.150	9.655	50.370
9	27.170	13.870	7.626	47.460	6.643	5.482	4.140	2.897	6.958	37.300	10.010	38.370
10	95.520	13.210	7.570	35.530	7.198	5.272	3.957	2.655	6.362	21.350	15.100	26.940
11	108.400	12.790	7.254	29.770	6.580	10.740	3.430	2.656	4.124	20.780	14.080	23.340
12	79.090	12.590	7.294	26.750	6.860	16.400	3.210	3.817	5.661	32.200	11.720	64.690
13	116.400	11.910	7.309	23.220	6.520	10.950	4.357	3.329	7.997	160.900	37.660	51.780
14	108.000	11.980	7.098	18.930	6.447	9.469	5.752	2.670	6.710	94.340	44.590	35.810
15	67.040	11.520	6.902	16.460	6.131	8.144	9.239	2.414	5.228	36.510	23.900	60.890
16	50.370	11.000	7.005	14.810	6.353	13.770	9.049	2.523	5.109	26.610	19.500	43.600
17	40.950	10.980	6.890	13.800	6.961	14.360	6.608	2.111	4.035	22.040	17.930	36.000
18	34.020	10.710	6.624	12.870	6.889	9.484	4.911	1.991	3.862	19.120	16.560	44.490
19	32.960	10.450	6.575	11.990	5.786	8.349	4.414	1.850	3.568	16.920	15.250	96.900
20	41.890	10.170	6.583	11.610	8.276	7.116	4.300	2.187	4.310	15.540	13.800	125.700
21	44.200	10.010	6.872	10.840	11.090	6.090	3.738	2.146	4.480	14.430	14.000	87.640
22	58.310	9.673	8.370	10.340	7.772	5.788	3.251	3.085	4.237	13.220	11.930	77.010
23	48.220	9.115	7.031	10.960	6.455	5.668	3.533	5.114	3.761	12.360	11.290	71.570
24	39.960	9.147	6.480	10.700	5.840	5.153	4.899	3.363	3.376	12.060	11.490	56.750
25	32.660	9.860	6.317	10.500	5.684	5.040	5.889	2.888	3.215	10.970	10.710	44.480
26	29.630	10.470	5.908	11.210	9.767	4.568	5.412	2.504	3.211	10.720	10.090	36.090
27	30.410	9.181	5.925	10.360	9.979	4.690	4.823	2.270	3.063	10.680	9.878	31.000
28	28.380	8.837	5.957	9.625	7.398	4.001	4.432	2.980	2.986	10.160	9.419	52.670
29	25.430		6.033	8.946	6.613	3.891	4.384	2.473	3.316	9.876	13.130	41.670
30	23.200		6.988	8.522	9.150	4.127	3.845	2.237	11.490	9.419	15.130	71.860
31	21.490		8.405		9.078		3.242	2.290		9.553		82.760
Average	44.140	12.550	7.216	16.850	7.379	7.849	4.430	2.925	4.231	24.820	14.520	47.270
Lowest	14.110	8.837	5.908	8.522	5.684	3.891	2.871	1.850	1.886	6.186	9.169	13.430
Highest	116.400	20.260	8.965	47.460	11.090	16.400	9.239	5.300	11.490	160.900	44.590	125.700
Peak flow	143.40	20.49	11.88	59.14	12.67	21.86	11.37	6.19	20.40	200.90	56.03	140.20
Day of peak	13	1	31	9	26	12	15	5	30	13	13	20
Monthly total (million cu m)	118.20	30.35	19.33	43.67	19.76	20.34	11.87	7.84	10.97	66.48	37.63	126.60
Runoff (mm)	76	20	12	28	13	13	8	5	7	43	24	82
Rainfall (mm)	112	7	34	70	68	59	75	35	88	108	51	146

Statistics of monthly data for previous record (Dec 1969 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg.	31.410	31.170	24.890	16.480	11.400	8.830	5.554	5.455	6.543	10.560	19.480	28.470
	Low	9.227	11.370	9.007	7.719	5.048	3.289	2.410	1.715	2.699	3.115	4.406	10.290
	(year)	1976	1976	1992	1976	1976	1992	1976	1976	1990	1978	1978	1991
	High	51.270	67.120	54.230	26.520	31.020	30.110	9.956	13.830	25.450	28.180	44.240	50.080
	(year)	1984	1990	1981	1987	1983	1971	1973	1985	1974	1976	1992	1992
Runoff	Avg	54	49	43	28	20	15	10	9	11	18	33	49
	Low	16	18	16	13	9	5	4	3	5	5	7	18
	High	88	105	94	44	54	50	17	24	43	49	74	86
Rainfall (1970-1992)	Avg	86	61	74	50	55	66	55	66	73	75	81	87
	Low	18	7	17	2	7	5	25	17	15	6	35	20
	High	148	143	163	110	142	151	115	141	178	149	178	155

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	16.270		16.620		98
Lowest yearly mean			10.360	1973	
Highest yearly mean			22.160	1977	
Lowest monthly mean	2.925	Aug	1.715	Aug 1976	
Highest monthly mean	47.270	Dec	67.120	Feb 1990	
Lowest daily mean	1.850	19 Aug	1.093	27 Aug 1976	
Highest daily mean	160.900	13 Oct	253.600	28 Dec 1979	
Peak	200.900	13 Oct	300.500	28 Dec 1979	
10% exceedance	37.920		35.530		107
50% exceedance	9.416		10.500		90
95% exceedance	2.644		2.993		88
Annual total (million cu m)	513.10		524.50		98
Annual runoff (mm)	331		338		98
Annual rainfall (mm)	853		829		103
1941-70 rainfall average (mm)			840		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge
- Abstraction for public water supplies
- Augmentation from surface water and/or groundwater.
- Augmentation from effluent returns

Station and catchment description

Velocity-area station with cableway. (Replacement station for Bath St James). Upstream of the city of Bath. Situated immediately downstream of confluence with Bybrook. Section by railway bridge; area widely inundated in flood conditions, but all flows contained through bridge. Flows below 5 cumecs are inaccurate. Flows augmented by groundwater scheme in catchment. Mixed geology - predominantly clays and limestone with eastern tributaries rising from Chalk. Land use - mainly rural, some urbanisation.

054001 Severn at Bewdley 1993

Measuring authority NRA-ST
First year 1921
Grid reference 32 (SO) 782 762
Level stn (m OD) 17 00
Catchment area (sq km) 4325 0
Max alt (m OD) 827

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	38 750	71 680	23 260	17 500	26 480	75 740	17 700	32 530	15 690	28 120	19 330	37 740
2	36 310	65 460	26 500	16 480	25 620	57 770	16 590	23 100	14 700	35 700	18 970	37 310
3	35 050	63 210	25 370	17 890	23 500	56 570	16 790	21 900	14 020	33 330	19 560	44 150
4	34 750	59 630	23 380	16 630	22 480	55 730	15 460	25 850	13 230	30 210	19 400	50.140
5	43 230	50 790	22 600	20 870	21 450	44 930	14 450	26 020	13 770	41 990	22 030	88 990
6	72 570	48 270	20 610	57 210	19 860	36 410	14 050	44 990	13 680	60 690	21 250	70 530
7	65 500	44 670	21 120	74 200	18 180	32 820	14 250	29.830	13 900	72 810	20 010	104 500
8	54 720	42 500	20 510	67 250	18 150	29 460	13 650	24 250	16 560	72 740	20 330	188 700
9	55 380	40 680	20 360	82 240	16 790	27 450	15 530	22.910	18 250	75 440	20 440	212 700
10	90 750	37 930	20 300	76.570	18 150	37 200	16 160	22 990	54 140	65 030	25 850	244 500
11	185 800	36 390	19 340	40 860	20 760	89 470	17 560	29.620	97 460	59 860	37 350	265.100
12	210 000	34 850	19 200	46 090	23 260	137 000	16 660	61 380	66 530	70 140	33.890	235 500
13	201 700	32 540	18.930	67 540	18 300	138 400	16 370	53.110	60 460	110 500	101 600	229 300
14	215 500	32 200	18.390	61 210	17 890	88 830	18 260	36 010	108 600	112 300	197 600	251 500
15	206 200	32 110	17 800	49 870	23 690	78 520	21 130	31 300	78 340	75 930	207 500	274 000
16	186 400	30 680	17.570	42 800	23 480	71 810	23 560	28 420	56 050	60 320	154.000	267.100
17	158 700	30 260	17 810	38 510	36 710	58 210	24 750	25 920	48 630	51 700	102 900	268.100
18	130 700	29 610	18 390	36 720	77 860	56 200	21 660	22 410	48 560	44 830	74 400	250 700
19	106 400	28 830	19 650	58 470	73 560	51 790	23 680	19.990	41 670	38 960	60 630	232 800
20	105 600	28 030	17 890	60 630	52 350	42 870	40 860	19 300	36 770	34 600	51.180	251 300
21	148 300	25 910	17 490	41 660	49 590	38 230	33 050	18 160	37 520	32 240	44 630	293 200
22	149 400	24 880	17.560	36 360	52 900	33 280	23 760	23.400	38 130	30 380	41 260	289 600
23	140 200	24 930	21.510	34.810	40 980	30 120	22 950	22 630	45 600	28.410	37 580	318 600
24	129 000	26 040	20 680	36 400	35 870	26 940	19 610	27.380	38 330	26 910	34 860	384 200
25	129 600	26 630	17 470	39 850	34 870	24 560	21 770	23 060	32 570	25.990	33 240	390 900
26	104 200	25 090	16.910	40.180	64 470	24 570	23 830	19 330	32 840	24 990	33.420	301 100
27	103 800	23 530	16 220	41 500	91 170	22 940	28 160	17.940	29 030	23 580	37 390	198.800
28	126 400	24 470	16 680	34 790	97 030	21 700	31 820	17 580	27 090	22.140	35 080	174 900
29	106 200		16 140	27 380	78 940	20.040	30 710	16 400	25 670	21 700	33.610	184 100
30	86 690		15 880	29 030	64 560	18 840	31 810	16 450	25.830	20 580	34 730	220 700
31	77 140		16 320		76 610		40 290	15 720		19 380		235 900
Average	114 000	37 210	19 410	43 720	40 820	50 950	22 160	26 450	38 790	46 820	53.130	212 800
Lowest	34 750	23 530	15 880	16 480	16 790	18 840	13 650	15 720	13.230	19 380	18.970	37.310
Highest	215 500	71 680	26.500	82 240	97 030	138 400	40 860	61 380	108 600	112.300	207 500	390 900
Peak flow	222 20	75 69	32 43	112 80	102 50	164 30	64.83	86 34	118 10	123 80	215.30	406.30
Day of peak	15	1	2	9	28	12	31	12	14	13	14	24
Monthly total (million cu m)	305 40	90 01	52 00	113 30	109 30	132 10	59 35	70 84	100 50	125 40	137.70	570.00
Runoff (mm)	71	21	12	26	25	31	14	16	23	29	32	132
Rainfall (mm)	108	10	18	79	106	71	79	57	89	65	73	214

Statistics of monthly data for previous record (Apr 1921 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	114 400	101 600	74 840	52 780	37.840	29 180	22.570	27 920	36.100	53 560	89 600	100.600
	Low	22 100	21.200	23 200	15 880	10 230	9 804	9 587	7 461	7 668	10 490	21 730	17 850
	(year)	1963	1934	1943	1938	1938	1976	1976	1976	1949	1947	1942	1933
	High	250 600	232 300	261 900	112 400	131.600	117 400	91 240	92 360	126 700	140 700	238 300	297 400
	(year)	1939	1946	1947	1947	1969	1931	1968	1927	1946	1967	1940	1965
Runoff	Avg	71	57	46	32	23	17	14	17	22	33	54	62
	Low	14	12	14	10	6	6	6	5	5	7	13	11
	High	155	130	162	67	81	70	57	57	76	87	143	184
Rainfall	Avg	92	68	64	60	68	62	71	78	77	85	97	95
	Low	23	8	3	5	11	5	10	13	5	13	13	10
	High	226	170	175	128	186	136	193	161	209	174	244	294

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre 1993
Mean flow (m^3s^{-1})	59 170		61 560		96
Lowest yearly mean			36 460	1964	
Highest yearly mean			94 740	1960	
Lowest monthly mean	19 410	Mar	7 461	Aug 1976	
Highest monthly mean	212.800	Dec	297 400	Dec 1965	
Lowest daily mean	13 230	4 Sep	5 990	4 Sep 1976	
Highest daily mean	390 900	25 Dec	637 100	21 Mar 1947	
Peak	406.300	24 Dec			
10% exceedance	141.900		147 300		96
50% exceedance	34 280		37 120		92
95% exceedance	16 310		10 990		148
Annual total (million cu m)	1866 00		1943 00		96
Annual runoff (mm)	431		449		96
Annual rainfall (mm)	969		917		106
1941-70 rainfall average (mm)			936		

Factors affecting runoff

- Reservoir(s) in catchment.
- Flow influenced by groundwater abstraction and/or recharge.
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater
- Augmentation from effluent returns.

Station and catchment description

US gauge since 1988 previously velocity-area station with rock control. Peak flows from 1972. Stage monitoring site relocated in 1950 and 1970, lowest flows not reliable in earlier record. Sig. exports for PWS and CEGB, minimum flow maintained by Clywedog releases. Naturalised flow series accommodates major usages. Diverse catchment; wet western 50% from impermeable Palaeozoic rocks and river gravels; drier northern 50% from Drift covered Carboniferous to Liassic sandstones and marls. Moorland, forestry, mixed farming

054002 Avon at Evesham 1993

Measuring authority: NRA-ST
First year: 1936
Grid reference 42 (SP) 040 438
Level stn. (m OD) 19.50
Catchment area (sq km): 2210.0
Max alt (m OD) 320

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	13.500	17.760	9.987	9.432	9.446	11.160	6.673	6.044	5.224	9.760	7.528	25.430
2	12.830	16.600	9.928	8.513	9.015	9.968	6.525	6.031	5.085	10.820	7.461	21.870
3	12.510	15.830	9.405	8.618	8.583	10.120	6.276	5.930	5.055	11.050	7.518	17.950
4	13.270	14.740	8.831	11.960	7.892	9.564	6.073	5.808	5.014	13.010	7.254	17.460
5	16.550	13.630	8.690	16.010	7.811	8.332	5.963	6.075	4.972	17.700	7.020	17.970
6	32.730	12.940	8.646	13.800	7.582	7.817	5.957	5.946	5.003	26.200	6.850	16.450
7	44.030	12.810	8.525	11.890	7.572	7.342	5.734	5.715	5.272	43.030	6.850	15.390
8	33.630	12.330	8.496	10.690	7.351	7.138	6.173	5.513	13.550	53.600	6.881	26.590
9	26.340	12.420	8.487	57.910	7.189	7.356	13.720	5.644	19.020	36.010	8.024	45.220
10	65.910	12.350	8.446	49.960	7.550	7.702	13.940	5.699	14.360	28.610	14.620	34.050
11	86.740	11.980	8.218	45.750	8.103	27.900	11.260	5.684	9.140	29.750	16.170	23.160
12	58.730	11.580	8.386	39.420	7.313	46.280	9.655	5.896	9.287	48.440	13.490	63.510
13	128.900	11.330	8.179	28.650	7.129	43.360	10.370	5.663	17.390	78.740	55.960	108.000
14	190.300	11.560	8.109	20.420	7.608	41.690	12.740	5.532	16.340	74.080	117.400	94.640
15	145.900	11.220	7.948	14.940	7.692	33.750	10.370	5.391	12.370	50.050	97.600	83.330
16	61.540	10.920	8.072	13.190	7.036	28.970	11.860	5.664	9.674	24.600	58.390	54.040
17	40.900	10.970	7.874	11.440	8.057	24.090	12.730	5.735	10.210	16.770	27.020	35.260
18	31.200	10.790	7.862	10.740	7.207	19.970	8.379	5.350	8.839	13.480	20.080	29.840
19	27.620	10.590	7.678	10.030	6.716	15.710	8.213	5.441	7.749	11.650	16.010	42.880
20	25.200	10.310	7.475	9.703	10.390	12.570	7.745	5.014	8.322	10.710	13.720	60.090
21	23.050	9.870	8.032	9.293	22.400	10.740	6.775	5.317	9.293	9.828	12.470	75.720
22	22.330	9.617	10.030	8.857	12.140	9.674	6.662	8.501	8.676	9.271	11.720	64.890
23	24.030	9.286	9.156	9.397	8.827	8.963	6.512	8.224	7.290	9.026	10.750	64.560
24	25.620	9.094	8.021	10.860	7.778	8.450	11.440	6.668	6.847	8.873	10.330	66.530
25	22.060	9.731	7.597	16.710	7.566	7.979	9.924	5.913	6.710	8.720	11.460	45.030
26	20.510	11.200	7.564	15.810	36.270	7.727	8.250	5.641	6.488	8.568	13.250	31.460
27	26.730	10.640	7.493	14.580	30.810	7.355	7.936	5.493	6.329	8.415	14.770	25.150
28	29.320	9.993	7.452	11.910	32.440	7.152	7.507	5.375	7.969	8.336	12.790	47.380
29	25.370		7.412	10.460	25.750	6.880	7.480	5.308	7.579	8.118	13.070	65.010
30	21.630		7.715	9.674	18.720	6.816	7.153	5.288	7.539	7.911	26.000	64.960
31	19.460		8.343		14.080		6.387	5.170		7.618		61.730
Average	42.850	11.850	8.324	17.350	12.070	15.420	8.593	5.828	8.887	22.670	21.750	46.630
Lowest	12.510	9.094	7.412	8.513	6.716	6.816	5.734	5.014	4.972	7.618	6.850	15.390
Highest	190.300	17.760	10.030	57.910	36.270	46.280	13.940	8.501	19.020	78.740	117.400	108.000
Peak flow	218.40	86.57	10.28	83.32	53.18	50.71	18.81	10.87	23.43	93.27	125.00	110.50
Day of peak	13	2	22	9	26	13	9	22	9	13	14	13
Monthly total (million cu m)	114.80	28.68	22.30	44.98	32.32	39.96	23.02	15.61	23.03	60.72	56.37	124.90
Runoff (mm)	52	13	10	20	15	18	10	7	10	27	26	57
Rainfall (mm)	70	9	17	64	70	59	70	25	87	74	64	90

Statistics of monthly data for previous record (Dec 1936 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg	28.150	27.470	22.270	15.140	11.330	8.685	6.678	6.792	6.958	9.577	17.560	22.810
	Low	5.143	4.868	2.261	3.237	2.220	1.935	2.256	2.042	1.968	2.485	2.681	3.549
	(year)	1950	1944	1944	1938	1944	1944	1976	1943	1959	1959	1943	1943
	High	73.520	77.930	75.600	36.100	37.690	27.380	42.220	16.100	24.200	45.420	55.910	65.160
	(year)	1939	1977	1947	1987	1983	1977	1968	1969	1960	1960	1960	1965
Runoff:	Avg	34	30	27	18	14	10	8	8	8	12	21	28
	Low	6	6	3	4	3	2	3	2	2	3	3	4
	High	89	85	92	42	46	32	51	20	28	55	66	79
Rainfall: (1937-1992)	Avg	60	43	48	44	54	54	57	69	55	59	64	60
	Low	13	3	5	5	8	10	8	5	3	6	8	15
	High	127	122	140	94	130	121	122	130	127	150	163	121

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	18.600		15.230		122
Lowest yearly mean			6.895	1944	
Highest yearly mean			25.020	1960	
Lowest monthly mean	5.828	Aug	1.935	Jun 1944	
Highest monthly mean	46.630	Dec	77.930	Feb 1977	
Lowest daily mean	4.972	5 Sep	1.274	4 Oct 1959	
Highest daily mean	190.300	14 Jan	277.100	11 Jul 1968	
Peak	218.400	13 Jan	371.000	11 Jul 1968	
10% exceedance	44.110		33.840		130
50% exceedance	10.150		8.191		124
95% exceedance	5.587		2.970		188
Annual total (million cu m)	586.60		480.60		122
Annual runoff (mm)	265		217		122
Annual rainfall (mm)	699		667		105
1941-70 rainfall average (mm)			672		

Factors affecting runoff

- Reservoir(s) in catchment.
- Flow influenced by groundwater abstraction and/or recharge
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from effluent returns.

Station and catchment description

Velocity-area station. Recording site, control and gauging site are widely separated; recording at a site where all flows contained. Gauge site can measure out-of-bank flows. Extensive modification to flow regime from abstractions and returns. Large catchment of low relief, draining argillaceous rocks almost exclusively. Contains many large towns, but chief land use is agriculture.

054008 Teme at Tenbury 1993

Measuring authority: NRA-ST
First year: 1956
Grid reference: 32 (SO) 597 686
Level stn (m OD): 48 00
Catchment area (sq km): 1134 4
Max alt. (m OD): 546

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	10 130	13 870	5.602	3 867	6 787	10 450	5.266	3 132	2 251	7 149	5 317	10 270
2	9 653	13 200	5.542	3 672	6 436	10 520	4 998	3 122	2 187	9 906	5 249	9 945
3	9 327	12 430	5 343	4 304	6 061	9.257	4 816	3 041	2.182	7 895	5 534	9.959
4	9 478	11 900	5.160	5 131	5.803	8 197	4.653	3.347	2 155	7 564	5 510	13 130
5	12 510	11 260	5 101	7 838	5.640	7.459	4 452	3 839	2.145	15 300	5 232	12 110
6	15 000	10 690	5 047	7 221	5 450	6 938	4 286	3 450	2.190	17 740	5.103	12 420
7	12 940	10.230	4 930	10 530	5 276	6 407	4.173	3 292	2 191	14 710	4 958	27.140
8	11 810	9 877	4.843	10.040	5 122	6 065	4 191	3 186	2 477	13 860	4 801	34 700
9	12 340	9 665	4 798	53 510	5.026	5.856	5 230	3 092	3.370	17 080	5 095	50 920
10	41 020	9.437	4 719	37 080	5 152	6 476	4 902	2.981	5 152	12 850	7 231	37 180
11	48.800	9 073	4 688	39.130	5.258	27.140	4.368	3 078	3 821	14.400	6.305	28 540
12	34.720	8.685	4 603	38 820	4 850	40 320	4 096	3 376	4 277	18.670	6 206	68 010
13	74.130	8 377	4.535	26.050	4.742	24 400	4 636	3.067	10 320	37 890	65 070	70 120
14	68.660	8 137	4 399	20 000	4.741	28 340	5.581	2 922	8 445	28 710	71 240	68 180
15	67 730	7 954	4 250	16 260	4 538	22 280	5.138	3 486	7 199	20 480	44.010	77 900
16	56.010	7 731	4.191	14 080	4.521	19.240	4 866	3.108	7 097	15.800	29 090	64 380
17	44.140	7.552	4 130	12.650	5 482	16.700	4 249	2 842	7 117	13.140	22 080	52 610
18	34 320	7 391	4 058	11 690	6.081	15.920	4.207	2.718	6.269	11 370	17.940	46 360
19	30 770	7 123	3.950	10 740	5 258	12 850	4.912	2 663	5 538	10 240	15 300	60 930
20	27.580	6 812	3 957	10 020	5.666	11 080	4 431	2 605	5 487	9 474	13 400	65.200
21	24.510	6 627	4 011	9 316	9 287	10 050	3.992	2 687	5.532	8 730	12.300	62 680
22	23 440	6 406	4.116	8 772	6.502	9.235	3 740	3 153	5 253	7 932	10 950	70.610
23	23 700	6 226	3.880	9 056	5 725	8 476	3 624	3 086	4 799	7 433	10 010	86 970
24	23 120	6 092	3 711	8 458	5 336	7.715	3.829	2.836	4.577	7 020	9 728	87 520
25	21 290	6.128	3 593	8 891	6.807	7.201	3 835	2.632	4 354	6.645	9 792	62 070
26	19 290	6.183	3.544	8.923	12.280	6 898	3 835	2.565	4.129	6.323	9 801	47 710
27	19 220	5 887	3 565	8 385	12 970	6.525	3.835	2.506	3 922	6.119	9 379	36 590
28	18 760	5 601	3 576	7.718	11 610	6 114	3 835	2 487	3 831	5 931	8 870	58 540
29	16 930		3 536	7 371	10 240	5 891	3 835	2 450	3 824	5 830	8.875	53 160
30	15 550		3.611	7 090	13 230	5 613	3 723	2 403	5 541	5 576	11 130	58 390
31	14 540		3 832		12.060		3 323	2 291		5 405		55 840
Average	27 470	8 591	4.349	14 220	6 901	12 320	4.350	2 950	4.588	12.170	14.850	48 230
Lowest	9 327	5 601	3.536	3.672	4 521	5 613	3 323	2 291	2 145	5 405	4 801	9 945
Highest	74 130	13 870	5 602	53 510	13 230	40.320	5 581	3 839	10 320	37.890	71 240	86 970
Peak flow	106.60	14 03	5.70	68.28	16 38	59.66	5 88	3.96	13 23	45.11	83.96	103.30
Day of peak	13	1	2	9	26	11	14	5	13	13	13	23
Monthly total (million cu m)	73 56	20 78	11.65	36 86	18 48	31.93	11 65	7.90	11.89	32.59	38.49	129 20
Runoff (mm)	65	18	10	32	16	28	10	7	10	29	34	114
Rainfall (mm)	87	7	15	87	86	69	68	46	91	67	73	162

Statistics of monthly data for previous record (Oct 1956 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	28 460	24 870	21 330	14.700	10 050	5 919	4 053	4.142	5 909	10 730	16 520	24 720
	Low	6 281	7.267	7 435	4.599	2 569	1.558	1 010	0 744	1.075	1 347	3 087	5.567
	(year)	1964	1992	1976	1990	1976	1976	1976	1976	1990	1959	1975	1975
	High	51 630	58 160	51 940	32 850	35 380	13.090	21 920	16 680	29 650	43 130	50 140	57 290
	(year)	1960	1990	1981	1987	1969	1969	1968	1957	1958	1960	1960	1965
Runoff	Avg	67	53	50	34	24	14	10	10	14	25	38	58
	Low	15	16	18	11	6	4	2	2	2	3	7	13
	High	122	124	123	75	84	30	52	39	68	102	115	135
Rainfall	Avg.	87	64	70	59	61	59	59	73	77	75	82	90
	Low	23	8	5	7	9	12	15	23	3	17	33	23
	High	157	138	146	132	174	125	122	170	211	183	169	183

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre 1993
Mean flow (m^3s^{-1})	13 480		14 240		95
Lowest yearly mean			7.279	1964	
Highest yearly mean			23 490	1960	
Lowest monthly mean	2 950	Aug	0 744	Aug 1976	
Highest monthly mean	48 230	Dec	58 160	Feb 1990	
Lowest daily mean	2 145	5 Sep	0 647	27 Aug 1976	
Highest daily mean	86 970	23 Dec	248 900	4 Dec 1960	
Peak	106 600	13 Jan	266 500	4 Dec 1960	
10% exceedance	36 900		33 920		109
50% exceedance	6 951		8 426		82
95% exceedance	2 720		1 531		178
Annual total (million cu m)	425 10		449 40		95
Annual runoff (mm)	375		396		95
Annual rainfall (mm)	858		856		100
1941 70 rainfall average (mm)			878		

Factors affecting runoff

- Augmentation from effluent returns.
- Natural to within 10% at 95 percentile flow.

Station and catchment description

Velocity-area station with a gravel control. Upstream shoaling may render low flow rating variable from year to year. Rarely goes out of bank. Adjustments small and dispersed; natural catchment. Left bank characterised by high relief hills and broad valleys. Steep and narrow on the right bank. Geology mainly Palaeozoic sediments with Pre-Cambrian crystalline rocks of the Longmynd. Relatively Drift free, some valley gravel and Boulder Clay in the lower reaches. Forestry, grazing.

056001 Usk at Chain Bridge 1993

Measuring authority: NRA-WEL
First year: 1957
Grid reference: 32 (SO) 345 056
Level stn. (m OD): 22.60
Catchment area (sq km): 911.7
Max alt. (m OD): 886

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	16.750	33.310	9.664	7.291	13.670	23.670	8.916	8.169	4.397	17.880	9.716	20.500
2	15.790	30.330	9.454	6.738	12.720	27.240	8.517	8.485	4.266	20.470	9.514	19.170
3	15.140	27.730	8.927	9.732	11.820	23.430	8.133	9.341	4.170	15.400	10.790	21.380
4	17.470	25.590	8.633	13.480	11.170	19.490	7.780	8.733	4.044	16.440	11.180	68.010
5	27.310	23.790	8.468	45.040	10.580	16.950	7.401	14.270	3.953	33.640	9.892	33.370
6	25.740	22.120	8.401	21.060	10.120	15.290	7.070	9.529	3.932	48.670	9.352	36.380
7	25.300	20.950	8.209	19.490	9.645	13.810	6.931	8.537	4.434	43.870	8.968	76.940
8	24.540	20.130	8.015	21.330	9.213	12.610	6.954	7.992	7.111	45.610	8.761	143.600
9	39.380	19.080	7.826	71.990	8.999	12.060	12.430	8.119	48.070	41.930	9.080	77.520
10	220.400	17.930	7.703	35.920	8.976	19.440	9.924	8.657	28.290	55.200	16.150	67.700
11	133.400	17.020	7.784	41.940	8.743	43.410	8.284	9.210	17.130	50.790	11.850	48.550
12	79.650	16.080	7.504	39.990	8.363	43.460	7.419	10.000	18.760	47.870	11.700	132.200
13	181.000	15.190	7.274	34.390	8.208	26.350	7.742	8.215	29.660	79.680	93.780	116.700
14	98.270	14.530	7.084	26.860	8.529	28.490	12.570	7.285	19.320	46.060	61.000	120.600
15	165.800	14.220	6.950	23.050	8.204	24.910	11.400	7.012	15.590	35.990	35.780	145.400
16	94.370	13.960	6.874	20.550	9.962	37.540	14.890	6.661	14.770	29.740	27.650	101.400
17	95.970	13.280	6.859	19.520	38.420	30.390	10.660	6.182	13.470	25.530	23.150	79.540
18	67.530	12.750	6.705	18.430	28.970	33.120	9.180	5.924	11.550	22.510	20.220	158.000
19	77.010	12.180	6.609	17.660	20.380	24.590	11.570	5.728	10.700	20.350	18.000	236.300
20	136.000	11.640	6.497	16.200	15.630	21.220	9.419	5.545	11.910	18.770	16.310	125.000
21	120.600	11.280	6.537	16.070	13.750	18.550	8.362	5.674	14.920	17.300	15.460	83.740
22	100.800	10.950	7.325	15.480	12.380	16.800	7.851	7.049	18.180	15.780	14.100	116.700
23	87.170	10.800	7.712	27.360	11.840	15.320	7.527	7.759	16.220	14.710	13.100	102.400
24	71.440	10.360	6.671	20.750	10.740	13.880	17.090	6.188	13.710	13.810	13.980	76.660
25	54.150	10.370	6.322	24.380	11.020	12.780	11.270	5.577	12.480	13.060	22.810	60.490
26	63.510	12.050	6.136	20.780	18.590	12.140	9.884	5.321	11.170	12.380	19.560	48.240
27	71.550	10.680	6.055	19.730	20.680	11.570	10.510	5.103	10.290	11.840	15.880	42.770
28	58.000	9.913	6.035	17.110	15.630	10.590	10.150	4.993	9.710	11.480	14.520	72.710
29	48.120		6.033	15.650	15.060	9.952	11.400	4.855	11.010	11.160	15.710	72.230
30	40.670		6.502	14.630	46.080	9.424	10.620	4.730	19.460	10.490	27.320	71.310
31	37.690		8.387		31.230		8.656	4.582		10.050		77.510
Average	74.470	16.720	7.392	23.420	15.140	20.950	9.694	7.272	13.760	27.690	19.840	85.580
Lowest	15.140	9.913	6.033	6.738	8.204	9.424	6.931	4.582	3.932	10.050	8.761	19.170
Highest	220.400	33.310	9.684	71.990	46.080	43.460	17.090	14.270	48.070	79.680	93.780	236.300
Peak flow	3.27		9.72	101.50	69.60	73.99	29.08	17.86	80.38	103.90	127.10	369.00
Day of peak	10		1	9	17	10	24	5	9	13	13	19
Monthly total (million cu m)	199.50	40.45	19.80	60.70	40.55	54.30	25.96	19.48	35.66	74.17	51.43	229.20
Runoff (mm)	219	44	22	67	44	60	28	21	39	81	56	251
Rainfall (mm)	230	15	28	118	111	93	102	52	135	109	95	276

Statistics of monthly data for previous record (Mar 1957 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	52.110	42.660	35.130	23.850	16.690	10.850	8.161	10.820	15.900	28.100	40.080	50.230
	Low	10.850	12.680	10.010	8.121	6.051	4.273	3.390	2.698	2.939	4.303	13.760	17.770
	(year)	1964	1963	1962	1974	1990	1957	1976	1976	1959	1978	1988	1988
	High	88.650	116.000	100.700	49.330	46.590	26.740	27.490	38.540	45.680	86.350	99.840	112.700
	(year)	1974	1990	1981	1985	1983	1972	1968	1985	1974	1967	1960	1959
Runoff:	Avg	153	114	103	68	49	31	24	32	45	83	114	148
	Low	32	34	29	23	18	12	10	8	8	13	39	52
	High	260	308	296	140	137	76	81	113	130	254	284	331
Rainfall:	Avg	159	114	118	85	86	77	78	99	120	138	149	167
	Low	28	10	15	8	9	17	21	25	8	19	55	46
	High	331	289	303	175	221	144	177	247	259	325	323	351

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	27.090		27.830		97
Lowest yearly mean			14.880	1973	
Highest yearly mean			44.050	1960	
Lowest monthly mean	7.272	Aug	2.698	Aug 1976	
Highest monthly mean	85.580	Dec	116.000	Feb 1990	
Lowest daily mean	3.932	6 Sep	1.607	27 Aug 1976	
Highest daily mean	236.300	19 Dec	585.400	27 Dec 1979	
Peak	369.000	19 Dec	945.000	27 Dec 1979	
10% exceedance	71.440		63.890		112
50% exceedance	14.700		16.480		89
95% exceedance	5.966		4.185		143
Annual total (million cu m)	854.30		878.20		97
Annual runoff (mm)	937		963		97
Annual rainfall (mm)	1304		1388		98
1941-70 rainfall average (mm)			1378		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies.
- Augmentation from surface water and/or groundwater

Station and catchment description

Velocity-area station; permanent cableway. Low flows measured at complementary station downstream (56010 - Trostrey weir). There is a partial impact on flows resulting from three large existing public water supply reservoirs in upper catchment. Intake to canal upstream of gauge. Some naturalised flows available. Geology - mainly Old Red Sandstone. Hill farming in upper areas, with dairy or livestock farming below; forest 3%. Peaty soils in uplands, seasonally wet.

062001 Teifi at Glan Teifi 1993

Measuring authority: NRA-WEL
First year: 1959

Grid reference: 22 (SN) 244 416
Level stn. (m OD): 5.20

Catchment area (sq km): 893.6
Max alt. (m OD): 593

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	16 730	41 780	12.900	9 231	11 310	35 270	13 120	11 310	7 515	21 360	9.983	29 070
2	15 750	36 990	12 520	8 692	10.730	31 630	11 440	10 990	7 245	20 920	9 776	26 610
3	16 050	31 980	11 990	10 250	10 230	28 880	10 690	10 810	7 075	29.010	18 350	35 260
4	18.340	26 310	11 520	17.130	9.776	24 710	10 160	13.520	6 799	32 090	13.890	61 400
5	24 780	23.660	11 320	41.170	9 369	21.460	9.555	14.600	6 497	44.930	12.190	48 950
6	24 960	21 650	11 250	25 000	8 936	19 100	9 105	13.140	6.255	62 070	11.150	56.180
7	22.940	20 010	10 970	39 300	8 600	17.440	8 765	11 650	6.525	63 350	11.010	75 180
8	23 170	18.690	10 560	39 830	8.233	16 090	9.116	11 290	7 493	49 390	11 430	87 870
9	34 600	17.530	10 230	61 110	8 142	15.950	13 470	13 370	15 920	46 700	22 050	78 640
10	98 880	16 400	9.976	45 330	7.995	22.250	11.920	14 930	22 270	42 840	29.110	71.270
11	95 330	15 400	9 654	38 270	7 606	101 200	11.550	15 340	18 650	39 620	27.960	55 160
12	78 350	14 540	9 383	32 200	6 692	118 700	11 720	14 710	17 300	37 740	38 650	86 600
13	100 300	13 810	9 002	29 140	6.784	90 640	13 340	12 980	16 250	33 360	124 900	106 000
14	88.860	13 120	8 681	24 120	7 672	75.490	23 460	11.350	14 660	28 950	129 900	106 200
15	116 500	13.540	8 378	21 250	8.751	61 830	24 830	10 380	12 830	27.150	99.140	99.230
16	94 700	13.710	8 357	19 400	29 310	70 080	23.980	9 704	12 490	24.380	67.650	83 160
17	83.430	12 840	8 617	18 460	64 990	60 600	19 000	8.925	11 800	21.940	50 970	81 270
18	67.340	12 260	8 530	18 440	45 430	56 550	16 180	8 046	10 550	20 320	42 520	110 300
19	67 750	11 800	7 897	19 610	43.790	46 920	16 640	7 722	10 670	19 070	36 340	129 200
20	80 170	11 080	7 609	18 030	31 300	40.730	14 620	7 704	14 420	18 220	31 080	108 200
21	79.210	10 680	8.569	15 900	25.710	34 060	12 760	10 410	46 400	17 360	27 470	83.370
22	74 500	10 990	11 720	16 560	22.630	28 830	11.350	16 880	37 180	16 340	24 350	89 840
23	66 920	10.220	10 660	18.800	20 040	25 180	10 740	16.020	28 520	15.440	22 000	88 790
24	57.240	9 719	8.935	16 560	24.460	22 240	10 950	13 130	23 140	14 650	22 540	83 710
25	48 870	15 140	8.202	15 790	25 670	20 010	10 390	10 840	21 140	13 510	24.670	74 790
26	59 430	16 850	7 805	16 460	31 600	18.920	10 890	9 860	19 950	12 490	23.970	59 080
27	113 000	14 870	7 562	15 030	28 200	19.300	11.990	9 144	18 720	12 000	20 980	55.510
28	115 000	13 700	7 555	13 610	24 430	17 220	11.910	8 613	16 740	11 610	18 940	72 730
29	77 810		7 643	12 580	25 650	15.320	13 830	8 345	16 380	11.140	23 900	64.760
30	56.480		10.520	11 860	47 840	14 240	14.840	8 185	22.830	10 680	29.110	60 310
31	47 560		10 230		39 080		13 480	7.871		10 310		61.550
Average	63 390	17 470	9 637	22 970	21 320	39 030	13 410	11 350	16.140	26.740	34 530	75.170
Lowest	15.750	9 719	7 555	8 692	6 692	14 240	8.765	7 704	6 255	10 310	9 776	26.610
Highest	116 500	41.780	12 900	61 110	64 990	118.700	24 830	16 880	46 400	63 350	129 900	129 200
Peak flow	123.70	44 14	13.19	67 67	71.13	143 60	26.99	23 39	54 84	75 71	138.50	146 00
Day of peak	15	1	1	9	17	11	14	27	21	7	14	18
Monthly total (million cu m)	169 80	42 27	25 81	59 54	57 11	101.20	35.92	30 39	41 84	71 62	89.51	201 30
Runoff (mm)	190	47	29	67	64	113	40	34	47	80	100	225
Rainfall (mm)	203	34	37	100	145	127	103	77	110	72	137	246

Statistics of monthly data for previous record (Jul 1959 to Dec 1992—incomplete or missing months total 0.2 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows	Avg	48.000	38 780	32 310	22 760	17 080	10 870	8.253	12 420	16 640	34 930	46.660	52.900
	Low	7 086	11.140	8 280	7 481	4 228	2 975	1 819	1 127	1 073	3 886	16.060	17.270
	(year)	1963	1965	1962	1974	1984	1984	1984	1976	1959	1972	1983	1991
	High	106 000	87 130	96 730	41 810	36 780	41 700	24.930	39 210	48.680	102 000	85.130	93 960
	(year)	1974	1990	1981	1985	1979	1972	1968	1985	1974	1981	1986	1965
Runoff	Avg	144	106	97	66	51	32	25	37	48	105	135	159
	Low	21	30	25	22	13	9	5	3	3	12	47	52
	High	318	236	290	121	110	121	75	118	141	306	247	282
Rainfall	Avg	146	97	106	86	76	80	80	102	114	152	153	158
	Low	28	2	25	10	17	17	25	16	10	40	75	28
	High	326	213	312	163	168	148	166	235	242	293	279	315

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	29 450		28 440		104
Lowest yearly mean			18 860	1964	
Highest yearly mean			38 230	1974	
Lowest monthly mean	9 637	Mar	1 073	Sep 1959	
Highest monthly mean	75.170	Dec	106.000	Jan 1974	
Lowest daily mean	6.255	6 Sep	0.731	25 Aug 1976	
Highest daily mean	129 900	14 Nov	373 600	18 Oct 1987	
Peak	146 000	18 Dec	448 800	18 Oct 1987	
10% exceedance	74 950		63 870		117
50% exceedance	17 600		18 680		94
95% exceedance	7.744		3 000		258
Annual total (million cu m)	928 70		897.50		103
Annual runoff (mm)	1039		1004		103
Annual rainfall (mm)	1391		1350		103
1941-70 rainfall average (mm)			1364		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies

Station and catchment description

Velocity-area station. Straight reach (width: 35m), natural control. Flood flows spill over right bank. Public water supply impounding reservoirs in upland area where there is mostly hill farming. Tregaron bog (10 sq. km.) has partial effect on flows; sensibly natural regime. Geology - mainly Ordovician and Silurian deposits. Dairy farming predominates in southern area. Forest: 5%. Peaty soils on hills, seasonally wet. Apart from Tregaron bog, most of the lower areas have soils with permeable substrate.

067015 Dee at Manley Hall 1993

Measuring authority: NRA-WEL
First year: 1937
Grid reference: 33 (SJ) 348 415
Level stn. (m OD): 25.40
Catchment area (sq km): 1019.3
Max alt. (m OD): 884

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	17.900	35.520	10.530	11.220	10.750	45.910	9.694	12.780	10.980	15.930	9.969	13.800
2	17.690	31.210	10.730	10.820	10.180	36.220	9.570	12.210	10.890	15.100	10.210	17.930
3	16.290	28.640	10.440	12.610	9.857	29.600	9.706	11.090	10.760	14.310	11.040	24.670
4	18.990	26.410	10.270	13.890	9.951	25.530	10.010	18.580	10.670	14.410	11.820	44.940
5	24.880	23.670	10.620	26.710	10.240	21.290	10.080	43.660	10.540	15.200	14.690	37.410
6	24.520	21.590	10.710	36.110	10.240	18.220	9.794	29.000	10.360	16.450	15.640	46.230
7	23.440	20.080	10.280	34.490	9.940	16.350	9.766	19.820	10.650	18.380	16.600	86.620
8	25.580	18.030	10.060	34.860	9.874	15.100	9.918	18.570	12.830	22.010	17.660	158.700
9	34.390	16.610	9.883	81.200	10.050	14.090	10.380	20.070	26.120	20.970	16.320	199.100
10	71.650	15.500	10.210	68.310	11.460	15.090	10.090	20.920	31.000	20.220	17.890	143.000
11	78.200	14.100	9.923	59.650	13.000	55.580	10.350	28.760	29.450	18.930	15.460	102.900
12	69.440	12.820	9.867	45.420	10.450	66.290	10.010	37.240	34.520	36.580	15.110	121.200
13	69.960	11.980	9.951	30.420	11.550	43.380	9.980	29.030	62.280	35.230	38.870	115.600
14	58.760	11.300	9.799	25.240	12.990	34.310	11.190	21.600	44.960	28.360	65.880	131.900
15	92.150	10.750	10.020	22.690	12.980	29.190	12.290	22.340	39.870	24.980	47.500	140.500
16	82.370	10.280	10.570	22.780	28.880	26.720	11.360	18.570	34.130	22.370	40.700	133.400
17	70.100	10.130	11.050	23.890	66.150	23.690	15.980	15.730	29.250	20.590	36.680	103.500
18	57.620	9.981	10.460	32.260	63.480	22.680	17.390	14.970	24.440	18.540	34.340	108.000
19	62.520	9.726	10.080	39.450	43.360	20.730	15.020	14.460	22.400	16.640	31.950	166.200
20	74.360	9.321	10.280	34.200	30.500	18.670	12.560	14.360	22.820	15.620	29.910	146.500
21	85.690	9.074	10.930	26.820	38.030	16.330	9.647	14.240	21.830	15.220	28.560	110.700
22	86.550	9.001	11.520	19.300	27.980	14.660	9.139	15.280	20.240	13.150	25.970	173.800
23	85.450	9.527	10.500	19.050	24.330	12.910	9.204	15.140	19.250	11.900	20.410	177.900
24	75.600	9.438	9.824	20.820	22.420	11.600	10.680	14.010	19.040	11.070	16.180	143.700
25	65.550	9.570	10.150	21.810	45.210	11.420	11.200	13.270	18.320	10.370	15.440	98.330
26	59.210	10.920	10.470	20.910	43.740	11.070	10.900	12.820	17.640	9.946	14.710	73.580
27	64.950	11.490	11.080	19.970	43.400	10.260	12.880	12.440	17.160	9.573	13.060	59.890
28	60.100	10.920	11.360	17.010	35.600	9.750	16.120	12.130	16.080	9.619	11.900	65.850
29	52.430		11.350	14.280	30.140	9.446	15.020	11.840	15.800	9.684	11.190	99.150
30	45.580		11.580	11.450	45.160	9.809	15.280	11.580	17.090	9.763	13.420	102.400
31	40.690		11.430		59.690		13.190	11.210		9.647		98.100
Average	55.250	15.270	10.510	28.590	26.180	23.200	11.560	18.310	22.380	17.120	22.300	104.700
Lowest	16.290	9.001	9.799	10.820	9.857	9.446	9.139	11.090	10.360	9.573	9.969	13.800
Highest	92.150	35.520	11.580	81.200	66.150	66.290	17.390	43.660	62.280	36.580	65.880	199.100
Peak flow	117.60	38.19	11.97	99.15	79.87	91.52	19.26	53.85	74.53	46.12	80.01	264.70
Day of peak	15	1	30	9	17	11	18	4	13	12	14	9
Monthly total (million cu m)	148.00	36.94	28.16	74.10	70.12	60.13	30.97	49.05	58.01	45.86	57.81	280.40
Runoff (mm)	145	36	28	73	69	59	30	48	57	45	57	275
Rainfall (mm)	192	20	28	131	162	81	92	94	115	60	81	373

Statistics of monthly data for previous record (Oct 1937 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	51.840	44.780	33.890	24.610	17.230	13.800	13.000	17.180	23.240	33.110	47.070	52.110
	Low	13.460	7.858	8.128	7.841	4.273	3.742	3.113	3.288	3.052	4.216	11.580	18.610
	(year)	1964	1963	1943	1938	1938	1961	1949	1955	1949	1947	1937	1963
	High	109.300	106.700	103.700	61.030	41.940	31.240	40.270	59.400	69.470	92.470	103.000	105.200
	(year)	1948	1946	1947	1970	1969	1972	1957	1957	1950	1967	1960	1965
Runoff:	Avg.	136	107	89	63	45	35	34	45	59	87	120	137
	Low	35	19	21	20	11	10	8	9	8	11	29	49
	High	287	253	273	155	110	79	106	156	177	243	262	277
Rainfall:	Avg.	151	111	106	85	90	82	93	109	119	141	159	157
	Low	41	14	33	10	18	13	20	9	13	25	15	36
	High	338	252	251	182	197	168	244	211	306	317	300	314

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	29.950		30.930		97
Lowest yearly mean			20.460	1964	
Highest yearly mean			44.600	1954	
Lowest monthly mean	10.510	Mar	3.052	Sep 1949	
Highest monthly mean	104.700	Dec	109.300	Jan 1948	
Lowest daily mean	9.001	22 Feb	1.926	30 Jul 1949	
Highest daily mean	199.100	9 Dec	521.000	14 Dec 1964	
Peak	264.700	9 Dec	665.400	14 Dec 1964	
10% exceedance	69.350		70.540		98
50% exceedance	16.950		19.340		88
95% exceedance	9.758		5.307		184
Annual total (million cu m)	944.50		976.10		97
Annual runoff (mm)	927		958		97
Annual rainfall (mm)	1429		1403		102
1941-70 rainfall average (mm)			1395		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies.
- Flow reduced by industrial and/or agricultural abstractions.
- Augmentation from surface water and/or groundwater.

Station and catchment description

Asymmetrical compound Crump profile weir, checked by current meter. Drowns at flows above 200 cumecs. Low flows maintained by releases from major river regulating res. (Celyn and Brenig). Data prior to February 1970 is poorer quality - based on d/s Erbistock (67002, area: 1040.0 sq. km.) flow record. D/s flood attenuation is notable. Geology is 75% shales, slates, mudstones and palaeozoic grits; 25% extrusive igneous and Carboniferous rocks. 80% grazed open moorland, 12% forestry, remainder arable, urban negligible.

068001 Weaver at Ashbrook 1993

Measuring authority: NRA-NW
First year: 1937

Grid reference: 33 (SJ) 670 633
Level stn. (m OD): 16.30

Catchment area (sq km): 622.0
Max alt. (m OD): 222

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3.796	6.965	2.696	2.045	2.176	9.224	1.881	1.696	1.238	2.739	2.093	3.587
2	3.638	6.055	2.664	1.964	2.105	7.034	1.769	1.745	1.309	5.325	2.094	3.386
3	3.541	5.703	2.573	2.457	2.035	5.181	1.726	1.739	1.338	3.766	2.292	3.251
4	3.639	5.587	2.462	2.695	2.047	4.344	1.695	2.150	1.296	3.202	2.221	4.208
5	5.839	5.116	2.458	3.611	2.009	3.728	1.694	2.370	1.247	10.270	2.212	4.165
6	8.181	4.686	2.454	3.013	2.027	3.236	1.630	1.899	1.260	14.790	2.175	6.337
7	6.915	4.533	2.417	2.675	2.050	2.901	1.629	1.849	1.375	9.255	2.176	20.880
8	6.146	4.421	2.401	2.565	2.040	2.644	1.678	1.817	2.595	5.929	2.120	27.980
9	7.147	4.283	2.367	14.490	2.168	2.619	1.982	2.615	2.411	11.090	6.267	31.920
10	12.750	4.003	2.330	14.350	2.910	3.106	2.715	2.445	2.665	7.839	8.167	15.870
11	20.830	3.816	2.310	7.323	3.476	17.690	2.108	2.779	2.000	5.434	6.460	11.640
12	13.110	3.624	2.307	7.305	2.693	18.920	1.827	3.539	2.042	12.260	5.266	28.870
13	18.010	3.530	2.286	7.045	2.522	8.768	2.260	3.039	2.715	11.020	16.570	31.240
14	21.810	3.395	2.220	4.930	3.524	13.290	3.112	2.882	2.419	7.962	33.610	24.540
15	21.560	3.336	2.155	4.023	2.684	10.530	4.783	3.751	2.400	5.361	18.470	36.290
16	15.650	3.237	2.138	3.420	2.505	6.771	3.633	2.627	2.217	4.066	10.410	25.980
17	11.050	3.386	2.175	3.146	2.784	5.604	3.051	2.091	2.174	3.381	7.699	18.150
18	8.497	3.488	2.160	3.462	2.694	6.213	3.313	1.925	1.940	3.104	5.786	15.680
19	7.738	3.299	2.105	3.120	1.794	4.155	4.234	1.860	1.756	3.084	4.642	19.760
20	7.038	2.894	2.071	2.903	2.351	3.471	3.494	1.864	2.138	3.244	4.118	17.690
21	6.078	2.820	2.070	2.716	3.102	3.061	2.286	1.618	2.538	3.134	3.739	23.820
22	5.730	2.812	2.300	2.547	2.520	2.829	2.151	1.794	2.325	2.766	3.540	30.000
23	6.412	2.860	2.187	2.616	2.136	2.645	1.995	1.660	2.000	2.539	3.330	30.560
24	6.335	2.896	1.971	2.476	2.305	2.394	1.901	1.564	1.895	2.440	3.151	29.130
25	5.701	3.004	1.921	2.751	1.814	2.260	1.995	1.465	1.781	2.367	3.132	20.590
26	12.920	3.064	1.883	2.590	5.509	2.205	1.994	1.483	1.686	2.334	3.127	14.350
27	19.690	2.953	1.877	2.452	22.970	2.123	2.112	1.650	1.626	2.297	3.039	11.270
28	15.030	2.706	1.876	2.283	29.890	2.000	2.066	1.518	1.593	2.292	2.968	29.010
29	12.350		1.875	2.340	17.500	1.873	2.800	1.409	1.618	2.219	3.239	28.880
30	10.260		1.911	2.271	14.930	1.929	2.176	1.364	2.067	2.156	3.745	21.430
31	8.498		2.067		12.880		1.807	1.328		2.085		18.430
Average	10.190	3.874	2.216	4.053	5.295	5.425	2.371	2.050	1.922	5.153	5.929	19.640
Lowest	3.541	2.706	1.875	1.964	1.794	1.873	1.629	1.328	1.238	2.085	2.093	3.251
Highest	21.810	6.965	2.696	14.490	29.890	18.920	4.783	3.751	2.715	14.790	33.610	36.290
Peak flow	26.32	7.44	2.80	24.07	33.88	26.34	6.15	5.74	3.42	16.61	37.22	41.42
Day of peak	14	1	1	9	28	11	15	14	8	6	14	14
Monthly total (million cu m)	27.29	9.37	5.94	10.50	14.18	14.06	6.35	5.49	4.98	13.80	15.37	52.61
Runoff (mm)	44	15	10	17	23	23	10	9	8	22	25	85
Rainfall (mm)	65	8	12	63	111	59	78	49	62	58	52	125

Statistics of monthly data for previous record (Oct 1937 to Dec 1992—incomplete or missing months total 1.8 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	10.380	9.016	6.808	4.919	3.684	2.754	2.711	2.948	3.164	4.399	7.637	9.418
	Low	1.966	2.376	2.183	1.491	0.905	1.125	0.737	0.641	0.918	1.184	1.302	2.430
	(year)	1964	1965	1938	1938	1946	1962	1976	1976	1964	1947	1942	1947
	High	21.950	19.860	18.580	11.760	22.720	6.996	12.750	8.405	16.990	15.970	22.540	22.250
	(year)	1939	1980	1947	1986	1969	1954	1968	1971	1957	1954	1954	1965
Runoff:	Avg.	45	35	29	20	16	11	12	13	13	19	32	41
	Low	8	9	9	6	4	5	3	3	4	5	5	10
	High	95	80	80	49	98	29	55	36	71	69	94	96
Rainfall:	Avg.	67	49	51	49	58	59	67	71	65	69	76	69
	Low	18	2	16	2	9	13	16	6	5	15	13	10
	High	145	145	127	98	194	142	168	175	169	137	170	140

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	5.706		5.639		101
Lowest yearly mean			2.752	1964	
Highest yearly mean			9.209	1954	
Lowest monthly mean	1.922	Sep	0.641	Aug 1976	
Highest monthly mean	19.640	Dec	22.720	May 1969	
Lowest daily mean	1.238	1 Sep	0.394	17 Aug 1976	
Highest daily mean	36.290	15 Dec	84.950	9 Feb 1946	
Peak	41.420	14 Dec	212.400	8 Feb 1946	
10% exceedance	15.180		12.380		123
50% exceedance	2.865		3.201		90
95% exceedance	1.633		1.149		142
Annual total (million cu m)	179.90		178.00		101
Annual runoff (mm)	289		286		101
Annual rainfall (mm)	742		750		99
1941-70 rainfall average (mm)			765		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge.
- Abstraction for public water supplies.
- Augmentation from effluent returns.

Station and catchment description

Initially a river section (from 1937). Early gaugings lost; rating accuracy unknown. Mobile control. Data before 1972, particularly low flows, unreliable. Unstable low flow rating led to relocation 400m d/s with an informal Flat V control and cableway in 8/78. Prone to weed and algal growth. High flow rating (above 40 cumec) has yet to be defined. Flat catchment includes western half of Crewe. Post glacial deposits over (mostly) Keuper Marl.

072004 Lune at Caton 1993

Measuring authority: NRA-NW
First year: 1959

Grid reference: 34 (SD) 529 653
Level stn. (m OD): 10.70

Catchment area (sq km): 983.0
Max alt. (m OD): 736

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	10.070	27.530	7.532	8.486	11.500	63.480	4.502	13.580	5.167	10.730	4.730	33.960
2	9.448	23.290	7.309	7.570	10.390	44.150	4.420	11.680	4.983	21.210	4.607	105.200
3	9.491	20.180	7.252	9.568	10.000	31.090	4.580	33.890	4.817	15.480	4.717	96.860
4	16.320	18.060	6.970	18.830	8.826	22.090	6.473	30.260	4.705	23.180	5.577	144.000
5	81.910	16.270	7.501	107.900	8.140	17.200	6.935	108.900	4.553	22.220	5.500	49.810
6	28.680	15.040	10.670	66.820	7.842	13.910	4.943	35.160	4.437	24.650	5.042	89.360
7	28.150	14.040	8.811	29.160	7.373	11.970	4.404	39.360	4.207	35.380	5.162	85.890
8	32.980	13.280	7.499	31.600	6.813	10.510	20.230	32.460	5.153	22.100	4.971	245.400
9	103.500	12.340	6.634	138.100	6.359	14.240	17.670	91.290	9.609	16.190	14.220	108.900
10	215.000	11.480	6.054	53.190	6.106	12.170	10.210	34.940	105.400	14.170	17.970	125.600
11	87.310	10.840	6.427	28.300	6.053	11.910	7.879	97.660	31.920	11.950	10.980	71.050
12	48.450	10.210	6.411	23.310	5.607	10.010	6.422	61.270	18.820	14.220	23.610	92.070
13	149.300	9.690	8.830	21.880	15.150	8.769	5.680	33.100	99.110	16.020	33.930	110.300
14	59.190	9.287	7.409	16.310	112.200	8.908	6.720	23.120	51.390	11.340	40.920	124.500
15	154.400	8.721	6.215	13.580	53.880	9.236	11.960	20.730	37.150	9.719	18.750	217.900
16	96.520	8.285	8.753	19.260	113.400	11.450	33.390	16.390	19.590	8.721	13.620	99.850
17	69.960	8.031	15.790	29.710	107.900	9.274	19.870	13.540	14.700	8.076	11.130	64.240
18	103.700	8.450	18.440	191.400	59.240	38.210	24.820	11.670	11.740	7.443	9.493	268.000
19	140.100	10.740	11.620	69.330	29.790	20.050	80.110	11.010	10.100	7.150	8.313	306.400
20	93.810	8.925	9.152	40.650	25.140	14.820	63.040	12.810	23.580	7.402	7.518	72.960
21	142.100	8.472	34.810	41.850	32.650	10.100	37.460	11.110	20.050	7.938	7.423	46.270
22	72.040	7.406	16.140	27.910	20.610	8.544	19.790	9.162	15.980	6.996	6.840	134.800
23	135.100	7.118	13.020	42.290	15.710	7.561	51.670	8.264	11.850	6.483	5.971	109.500
24	95.520	6.841	11.970	40.420	12.810	6.997	29.490	7.491	10.060	6.127	6.455	58.870
25	51.670	8.500	9.908	75.370	11.050	6.429	27.670	7.004	9.279	5.816	6.919	37.790
26	48.460	13.330	8.646	37.190	10.230	8.441	30.730	6.587	8.350	5.606	7.046	28.320
27	56.620	9.768	7.941	24.720	12.570	7.401	38.010	6.240	7.649	5.353	6.627	23.520
28	183.100	7.694	7.469	18.610	13.210	6.075	24.720	5.923	6.899	5.075	6.350	30.440
29	69.180		7.332	15.290	15.350	5.404	17.590	5.780	6.622	4.931	6.881	127.300
30	43.420		9.866	12.960	73.270	4.591	15.070	5.670	7.439	4.787	25.440	91.450
31	35.260		8.982		158.100		14.800	5.390		4.776		49.590
Average	79.700	11.920	10.040	42.050	31.850	15.170	21.010	26.180	19.180	11.980	11.220	104.800
Lowest	9.448	6.841	6.054	7.570	5.607	4.591	4.404	5.390	4.207	4.776	4.607	23.520
Highest	215.000	27.530	34.810	191.400	158.100	63.480	80.110	108.900	105.400	35.380	40.920	306.400
Peak flow	441.20	30.33	59.88	246.80	258.60	72.24	160.40	197.30	204.30	49.09	56.07	640.50
Day of peak	10	1	21	18	16	1	20	5	13	7	14	19
Monthly total (million cu m)	213.50	28.84	26.90	109.00	85.30	39.31	56.27	70.11	49.71	32.08	29.09	280.80
Runoff (mm)	217	29	27	111	87	40	57	71	51	33	30	286
Rainfall (mm)	249	16	44	161	168	59	141	101	102	46	60	325

Statistics of monthly data for previous record (Jan 1959 to Dec 1992—incomplete or missing months total 4.0 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	53.230	40.490	37.660	28.110	17.790	14.720	18.220	24.620	31.970	44.190	52.300	56.340
	Low	6.622	3.842	11.820	4.203	2.565	3.385	1.882	2.167	2.790	4.314	24.640	18.730
	(year)	1963	1963	1975	1974	1974	1975	1984	1976	1959	1972	1985	1971
	High	88.800	114.000	113.800	67.970	40.700	49.190	42.800	71.330	67.010	134.400	97.220	108.900
	(year)	1990	1990	1981	1970	1986	1972	1988	1985	1985	1967	1963	1986
Runoff:	Avg.	145	101	103	74	48	39	50	67	84	120	138	153
	Low	18	9	32	11	7	9	5	6	7	12	65	51
	High	242	280	310	179	111	130	117	194	177	366	256	297
Rainfall:	Avg.	149	104	114	93	86	90	111	129	136	158	152	164
	Low	20	9	48	5	21	22	29	24	26	54	72	55
	High	279	309	246	193	178	169	245	270	262	402	277	333

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	32.370		34.960		93
Lowest yearly mean			24.700	1976	
Highest yearly mean			46.500	1967	
Lowest monthly mean	10.040	Mar	1.882	Jul 1984	
Highest monthly mean	104.800	Dec	134.400	Oct 1967	
Lowest daily mean	4.207	7 Sep	1.166	25 Aug 1984	
Highest daily mean	306.400	19 Dec	718.300	23 Mar 1968	
Peak	640.500	19 Dec	873.600	19 Feb 1990	
10% exceedance	94.980		84.610		112
50% exceedance	13.610		17.240		79
95% exceedance	4.994		3.047		164
Annual total (million cu m)	1021.00		1103.00		93
Annual runoff (mm)	1038		1122		93
Annual rainfall (mm)	1472		1486		99
1941-70 rainfall average (mm)			1525		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies.
- Augmentation from surface water and/or groundwater.

Station and catchment description

Bazin type compound broad-crested weir operated after 10/6/77 as full-range station. Previously used for low/medium flows; high flows from Halton 3km downstream. High flows inundate wide floodplain. Transfers to river Wyre under Lancs. Conjunctive Use Scheme. Major abstractions for PWS. Headwaters rise from Shap Fell and the Pennines. Mixed geology: Carboniferous Limestone, Silurian shales, Millstone Grit and Coal Measures, substantial Drift cover. Agriculture in valleys; grassland rising to peat moss in highest areas.

073010 Leven at Newby Bridge 1993

Measuring authority: NRA-NW
First year: 1939
Grid reference: 34 (SD) 367 863
Level stn. (m OD): 37.30
Catchment area (sq km): 247.0
Max alt. (m OD): 873

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.722	17.740	4.882	10.390	9.306	27.060	2.587	12.380	1.419	5.462	1.686	6.532
2	4.248	15.220	4.212	8.901	7.651	25.420	2.138	11.560	1.399	6.152	1.691	12.800
3	4.035	13.280	3.508	7.983	6.310	22.190	2.202	12.830	1.432	6.004	1.982	18.740
4	4.341	11.630	2.965	8.328	5.227	18.850	3.010	13.440	1.133	6.695	2.038	33.410
5	8.575	10.140	2.766	13.200	4.538	15.910	3.366	13.320	0.944	7.668	2.025	34.570
6	10.960	9.066	2.433	19.140	3.688	13.230	2.836	12.520	1.445	9.203	1.782	32.340
7	11.540	7.955	2.199	18.540	3.148	11.110	2.407	12.320	1.515	10.610	1.503	35.140
8	13.090	7.027	2.037	18.330	3.053	9.528	3.282	12.150	1.539	11.310	1.339	39.800
9	18.450	6.223	1.894	34.510	3.142	8.379	5.302	12.590	1.654	10.550	5.496	48.090
10	29.830	5.510	1.983	40.850	2.594	7.882	5.186	12.100	3.550	9.707	10.240	50.790
11	35.560	4.942	2.088	36.030	2.405	8.059	5.065	15.160	5.624	8.863	9.825	48.180
12	31.890	4.509	2.345	28.660	1.720	7.417	4.752	16.650	6.462	8.256	9.424	43.250
13	32.620	4.009	3.033	23.970	3.308	6.075	4.362	15.260	6.291	7.376	11.280	40.840
14	32.040	3.751	3.053	19.640	7.315	5.825	4.826	13.540	5.670	6.146	12.040	41.200
15	33.950	3.419	2.759	15.780	8.931	4.951	6.595	11.610	6.289	5.169	11.680	49.190
16	35.630	3.186	3.321	13.300	14.300	5.155	9.391	9.885	5.645	4.326	10.530	47.420
17	37.580	3.094	5.013	12.060	29.010	4.805	10.330	8.218	4.949	3.735	9.338	41.050
18	35.650	2.918	6.792	16.940	31.090	7.275	10.270	6.831	4.082	3.180	8.099	50.990
19	40.080	3.038	6.847	21.790	27.150	8.860	10.920	5.859	3.609	2.781	6.811	78.920
20	43.050	2.810	6.926	21.480	23.200	8.678	10.340	5.158	4.913	2.805	5.736	69.030
21	38.940	2.769	12.660	21.070	19.530	7.812	9.210	4.542	7.887	2.700	4.595	54.500
22	34.950	2.649	13.190	19.510	16.410	7.110	8.085	3.812	10.340	2.110	3.759	46.790
23	33.250	2.490	12.170	20.560	13.870	6.130	8.647	3.109	9.959	1.856	3.163	42.240
24	35.540	2.181	10.780	22.740	11.620	5.123	9.216	2.588	9.122	1.723	2.650	35.990
25	32.360	3.741	9.183	22.490	10.200	4.426	9.908	2.404	8.453	1.540	2.274	30.590
26	26.660	5.752	7.604	20.510	8.441	4.236	12.560	2.147	7.294	1.600	2.025	25.450
27	24.080	5.765	6.301	18.120	6.723	3.935	14.910	1.947	6.132	1.714	1.666	21.400
28	26.010	5.495	5.523	15.760	5.724	3.718	15.980	1.736	5.199	1.764	1.565	18.930
29	25.230		4.943	13.190	5.371	3.278	15.470	1.640	4.590	1.760	2.102	23.680
30	22.800		9.017	10.850	6.015	3.021	14.340	1.646	4.324	1.828	3.421	27.280
31	20.350		11.460		22.060		13.590	1.544		1.758		25.560
Average	25.420	6.082	5.609	19.150	10.420	9.182	7.777	8.403	4.762	5.044	5.059	37.890
Lowest	4.035	2.181	1.894	7.983	1.720	3.021	2.138	1.544	0.944	1.540	1.339	6.532
Highest	43.050	17.740	13.190	40.850	31.090	27.060	15.980	16.650	10.340	11.310	12.040	78.920
Peak flow	44.59	19.20	13.91	42.20	31.91	27.61	16.38	17.24	10.68	11.63	12.66	82.38
Day of peak	20	1	21	10	18	1	28	12	22	8	14	19
Monthly total (million cu m)	68.08	14.71	15.02	49.65	27.91	23.80	20.83	22.51	12.34	13.51	13.11	101.50
Runoff (mm)	276	60	61	201	113	96	84	91	50	55	53	411
Rainfall (mm)	326	36	105	239	205	79	167	90	131	60	127	482

Statistics of monthly data for previous record (Jan 1939 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	19.950	16.910	14.180	11.180	7.447	6.243	7.308	10.400	14.140	17.300	20.540	21.190
	Low	1.935	0.974	3.699	1.796	0.641	0.545	0.774	0.652	0.560	1.438	6.873	8.207
	(year)	1963	1963	1962	1974	1980	1978	1941	1984	1959	1972	1983	1963
	High	38.020	37.450	36.040	21.640	18.680	18.730	16.990	31.070	33.930	50.170	36.450	40.110
	(year)	1975	1990	1989	1949	1986	1972	1953	1985	1946	1967	1986	1954
Runoff:	Avg.	216	167	154	117	81	66	79	113	148	188	216	230
	Low	21	10	40	19	7	6	8	7	6	16	72	89
	High	412	367	391	227	203	197	184	337	356	544	383	435
Rainfall:	Avg.	229	159	168	120	114	124	147	185	212	227	236	240
	Low	26	7	32	12	22	17	32	7	29	30	17	90
	High	439	410	398	243	241	269	309	428	427	557	428	450

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	12.140		13.890		87
Lowest yearly mean			9.234	1973	
Highest yearly mean			21.840	1954	
Lowest monthly mean	4.762	Sep	0.545	Jun 1978	
Highest monthly mean	37.890	Dec	50.170	Oct 1967	
Lowest daily mean	0.944	5 Sep	0.108	7 Oct 1972	
Highest daily mean	78.920	19 Dec	115.900	2 Dec 1954	
Peak	82.380	19 Dec	135.800	2 Dec 1954	
10% exceedance	32.210		30.950		104
50% exceedance	7.796		10.110		77
95% exceedance	1.680		1.190		141
Annual total (million cu m)	382.80		438.30		87
Annual runoff (mm)	1550		1775		87
Annual rainfall (mm)	2047		2161		95
1941-70 rainfall average (mm)			2215		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies.
- Augmentation from effluent returns.

Station and catchment description

Level record since 1939 from four different sites at Newby Bridge. All flow records from 1939 to 1974 combined into a single sequence. Since 5/5/71 compound Crump profile weir - increased sensitivity at low flows. Full-range. Just d/s of Lake Windermere - highly regulated, compensation flow. Major abstractions for PWS, sewage effluent from Ambleside. Predominantly impervious, Borrowdale Volcanics in north and Silurian slate in south. Boulder Clay along river valleys. Mainly grassland, very wooded in lower reaches.

076007 Eden at Sheepmount 1993

Measuring authority: NRA-NW
First year: 1967
Grid reference: 35 (NY) 390 571
Level stn. (m OD): 7.00
Catchment area (sq km): 2286.5
Max alt. (m OD): 950

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	24.420	56.290	19.190	21.900	32.280	65.990	12.470	22.350	11.910	17.610	13.210	39.300
2	23.400	50.740	18.910	20.430	29.260	59.190	12.220	19.800	11.700	19.020	13.130	58.160
3	22.600	46.190	18.830	19.180	26.640	46.300	12.420	32.990	11.490	23.910	14.280	77.450
4	28.680	41.780	18.640	20.370	23.780	36.930	12.740	34.150	11.210	26.130	15.130	224.300
5	82.180	37.890	20.630	92.390	21.720	31.050	12.480	128.000	11.060	28.880	14.980	86.020
6	55.430	35.630	29.270	169.100	20.550	27.070	11.970	60.800	10.910	53.920	14.300	102.700
7	45.720	33.950	23.810	76.190	19.520	24.150	11.870	42.150	10.690	105.700	13.970	166.100
8	56.870	32.080	19.950	61.240	18.580	21.900	13.330	41.090	13.750	57.100	13.660	204.300
9	159.800	30.180	18.510	140.700	17.800	20.670	15.970	71.170	28.770	43.960	16.110	169.500
10	212.400	28.460	17.680	114.100	17.290	20.800	15.480	46.860	37.270	41.690	23.350	152.700
11	141.800	27.170	17.590	66.100	16.960	22.400	14.800	52.680	43.090	32.540	19.030	116.900
12	88.860	25.940	18.160	53.340	16.210	21.470	15.440	51.010	23.490	30.330	26.180	95.580
13	257.700	25.030	22.460	49.630	24.510	19.400	13.380	39.290	73.330	34.030	52.490	135.200
14	139.600	24.180	20.800	39.560	181.100	18.630	13.450	29.450	81.210	27.050	80.380	162.100
15	303.600	23.180	18.610	33.130	105.400	18.070	16.510	24.950	68.100	23.080	44.210	271.900
16	195.600	22.400	20.340	29.730	139.500	17.830	30.530	22.960	40.100	20.660	31.830	166.600
17	191.700	21.990	23.560	30.020	243.700	17.480	27.380	20.550	29.920	19.040	26.290	97.580
18	159.400	20.900	30.790	164.200	147.700	20.520	19.340	18.840	24.480	17.810	22.280	287.000
19	250.500	20.720	24.000	153.100	81.210	28.740	19.100	17.820	21.510	17.040	19.840	432.200
20	182.400	19.770	20.420	73.620	65.740	26.170	22.470	17.120	25.270	18.080	18.240	149.800
21	169.600	19.280	37.780	70.900	78.910	18.390	19.510	16.320	36.670	19.420	17.840	99.780
22	142.200	18.340	28.500	53.890	57.620	16.540	17.130	15.430	32.720	17.810	17.100	129.300
23	231.600	17.840	24.930	60.620	45.020	15.570	27.590	14.880	27.900	16.640	16.390	118.500
24	250.800	17.720	23.380	70.450	37.260	14.900	29.760	14.450	24.370	15.880	15.650	97.750
25	124.200	19.380	21.400	145.100	31.900	14.600	35.390	14.060	22.570	15.300	15.760	73.850
26	102.900	24.600	19.810	90.900	28.770	14.960	35.660	13.690	20.390	14.890	16.510	59.910
27	93.650	22.500	18.820	58.930	27.400	15.210	31.890	13.340	18.860	14.520	16.910	51.150
28	185.500	19.720	18.240	46.330	25.440	13.970	41.620	13.050	17.690	14.180	16.750	51.730
29	102.800		18.340	38.840	24.430	13.250	28.870	12.790	16.860	13.910	16.500	153.700
30	75.260		22.260	34.010	26.820	12.750	25.000	12.550	16.850	13.620	30.430	126.100
31	66.120		24.160		118.400		24.530	12.180		13.400		85.810
Average	134.400	27.990	21.930	69.930	56.500	23.830	20.650	30.540	27.470	26.680	22.420	136.900
Lowest	22.600	17.720	17.590	19.180	16.210	12.750	11.870	12.180	10.690	13.400	13.130	39.300
Highest	303.600	56.290	37.780	169.100	243.700	65.990	41.620	128.000	81.210	105.700	80.380	432.200
Peak flow	457.60	60.47	49.67	258.30	344.60	80.18	52.18	182.60	166.50	135.60	95.94	581.30
Day of peak	24	1	21	6	17	1	23	5	13	7	14	19
Monthly total (million cu m)	360.10	67.72	58.73	181.30	151.30	61.77	55.32	81.80	71.21	71.47	58.12	366.60
Runoff (mm)	157	30	26	79	66	27	24	36	31	31	25	160
Rainfall (mm)	213	15	43	142	135	40	94	69	90	53	57	233

Statistics of monthly data for previous record (Oct 1967 to Dec 1992—incomplete or missing months total 3.0 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	86.400	69.580	60.450	41.570	27.440	21.810	22.410	25.570	37.360	61.230	75.200	78.140
	Low	39.680	26.440	24.360	13.070	11.050	10.420	8.377	7.023	9.216	7.961	30.430	32.490
	(year)	1992	1986	1975	1974	1974	1973	1984	1976	1972	1972	1973	1971
	High	151.200	210.700	119.700	63.970	69.120	50.380	59.240	92.380	105.400	225.000	126.400	143.100
	(year)	1975	1990	1968	1970	1983	1972	1988	1985	1985	1967	1984	1986
Runoff:	Avg.	101	74	71	47	32	25	26	30	42	72	85	92
	Low	46	28	29	15	13	12	10	8	10	9	34	38
	High	177	223	140	73	81	57	69	108	120	264	143	168
Rainfall:	Avg.	129	87	102	67	67	72	85	94	108	130	126	128
	Low	44	13	43	8	19	21	22	19	25	31	54	43
	High	232	279	179	111	133	126	221	211	231	307	208	371

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	50.270		50.530		99
Lowest yearly mean			28.190	1973	
Highest yearly mean			60.790	1982	
Lowest monthly mean	20.650	Jul	7.023	Aug 1976	
Highest monthly mean	136.900	Dec	225.000	Oct 1967	
Lowest daily mean	10.690	7 Sep	5.468	7 Sep 1976	
Highest daily mean	432.200	19 Dec	772.900	23 Mar 1968	
Peak	581.300	19 Dec	1357.000	24 Mar 1968	
10% exceedance	139.000		108.800		128
50% exceedance	24.840		31.270		79
95% exceedance	12.950		9.969		130
Annual total (million cu m)	1585.00		1595.00		99
Annual runoff (mm)	693		697		99
Annual rainfall (mm)	1184		1195		99
1941-70 rainfall average (mm)			1225		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies.

Station and catchment description

Velocity-area station. Permanent cableway. Full-range. Most floods contained in immediate channel. Pre-1970 (when floodbanks constructed) bypassed via Caldew floodplain. Highly influenced by Ullswater, Haweswater and Wet Sleddale especially at low flows. Rural except for Carlisle, Penrith and Appleby. Headwaters in Carboniferous Limestone of Pennines to east, impervious Lower Palaeozoics of Lake District massif to west; moorland. Extensive Boulder Clay covered Permo-Triassic sandstone in Vale of Eden. Arable and grazing.

079006 Nith at Drumlanrig — 1993

Measuring authority: SRPB
First year: 1967

Grid reference: 25 (NX) 858 994
Level stn. (m OD): 52.20

Catchment area (sq km): 471.0
Max alt. (m OD): 725

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	10.780	13.990	5.177	20.750	5.696	6.116	2.029	6.967	4.478	12.770	2.270	35.560
2	10.460	13.660	4.848	14.000	5.136	6.193	2.113	21.230	4.430	15.350	2.177	52.430
3	9.996	11.350	4.847	15.530	4.528	5.217	5.296	17.080	4.350	9.243	7.144	130.000
4	33.560	9.707	4.839	22.370	4.060	4.286	12.900	10.010	4.260	10.330	7.658	68.350
5	52.000	8.814	4.710	105.800	3.772	3.673	5.178	9.688	4.220	21.660	4.595	35.030
6	16.800	10.010	5.369	64.580	3.557	3.302	3.340	8.290	4.177	36.180	3.815	50.980
7	29.330	9.320	4.946	25.350	3.579	3.025	2.861	25.470	4.105	20.780	4.067	50.490
8	81.420	8.250	4.283	45.200	9.248	2.828	12.240	15.300	8.080	11.920	10.010	130.100
9	83.440	7.387	3.949	66.850	4.828	7.744	9.997	24.770	8.412	17.550	42.490	91.310
10	81.960	6.729	3.785	27.750	3.757	6.287	6.505	12.850	8.977	16.940	13.210	74.580
11	31.110	6.504	4.269	17.210	3.361	6.661	5.327	47.310	8.544	9.957	8.535	53.310
12	20.410	6.160	4.108	13.340	2.985	7.345	3.898	16.550	6.576	8.164	12.900	37.730
13	23.510	5.899	5.031	10.800	3.959	4.757	3.152	10.240	5.757	6.714	11.850	41.520
14	94.790	5.789	4.349	8.617	25.900	4.149	3.451	8.943	5.362	5.776	10.990	69.040
15	133.900	6.998	4.583	7.375	47.650	3.507	5.327	8.554	5.173	5.155	9.862	74.880
16	72.750	6.926	7.250	7.502	79.970	3.292	9.254	6.275	5.008	4.628	17.250	49.010
17	41.770	7.144	22.230	7.869	202.100	6.127	5.891	5.282	4.854	4.208	9.943	49.330
18	53.200	7.116	30.640	37.630	60.050	16.760	4.520	4.735	4.737	3.947	7.496	170.100
19	82.190	8.389	12.770	47.190	27.000	9.277	3.780	4.260	35.850	3.835	6.260	99.210
20	51.380	6.488	10.110	73.380	17.660	5.364	3.203	3.852	20.110	4.447	6.062	36.260
21	46.780	5.941	13.780	36.720	15.780	4.180	2.783	3.490	13.320	4.259	5.487	27.940
22	32.290	5.266	9.169	25.700	11.780	3.772	2.576	3.160	10.560	3.660	5.220	33.050
23	127.700	4.986	13.100	21.560	9.094	3.297	3.018	2.989	8.972	3.415	5.909	29.170
24	72.640	4.813	22.550	15.200	7.384	2.867	3.277	2.850	9.271	3.200	4.506	22.040
25	33.630	12.640	12.520	27.090	6.247	2.974	7.917	2.657	8.108	3.013	5.485	17.620
26	40.280	10.090	9.007	17.280	5.426	5.318	33.970	2.470	7.317	2.890	5.786	16.060
27	33.410	7.097	7.766	11.930	4.821	3.772	10.900	2.334	6.851	2.765	4.645	15.790
28	43.220	5.443	25.090	9.354	4.416	2.719	13.260	2.236	6.528	2.653	4.336	24.280
29	24.860		112.200	7.606	4.278	2.327	9.194	2.163	6.907	2.591	10.030	81.760
30	20.420		138.300	6.497	5.954	2.157	6.347	2.060	8.708	2.493	58.390	24.770
31	18.240		38.920		7.195		10.130	1.920		2.400		15.700
Average	48.650	7.961	17.890	27.270	19.390	4.976	6.891	9.548	8.133	8.480	10.280	55.080
Lowest	9.996	4.813	3.785	6.497	2.985	2.157	2.029	1.920	4.105	2.400	2.177	15.700
Highest	133.900	13.990	138.300	105.800	202.100	16.760	33.970	47.310	35.850	36.180	58.390	170.100
Peak flow	392.30	19.72	291.80	144.20	282.30	19.87	54.42	88.88	88.35	75.86	92.87	245.50
Day of peak	14	25	30	5	17	18	26	11	19	5	30	8
Monthly total (million cu m)	130.30	19.26	47.91	70.68	51.94	12.90	18.46	25.57	21.08	22.71	26.64	147.50
Runoff (mm)	277	41	102	150	110	27	39	54	45	48	57	313
Rainfall (mm)	287	33	132	169	155	72	108	75	111	61	112	295

Statistics of monthly data for previous record (Jun 1967 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	29.120	21.940	20.140	10.570	7.624	5.247	5.460	8.541	14.240	23.090	26.730	26.060
	Low	9.037	4.288	4.427	2.457	1.390	1.489	0.868	0.841	1.261	2.744	5.268	12.770
	(year)	1985	1986	1969	1974	1980	1984	1984	1984	1972	1972	1983	1971
	High	61.220	60.660	35.660	27.170	27.570	14.660	15.780	38.280	39.000	39.200	49.350	55.190
	(year)	1974	1990	1992	1991	1986	1972	1988	1985	1985	1967	1982	1986
Runoff:	Avg.	166	114	115	58	43	29	31	49	78	131	147	148
	Low	51	22	25	14	8	8	5	5	7	16	29	73
	High	348	312	203	150	157	81	90	218	215	223	272	314
Rainfall:	Avg.	185	122	141	79	91	85	95	115	148	181	172	168
	Low	67	10	34	11	19	30	41	23	20	66	35	69
	High	398	382	239	175	230	163	211	302	247	301	285	345

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	18.850		16.550		114
Lowest yearly mean			10.720	1971	
Highest yearly mean			21.700	1982	
Lowest monthly mean	4.976	Jun	0.841	Aug 1984	
Highest monthly mean	55.080	Dec	61.220	Jan 1974	
Lowest daily mean	1.920	31 Aug	0.606	26 Aug 1984	
Highest daily mean	202.100	17 May	231.700	19 Dec 1982	
Peak	392.300	14 Jan	538.400	18 Oct 1982	
10% exceedance	49.280		42.640		116
50% exceedance	8.173		8.228		99
95% exceedance	2.684		1.339		200
Annual total (million cu m)	594.50		522.30		114
Annual runoff (mm)	1262		1109		114
Annual rainfall (mm)	1610		1582		102
1941-70 rainfall average (mm)			1579		

Factors affecting runoff

- Reservoir(s) in catchment.
- Abstraction for public water supplies.
- Natural to within 10% at 95 percentile flow.

Station and catchment description

Velocity-area station on long straight reach at particularly well confined site. Cableway. Gravel and rock bed. Natural channel control. Sensibly natural flow regime. Afton Reservoir has small influence.

084005 Clyde at Blairston 1993

Measuring authority: CRPB
First year: 1958

Grid reference: 26 (NS) 704 579
Level stn. (m OD): 17.60

Catchment area (sq km): 1704.2
Max alt. (m OD): 732

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	21.490	46.470	15.350	40.140	23.140	25.150	8.052	15.670	7.455	11.040	10.580	77.990
2	22.770	42.350	14.680	30.800	23.120	28.740	8.050	17.510	7.459	17.830	10.060	150.500
3	25.510	38.450	14.610	26.440	21.880	23.770	12.810	26.360	7.307	25.790	21.650	256.000
4	32.160	33.430	15.070	31.450	19.570	18.980	17.150	25.440	7.052	30.820	37.130	217.900
5	48.350	30.140	16.770	84.110	17.680	16.420	14.410	40.520	6.977	29.090	22.090	102.100
6	38.520	29.190	16.710	141.400	16.930	13.990	10.820	31.770	6.927	106.400	18.680	102.500
7	42.000	28.220	14.750	70.040	17.180	12.950	9.560	30.570	6.755	159.500	21.460	134.800
8	117.500	25.880	14.040	55.140	25.250	11.730	28.240	26.930	8.897	87.280	31.220	220.500
9	225.000	24.190	12.590	68.870	23.740	26.930	26.990	25.500	11.970	113.800	83.660	227.400
10	148.300	22.800	12.330	63.020	18.200	28.880	15.790	26.090	37.700	125.300	50.690	126.700
11	95.410	21.420	12.940	42.620	17.010	17.540	12.100	58.870	51.930	59.150	29.110	110.000
12	66.960	20.610	13.420	34.310	15.560	17.380	10.360	51.460	24.290	40.960	44.830	88.740
13	74.400	19.650	14.630	30.340	18.090	16.490	9.371	26.830	17.390	32.160	42.340	133.400
14	105.300	19.300	14.510	26.400	93.430	20.030	10.010	21.380	21.790	26.720	38.100	142.600
15	315.300	19.500	13.680	23.520	161.400	15.410	11.990	22.130	31.200	23.300	32.060	178.300
16	207.300	19.290	23.570	24.320	149.900	13.090	39.200	17.520	23.920	20.530	71.150	105.000
17	154.700	19.170	85.440	31.220	262.600	13.720	39.210	15.550	16.290	19.030	39.930	66.900
18	144.600	19.150	84.200	98.320	150.200	22.820	18.770	13.990	12.720	17.050	27.380	165.300
19	203.600	20.360	38.790	148.400	66.750	22.680	14.140	12.730	18.100	17.000	22.060	263.400
20	168.800	18.560	27.420	109.100	47.010	17.920	13.620	11.960	44.050	18.190	19.280	108.100
21	148.300	17.090	29.070	112.200	42.400	13.330	11.800	11.130	28.320	17.620	17.920	65.050
22	123.900	15.740	28.330	69.590	35.140	12.060	9.908	10.520	20.040	15.280	16.360	64.210
23	269.100	15.180	46.390	62.650	28.970	11.240	10.260	10.010	16.160	14.300	15.970	61.310
24	283.800	14.920	54.970	49.040	25.180	10.220	11.220	9.888	15.370	13.470	14.590	50.950
25	126.300	21.020	40.790	60.200	21.910	10.660	13.310	9.515	13.830	12.670	15.100	41.000
26	118.100	24.640	27.070	61.330	19.650	11.530	18.980	9.082	12.580	12.450	16.150	34.490
27	90.980	21.230	23.160	41.100	18.500	11.430	17.280	8.995	11.630	11.880	14.430	30.790
28	96.460	16.330	20.670	32.970	16.680	9.681	14.300	8.517	10.970	11.510	13.720	40.770
29	74.990		22.360	27.760	16.480	8.691	17.890	8.345	10.730	11.220	14.450	176.900
30	61.990		115.200	25.020	19.070	8.288	14.120	8.262	10.430	10.820	27.810	81.370
31	56.630		61.990		24.200		14.020	8.275		10.550		48.170
Average	119.600	23.720	30.500	57.390	46.990	16.390	15.600	20.040	17.340	36.220	28.000	118.500
Lowest	21.490	14.920	12.330	23.520	15.560	8.288	8.050	8.262	6.755	10.550	10.060	30.790
Highest	315.300	46.470	115.200	148.400	262.600	28.880	39.210	58.870	51.930	159.500	83.660	263.400
Peak flow	384.90	52.35	167.20	198.70	285.00	42.63	54.62	79.60	80.97	178.50	116.30	346.20
Day of peak	24	1	31	20	18	10	9	12	11	8	10	4
Monthly total (million cu m)	320.40	57.39	81.69	148.80	125.90	42.49	41.79	53.68	44.95	97.00	72.57	317.40
Runoff (mm)	188	34	48	87	74	25	25	32	26	57	43	186
Rainfall (mm)	215	21	80	114	114	59	84	65	81	81	74	215

Statistics of monthly data for previous record (Oct 1958 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	68.110	54.000	48.560	31.480	22.770	16.600	15.670	24.840	36.490	51.230	64.630	65.920
	Low	11.920	8.854	14.810	10.430	7.994	7.491	5.041	4.536	7.630	8.243	15.870	26.080
	(year)	1963	1963	1969	1974	1980	1984	1984	1984	1972	1972	1983	1963
	High	134.300	160.200	91.070	64.400	56.230	41.190	47.620	82.370	128.400	114.600	129.600	133.400
	(year)	1975	1990	1990	1991	1986	1972	1985	1985	1985	1967	1982	1986
Runoff:	Avg.	107	77	76	48	36	25	25	39	55	81	98	104
	Low	19	13	23	16	13	11	8	7	12	13	24	41
	High	211	227	143	98	88	63	75	129	195	180	197	210
Rainfall:	Avg.	118	80	97	66	70	72	80	102	114	123	123	119
	Low	25	16	28	9	18	17	32	24	16	33	24	38
	High	250	254	166	125	150	157	166	206	230	231	221	237

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	44.520		41.650		107
Lowest yearly mean			27.090	1973	
Highest yearly mean			58.800	1990	
Lowest monthly mean	15.600	Jul	4.536	Aug 1984	
Highest monthly mean	119.600	Jan	160.200	Feb 1990	
Lowest daily mean	6.755	7 Sep	3.366	23 Aug 1984	
Highest daily mean	315.300	15 Jan	581.700	21 Sep 1985	
Peak	384.900	24 Jan	666.400	22 Sep 1985	
10% exceedance	115.700		97.640		118
50% exceedance	22.900		24.050		95
95% exceedance	9.329		7.800		120
Annual total (million cu m)	1404.00		1314.00		107
Annual runoff (mm)	824		771		107
Annual rainfall (mm)	1203		1164		103
1941-70 rainfall average (mm)			1152		

Factors affecting runoff

- Regulation for HEP.

Station and catchment description

Recorder moved to present position in Nov. 1974 from opposite bank. Section is natural with steep grass and tree covered banks. Velocity profile slightly uneven due to upstream bend. Control - piers of redundant rail bridge, 300m d/s. Section rated by current meter to 3.4m, just below max. recorded stage. Some naturalised flows available. Very mixed geology with the older formations (Ordovician/Silurian) to the south. Hill pasture and moorland predominates but some mixed farming and urban development is found in the lower valley.

085003 Falloch at Glen Falloch 1993

Measuring authority: CRPB
First year: 1970
Grid reference: 27 (NN) 321 197
Level stn. (m OD): 9.50
Catchment area (sq km): 80.3
Max alt. (m OD): 1130

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	13.000	1.621	0.744	3.436	0.490	3.097	0.358	7.092	0.205	7.486	0.411	28.680
2	23.040	4.590	0.767	1.681	0.414	2.642	9.259	18.900	0.199	8.883	0.394	28.840
3	11.120	10.490	0.673	6.368	0.391	1.587	14.430	8.851	0.199	8.698	0.521	47.190
4	24.350	13.330	0.782	6.444	0.379	1.505	2.530	8.572	0.199	4.144	0.674	19.660
5	15.950	16.200	1.631	24.930	0.382	0.902	0.939	4.348	0.199	1.506	0.521	9.422
6	5.234	7.891	1.082	5.420	0.560	0.634	0.626	11.870	0.200	7.468	0.918	20.340
7	16.530	4.757	0.859	2.397	0.490	0.637	12.940	6.880	0.236	9.147	4.079	5.553
8	27.890	2.320	1.300	15.010	0.390	0.607	15.370	3.503	0.434	3.125	5.666	9.886
9	20.110	2.181	0.740	21.540	0.330	1.160	2.394	8.225	0.919	3.081	15.300	15.150
10	21.670	1.754	0.578	6.735	0.307	0.821	1.138	2.410	1.575	2.377	1.782	8.955
11	3.342	1.448	1.762	2.525	0.308	0.541	0.754	7.359	2.349	1.379	1.475	3.389
12	3.518	1.359	1.463	1.693	0.255	0.372	0.563	2.150	0.801	0.993	6.256	3.830
13	4.053	1.971	3.005	1.736	1.410	1.207	0.458	2.955	1.163	0.765	1.651	2.379
14	47.500	14.730	2.350	1.210	1.769	1.025	0.544	4.637	0.603	0.682	1.061	15.120
15	40.600	4.120	6.110	2.378	3.178	0.895	2.302	1.765	0.444	0.607	16.190	4.700
16	119.800	3.889	58.640	8.415	11.380	3.529	3.829	1.354	0.427	0.542	5.630	2.245
17	16.060	2.605	49.720	4.967	52.570	7.340	3.006	0.777	0.465	0.519	2.223	9.178
18	6.075	6.028	7.060	8.860	5.250	3.754	0.981	1.671	0.396	0.503	1.246	104.100
19	38.270	3.082	5.260	12.320	4.513	2.177	0.782	0.961	17.970	5.203	0.850	11.200
20	22.190	4.753	16.220	24.800	1.870	0.873	0.566	0.722	9.639	2.840	0.716	2.413
21	45.530	1.633	4.593	5.829	1.341	1.504	0.445	0.687	5.372	1.129	0.622	1.637
22	11.930	1.446	3.798	9.934	0.981	0.985	5.199	0.499	1.768	0.827	1.029	1.781
23	57.370	1.575	3.240	5.159	0.711	0.595	6.138	0.427	1.128	0.714	0.675	1.706
24	11.150	7.056	6.116	2.792	0.528	0.474	18.790	0.388	3.516	0.631	0.452	1.316
25	3.852	8.775	2.770	2.136	0.421	7.249	4.268	0.351	1.253	0.570	0.822	2.437
26	6.419	2.157	2.445	1.468	0.354	3.656	4.185	0.309	0.786	0.539	0.580	2.654
27	8.552	1.062	13.430	1.158	0.313	0.840	4.173	0.290	0.603	0.503	0.763	0.884
28	3.968	0.829	9.432	0.835	0.326	0.533	7.338	0.314	0.527	0.482	0.646	8.267
29	2.972		70.910	0.639	0.768	0.429	5.092	0.487	0.532	0.464	4.292	21.300
30	4.977		23.260	0.533	20.940	0.384	7.666	0.323	2.711	0.440	8.806	3.434
31	2.350		4.392		4.810		6.060	0.254		0.424		1.937
Average	20.620	4.773	9.843	6.445	3.811	1.732	4.617	3.527	1.894	2.473	2.875	12.890
Lowest	2.350	0.829	0.578	0.533	0.255	0.372	0.358	0.254	0.199	0.424	0.394	0.884
Highest	119.800	16.200	70.910	24.930	52.570	7.340	18.790	18.900	17.970	9.147	16.190	104.100
Peak flow	191.30	35.26	176.20	64.69	107.30	16.32	71.24	45.86	58.34	37.96	77.04	172.20
Day of peak	17	15	17	6	18	26	25	2	20	4	9	19
Monthly total (million cu m)	55.24	11.55	26.36	16.71	10.21	4.49	12.37	9.45	4.91	6.62	7.45	34.52
Runoff (mm)	688	144	328	208	127	56	154	118	61	83	93	430
Rainfall (mm)	739	127	344	214	179	85	204	125	113	89	173	505

Statistics of monthly data for previous record (Oct 1970 to Dec 1992—incomplete or missing months total 0.3 years)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	8.992	6.030	7.312	3.405	2.703	2.195	2.699	4.121	6.713	7.267	8.460	8.277
	Low	1.926	0.489	0.854	0.408	0.133	0.284	0.634	0.339	0.751	1.362	3.068	1.416
	(year)	1985	1986	1975	1974	1980	1992	1984	1983	1972	1974	1988	1981
	High	19.630	18.500	21.400	9.346	10.980	5.609	7.401	10.810	11.210	16.050	14.670	15.740
	(year)	1974	1990	1990	1991	1986	1973	1988	1992	1981	1983	1986	1986
Runoff:	Avg.	300	184	244	110	90	71	90	137	217	242	273	276
	Low	64	15	28	13	4	9	21	11	24	45	99	47
	High	655	557	714	302	366	181	247	361	362	535	474	525
Rainfall:	Avg.	370	238	288	137	134	134	165	208	300	316	347	346
	Low	93	11	100	15	19	42	66	42	40	100	117	111
	High	715	675	696	357	439	249	365	507	468	645	614	637

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	6.338		5.684		112
Lowest yearly mean			4.440	1972	
Highest yearly mean			7.729	1990	
Lowest monthly mean	1.732	Jun	0.133	May 1980	
Highest monthly mean	20.620	Jan	21.400	Mar 1990	
Lowest daily mean	0.199	2 Sep	0.032	12 Jul 1977	
Highest daily mean	119.800	16 Jan	115.800	2 Jan 1992	
Peak	191.300	17 Jan	226.700	22 Oct 1971	
10% exceedance	15.960		16.000		100
50% exceedance	2.223		2.158		103
95% exceedance	0.349		0.258		135
Annual total (million cu m)	199.90		179.40		111
Annual runoff (mm)	2489		2234		111
Annual rainfall (mm)	2897		2983		97
1941-70 rainfall average (mm)			2761		

Factors affecting runoff

- Natural to within 10% at 95 percentile flow.

Station and catchment description

Velocity-area station with artificial low flow control (long broad-crested weir with rectangular low flow notch) - installed 1975. Damage to part of the high flow crest results in a small discharge bypassing the central notch. All but very high flows contained. No significant abstractions or discharges. Very responsive flow regime. A very wet mountainous catchment developed on ancient metamorphic formations - some Drift cover.

093001 Carron at New Kelso 1993

Measuring authority: HRPB
First year: 1979

Grid reference: 18 (NG) 942 429
Level stn. (m OD): 5.60

Catchment area (sq km): 137.8
Max alt. (m OD): 1053

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.067	4.274	3.474	6.608	1.599	1.607	1.869	22.000	1.408	1.258	1.394	9.191
2	21.820	4.751	2.998	4.519	1.531	1.647	6.728	9.623	1.551	3.430	1.327	15.470
3	14.250	16.240	2.756	3.505	1.541	1.604	17.110	14.470	1.570	2.601	1.267	41.620
4	18.490	41.610	7.184	3.595	1.981	1.501	11.620	12.100	1.408	5.002	1.215	30.850
5	26.190	66.630	18.520	4.538	1.803	1.669	10.090	5.640	1.281	4.017	1.192	22.420
6	18.190	22.850	7.948	3.590	1.803	2.155	5.820	6.851	1.225	28.120	1.361	27.400
7	27.720	15.390	4.663	2.908	1.679	2.647	18.090	11.890	1.161	19.400	4.791	13.660
8	27.610	8.398	3.846	2.788	1.519	3.050	37.390	7.088	1.145	9.482	4.538	12.840
9	25.630	5.424	3.317	3.280	1.417	2.422	22.380	20.770	1.073	5.773	16.440	17.350
10	12.340	4.168	2.749	3.046	1.318	1.893	31.850	14.340	1.068	6.488	6.056	12.300
11	7.318	3.428	2.714	2.666	1.205	1.592	14.980	6.772	1.440	4.636	4.576	6.259
12	8.247	3.058	2.542	2.304	1.212	1.324	6.241	7.055	1.742	3.326	9.803	4.318
13	7.994	2.976	2.409	2.014	2.841	1.145	3.864	5.937	1.605	2.559	5.448	3.838
14	19.140	25.030	2.648	1.841	2.733	1.038	2.833	15.780	1.782	2.395	3.713	22.870
15	54.130	15.180	24.120	9.726	16.110	1.033	2.316	6.622	1.802	3.841	3.214	15.620
16	145.400	27.670	21.750	16.910	11.980	4.421	2.900	3.951	1.756	3.331	7.207	9.315
17	43.110	15.400	59.650	6.603	10.730	15.560	2.829	3.150	1.539	10.120	4.167	10.040
18	12.100	23.330	20.460	4.314	6.757	11.010	2.613	2.679	1.362	10.120	2.729	97.120
19	33.090	18.010	25.120	5.814	3.614	10.550	2.103	2.665	1.311	20.920	2.116	43.090
20	34.920	26.780	42.830	8.481	2.635	5.256	2.078	2.588	1.441	19.320	1.812	11.060
21	34.870	10.950	24.330	7.813	2.408	13.840	3.005	3.666	4.228	9.964	1.600	5.597
22	21.600	10.790	22.740	9.028	2.293	7.516	5.313	2.889	3.280	4.801	1.412	4.356
23	44.440	7.508	11.330	5.667	1.975	3.770	16.410	2.913	2.227	3.548	1.278	3.842
24	28.830	13.200	11.450	4.379	1.730	2.592	19.800	2.514	3.966	2.935	1.190	4.638
25	11.190	22.960	7.502	4.164	1.546	10.510	31.310	2.380	2.553	2.450	1.311	3.561
26	14.490	10.980	5.882	2.949	1.354	11.390	23.220	2.082	1.913	2.136	1.370	2.735
27	11.710	5.888	11.800	2.405	1.187	4.313	9.467	1.932	1.573	1.919	1.253	2.380
28	10.610	4.234	8.353	2.018	1.118	2.752	8.329	1.791	1.416	1.758	1.186	7.033
29	7.011		10.110	1.782	1.137	2.238	12.000	1.759	1.303	1.618	1.220	35.560
30	8.574		22.790	1.614	1.291	2.053	23.030	1.595	1.211	1.522	1.339	15.420
31	6.968		15.070		1.561		15.760	1.474		1.450		6.278
Average	24.610	15.610	13.320	4.696	3.020	4.470	12.040	6.676	1.745	6.459	3.251	16.710
Lowest	5.067	2.976	2.409	1.614	1.118	1.033	1.869	1.474	1.068	1.258	1.186	2.380
Highest	145.400	66.630	59.650	16.910	16.110	15.560	37.390	22.000	4.228	28.120	16.440	97.120
Peak flow	253.60	99.89	85.13	24.83	24.38	19.65	48.07	30.51	5.53	38.51	22.38	139.70
Day of peak	16	5	17	16	15	21	8	1	21	6	9	18
Monthly total (million cu m)	65.93	37.77	35.69	12.17	8.09	11.59	32.26	17.88	4.52	17.30	8.43	44.76
Runoff (mm)	478	274	259	88	59	84	234	130	33	126	61	325
Rainfall (mm)	530	210	238	86	95	101	244	103	55	115	90	394

Statistics of monthly data for previous record (Jan 1979 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	15.770	12.000	14.640	7.493	5.150	3.890	5.973	8.860	14.570	13.470	15.940	17.740
	Low	5.886	1.361	4.103	2.863	0.698	0.921	2.426	2.703	7.088	6.332	6.369	5.636
	(year)	1985	1986	1980	1980	1980	1982	1984	1984	1986	1979	1989	1989
	High	31.650	32.590	38.990	13.440	14.120	8.623	10.430	15.050	21.050	24.070	31.120	30.710
	(year)	1989	1989	1990	1984	1986	1980	1985	1989	1990	1983	1981	1983
Runoff:	Avg.	307	213	285	141	100	73	116	172	274	262	300	345
	Low	114	24	80	54	14	17	47	53	133	123	120	110
	High	615	572	758	253	274	162	203	293	396	468	585	597
Rainfall:	Avg.	324	224	313	145	116	117	154	216	314	313	336	370
	Low	94	6	95	70	36	28	89	85	150	182	114	124
	High	623	583	768	285	295	275	248	384	425	532	629	546

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	9.398		11.300		83
Lowest yearly mean			8.852	1987	
Highest yearly mean			14.740	1990	
Lowest monthly mean	1.745	Sep	0.698	May 1980	
Highest monthly mean	24.610	Jan	38.990	Mar 1990	
Lowest daily mean	1.033	15 Jun	0.425	24 Jun 1982	
Highest daily mean	145.400	16 Jan	203.900	2 Jan 1992	
Peak	253.600	16 Jan	337.400	18 Sep 1990	
10% exceedance	22.840		27.390		83
50% exceedance	4.325		5.707		76
95% exceedance	1.235		1.016		122
Annual total (million cu m)	296.40		356.60		83
Annual runoff (mm)	2151		2588		83
Annual rainfall (mm)	2261		2942		77
1941-70 rainfall average (mm)			2498		

Factors affecting runoff

- Natural to within 10% at 95 percentile flow.

Station and catchment description

40m wide river section with floodbank on right. Any bypassing in extreme floods will be over 30m wide floodplain on left bank. Unstable gravel control requires regular calibration of low flow range. Adequately gauged to bankfull. Computed flows are 100% natural. 70% of catchment drains through Loch Dughaill with little additional surface storage. Typical mix of rough grazing and moorland. One of the wetter Highland catchments currently gauged.

201005 Camowen at Camowen Terrace 1993

Measuring authority: DOEN
First year: 1972

Grid reference: 23 (IH) 460 730
Level stn. (m OD): 66.00

Catchment area (sq km): 274.6
Max alt. (m OD): 539

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3.985	7.290	4.321	9.268	3.990	7.889	2.814	4.324	2.504	5.678	2.356	6.642
2	3.812	6.621	3.865	8.656	3.818	22.120	2.732	11.410	2.438	5.010	2.257	9.731
3	9.355	5.942	3.564	49.660	3.555	10.520	2.738	12.840	2.363	10.270	2.278	18.420
4	8.946	5.440	3.344	29.370	3.310	6.117	2.778	7.139	2.387	7.353	2.320	12.110
5	8.254	5.045	3.322	26.700	3.245	4.733	2.607	6.067	2.416	4.977	2.335	9.727
6	5.706	4.803	3.348	14.200	3.190	4.114	2.421	4.972	2.404	5.322	2.363	12.370
7	5.565	4.557	3.249	12.940	3.117	3.727	2.470	4.599	2.223	4.643	2.640	14.700
8	22.640	4.324	3.168	19.900	3.038	3.495	2.655	4.650	3.413	4.662	3.231	49.330
9	15.720	4.120	2.645	32.840	2.923	3.327	2.781	9.890	9.276	4.214	7.356	17.270
10	13.310	4.015	2.577	14.030	2.781	3.614	2.807	8.116	32.660	3.868	3.856	17.520
11	9.296	3.852	2.823	9.512	2.742	15.660	2.734	24.180	8.128	3.601	3.185	25.390
12	7.711	3.645	2.793	7.780	2.591	10.080	2.664	7.650	5.236	3.340	4.367	37.100
13	13.720	3.504	2.834	6.897	2.658	5.863	5.814	5.543	4.074	3.122	4.047	19.100
14	25.070	3.723	2.770	6.221	3.341	6.693	11.100	5.061	3.475	2.994	3.971	29.940
15	23.780	3.923	2.772	5.548	3.395	5.660	19.510	4.715	3.058	2.917	3.509	43.320
16	13.510	3.806	3.637	5.331	3.142	4.866	11.760	4.160	2.831	2.840	3.533	17.860
17	11.900	3.698	5.191	5.462	9.578	8.054	7.012	3.755	2.624	2.744	3.003	14.530
18	18.960	3.571	5.052	17.570	5.287	14.580	19.260	3.596	2.607	2.648	2.626	20.230
19	16.150	3.466	3.786	11.300	3.683	28.860	9.561	3.392	4.359	2.591	2.480	19.090
20	12.840	3.398	3.278	8.255	3.231	9.231	5.681	3.168	3.611	2.582	2.346	10.560
21	11.320	3.576	3.223	7.206	2.926	6.533	4.721	3.014	3.917	2.546	2.208	12.040
22	9.502	3.708	3.703	8.503	2.779	5.269	4.433	2.870	3.852	2.546	2.177	23.820
23	46.440	3.559	9.488	11.010	2.595	4.454	10.040	2.771	3.163	2.528	2.195	32.230
24	18.410	3.418	6.119	13.800	2.554	3.913	5.652	2.667	5.130	2.508	2.145	13.490
25	11.580	5.393	4.544	9.269	2.466	3.663	7.123	2.647	4.397	2.506	2.237	11.060
26	17.060	12.150	3.747	7.740	2.372	3.459	5.771	2.678	4.137	2.469	2.230	8.633
27	15.710	6.792	3.721	6.139	2.354	3.155	4.985	2.608	3.431	2.444	2.213	23.090
28	16.240	5.178	3.890	5.282	5.010	2.954	5.491	2.545	3.222	2.420	2.220	28.540
29	13.150		20.510	4.661	5.835	3.078	5.945	2.554	5.333	2.393	8.325	24.520
30	9.672		20.230	4.297	22.540	2.989	4.374	2.620	5.364	2.393	5.824	12.160
31	8.116		14.370		19.030		4.189	2.532		2.391		9.066
Average	13.790	4.733	5.222	12.640	4.615	7.289	5.956	5.443	4.801	3.630	3.194	19.470
Lowest	3.812	3.398	2.577	4.297	2.354	2.954	2.421	2.532	2.223	2.391	2.145	6.642
Highest	46.440	12.150	20.510	49.660	22.540	28.860	19.510	24.180	32.660	10.270	8.325	49.330
Peak flow	78.37	16.74	43.07	84.42	45.22	45.53	40.96	50.47	55.14	16.60	17.63	75.66
Day of peak	23	26	29	3	30	19	18	11	10	3	29	8
Monthly total (million cu m)	36.93	11.45	13.99	32.78	12.36	18.89	15.95	14.58	12.44	9.72	8.28	52.15
Runoff (mm)	134	42	51	119	45	69	58	53	45	35	30	190
Rainfall (mm)	152	31	75	126	86	101	124	67	103	23	50	209

Statistics of monthly data for previous record (May 1972 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	12.440	9.311	9.066	5.309	3.513	2.648	2.208	3.850	5.007	7.661	9.377	11.090
	Low	7.334	2.992	2.210	1.701	1.076	0.911	0.554	0.927	0.680	1.215	3.757	5.000
	(year)	1989	1986	1973	1974	1980	1974	1989	1983	1972	1972	1983	1989
	High	19.140	19.580	13.630	9.765	9.152	5.471	5.542	13.070	14.560	14.560	18.020	17.330
	(year)	1984	1990	1981	1986	1986	1981	1985	1985	1985	1990	1979	1978
Runoff:	Avg.	121	83	88	50	34	25	22	38	47	75	89	108
	Low	72	26	22	16	11	9	5	9	6	12	35	49
	High	187	173	133	92	89	52	54	127	137	142	170	169
Rainfall:	Avg.	126	86	110	65	68	71	74	98	99	115	110	118
	Low	55	4	38	20	11	28	20	20	13	55	45	39
	High	194	199	156	123	145	129	146	188	177	206	182	183

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	7.595		6.784		112
Lowest yearly mean			4.102	1975	
Highest yearly mean			8.435	1986	
Lowest monthly mean	3.194	Nov	0.554	Jul 1989	
Highest monthly mean	19.470	Dec	19.580	Feb 1990	
Lowest daily mean	2.145	24 Nov	0.367	14 Jul 1989	
Highest daily mean	49.660	3 Apr	139.600	21 Oct 1987	
Peak	84.420	3 Apr	180.200	21 Oct 1987	
10% exceedance	17.700		15.380		115
50% exceedance	4.383		4.220		104
95% exceedance	2.375		1.032		230
Annual total (million cu m)	239.50		214.10		112
Annual runoff (mm)	872		780		112
Annual rainfall (mm)	1147		1140		101
1941-70 rainfall average (mm)			1183		

Factors affecting runoff

Station and catchment description

Velocity-area station with cableway and weir control - informal broad-crested structure (for angling enhancement), dimensions not known. The net effect of abstractions for public water supply and augmentations from effluent returns is minor. Catchment geology: mixed impermeable rocks (granite, schist and gneiss, and sandstone) overlain by substantial deposits of till, sand and gravel. Largely upland given over mainly to grassland or heath.

203010 Blackwater at Maydown Bridge 1993

Measuring authority: DOEN
First year: 1970
Grid reference: *23* (IH) 820 519
Level stn. (m OD): 15.00
Catchment area (sq km): 951.4
Max alt. (m OD): 380

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	8.991	17.470	10.620	24.560	9.783	18.430	4.326	9.262	3.277	9.785	3.620	11.910
2	8.830	15.980	9.162	23.290	8.758	31.080	4.179	16.470	3.177	8.262	3.582	25.730
3	17.250	14.360	8.623	89.330	7.955	35.460	4.151	20.090	3.076	12.200	3.538	40.930
4	32.110	12.980	7.892	85.130	7.307	18.450	4.219	15.300	2.996	18.230	3.478	49.050
5	31.380	11.850	7.616	80.840	6.862	13.770	3.987	15.160	2.914	21.430	3.416	22.080
6	18.850	10.990	7.253	47.490	6.437	11.400	3.754	10.950	2.848	38.630	3.365	37.880
7	15.480	10.400	6.847	35.270	6.034	9.894	3.659	9.360	2.822	20.820	3.559	56.070
8	19.350	9.829	6.477	33.880	5.638	8.269	3.520	8.604	5.366	17.620	3.661	108.500
9	50.030	9.455	6.059	75.390	5.273	7.521	3.684	12.650	17.830	17.100	15.770	107.100
10	29.220	8.942	5.867	53.100	5.006	7.965	3.956	11.050	36.550	14.770	11.760	71.840
11	22.990	8.551	6.637	27.100	5.064	40.840	3.780	37.200	15.670	12.260	7.743	84.220
12	19.860	7.916	6.843	20.610	4.646	55.120	3.787	21.330	9.451	10.360	7.215	91.080
13	67.620	7.476	7.473	20.840	4.878	21.500	4.178	14.140	7.102	8.988	10.700	88.240
14	54.360	7.829	7.435	19.110	14.090	24.380	12.080	17.560	5.756	7.884	12.500	65.100
15	109.600	10.940	6.438	16.570	16.600	20.870	29.280	20.020	4.825	7.181	9.784	111.300
16	66.320	9.652	7.479	15.150	11.750	17.970	32.440	12.640	4.259	6.530	11.480	89.750
17	35.730	8.915	9.556	15.340	51.660	15.550	16.260	9.998	3.885	6.020	10.170	46.820
18	32.180	8.253	9.254	26.940	32.570	26.520	40.290	8.817	3.678	5.419	7.874	40.460
19	40.300	7.644	8.080	33.060	17.510	22.040	46.490	8.020	7.974	5.235	6.507	69.550
20	35.700	7.016	6.781	23.190	13.940	16.520	18.010	7.200	8.563	4.597	5.664	37.880
21	28.760	6.947	6.998	20.350	11.290	12.770	12.920	6.548	6.584	4.319	5.226	26.290
22	25.330	8.191	6.525	17.000	9.585	10.900	10.950	5.893	8.223	4.184	4.717	59.330
23	93.140	7.491	7.805	20.990	8.454	9.451	19.370	5.290	6.078	4.031	4.334	93.750
24	98.960	6.796	9.826	28.300	7.944	8.270	16.920	4.897	5.771	3.965	4.181	66.280
25	53.830	10.200	7.718	26.560	7.492	7.521	22.690	4.620	9.798	3.887	4.260	36.210
26	38.510	23.940	6.579	27.410	6.990	7.080	21.020	4.396	10.890	3.935	4.376	28.440
27	39.940	20.310	5.977	18.460	8.285	6.229	16.240	4.194	7.738	3.925	4.322	27.550
28	37.620	13.170	6.537	14.740	12.690	5.524	14.330	4.014	6.326	3.847	4.309	84.170
29	33.660		32.660	12.440	17.120	5.032	11.480	3.904	7.250	3.771	8.839	65.450
30	24.860		69.270	10.900	27.650	4.681	9.909	3.819	11.520	3.713	16.500	35.820
31	19.990		31.660		27.040		9.115	3.450		3.661		24.990
Average	39.060	10.840	11.100	32.110	12.460	16.700	13.260	10.870	7.740	9.566	6.882	58.120
Lowest	8.830	6.796	5.867	10.900	4.646	4.681	3.520	3.450	2.822	3.661	3.365	11.910
Highest	109.600	23.940	69.270	89.330	51.660	55.120	46.490	37.200	36.550	38.630	16.500	111.300
Peak flow	124.90	35.56	95.18	131.70	71.22	76.57	81.28	49.87	45.08	51.47	23.30	125.30
Day of peak	23	26	30	3	17	12	18	11	10	6	9	8
Monthly total (million cu m)	104.60	26.22	29.72	83.23	33.38	43.29	35.51	29.10	20.06	25.62	17.84	155.70
Runoff (mm)	110	28	31	87	35	46	37	31	21	27	19	164
Rainfall (mm)	134	27	62	123	101	88	104	61	96	36	50	185

Statistics of monthly data for previous record (Jul 1970 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	32.720	26.630	23.750	13.880	7.804	5.574	3.749	8.307	10.380	17.920	26.070	30.370
	Low	18.050	7.186	8.772	3.441	1.306	0.973	0.859	0.596	1.920	2.163	8.857	10.570
	(year)	1971	1986	1973	1974	1984	1975	1984	1975	1972	1972	1983	1971
	High	56.780	66.170	43.250	33.100	19.810	17.540	12.690	32.480	30.110	33.770	51.680	50.390
	(year)	1984	1990	1981	1989	1983	1981	1985	1985	1985	1988	1970	1978
Runoff:	Avg.	92	68	67	38	22	15	11	23	28	50	71	86
	Low	51	18	25	9	4	3	2	2	5	6	24	30
	High	160	168	122	90	56	48	36	91	82	95	141	142
Rainfall:	Avg.	108	77	89	60	57	62	65	85	83	99	96	96
	Low	46	4	33	14	8	19	17	15	7	43	36	30
	High	185	177	142	122	124	111	129	165	153	178	146	164

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	19.160		17.230		111
Lowest yearly mean			9.712	1975	
Highest yearly mean			23.860	1988	
Lowest monthly mean	6.882	Nov	0.596	Aug 1975	
Highest monthly mean	58.120	Dec	66.170	Feb 1990	
Lowest daily mean	2.822	7 Sep	0.043	6 Sep 1975	
Highest daily mean	111.300	15 Dec	172.000	22 Dec 1991	
Peak	131.700	3 Apr	174.200	31 Dec 1991	
10% exceedance	45.300		43.970		103
50% exceedance	10.590		10.160		104
95% exceedance	3.685		1.091		338
Annual total (million cu m)	604.20		543.80		111
Annual runoff (mm)	635		572		111
Annual rainfall (mm)	1067		977		109
1941-70 rainfall average (mm)			1005		

Factors affecting runoff

- Flow influenced by groundwater abstraction and/or recharge.
- Natural to within 10% at 95 percentile flow.

Station and catchment description

Velocity-area station with cableway and natural control. Flows influenced by major arterial drainage scheme - started in 1988. A substantial portion of the catchment is in the Irish Republic where some groundwater may be abstracted but its hydrological significance is uncertain. Geology: Carboniferous Limestone and Millstone Grit with sandstones overlain by substantial amounts of till. A predominantly rural catchment with limited afforestation. Monaghan Town (pop. 5,000) - in the Irish Republic - is the only significant urban centre.

203028 Agivey at White Hill 1993

Measuring authority: DOEN
First year: 1972

Grid reference: *24* (IC) 883 193
Level stn. (m OD): 17.00

Catchment area (sq km): 98.9
Max alt. (m OD): 461

Daily mean gauged discharges (cubic metres per second)

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1.223	2.193	1.339	3.153	1.078	3.646	0.586	1.251	0.517	3.538	0.758	2.341
2	1.236	1.981	1.164	2.225	1.011	4.155	0.580	4.718	0.521	2.093	0.741	3.570
3	9.858	1.783	1.077	30.120	0.941	2.590	0.570	2.163	0.540	4.682	0.727	11.980
4	6.360	1.605	1.011	34.350	0.893	1.831	0.623	3.849	0.545	2.687	0.747	5.512
5	4.570	1.485	1.229	13.340	0.857	1.449	0.588	2.302	0.559	1.679	0.676	3.253
6	2.347	1.416	1.132	5.749	0.838	1.238	0.554	1.328	0.532	1.719	0.684	3.900
7	1.947	1.366	1.035	4.580	0.963	1.107	0.561	1.225	0.527	5.347	1.382	3.544
8	11.450	1.327	0.983	4.339	1.154	1.016	0.599	1.453	1.408	3.333	1.415	14.460
9	6.202	1.256	0.935	10.630	0.892	0.990	0.704	3.458	10.850	2.978	3.636	6.257
10	7.421	1.225	1.079	3.754	0.815	1.090	1.826	2.933	11.060	2.446	1.714	6.846
11	3.299	1.196	1.704	2.385	0.785	1.714	2.358	7.426	2.349	1.722	1.294	9.233
12	2.617	1.142	1.300	2.631	0.762	1.523	1.222	2.258	1.404	1.342	1.381	29.010
13	3.381	1.080	2.173	4.183	2.964	1.159	1.848	1.453	1.022	1.182	1.367	10.430
14	18.750	1.230	1.446	4.292	16.000	1.073	5.162	1.196	0.904	1.007	1.333	8.360
15	18.000	1.402	1.507	3.082	20.890	0.983	5.758	1.076	0.825	1.717	1.254	13.050
16	9.263	1.216	1.875	2.699	4.132	0.879	2.501	0.961	0.750	3.040	1.820	5.934
17	4.760	1.239	1.828	2.343	19.210	1.076	1.329	0.846	0.706	2.016	1.288	4.194
18	9.994	1.275	1.968	9.115	4.643	1.608	2.300	0.822	0.679	1.436	1.023	4.258
19	6.265	1.462	1.391	4.413	2.912	2.731	2.354	0.777	8.165	1.317	0.909	5.084
20	4.684	1.311	1.131	3.442	2.384	1.746	1.260	0.690	1.818	2.017	0.857	2.943
21	4.183	1.639	1.078	2.751	1.747	1.157	1.147	0.700	1.459	1.549	0.813	4.614
22	3.132	1.914	1.144	3.398	1.471	0.966	0.995	0.663	1.501	1.216	0.764	16.690
23	19.890	1.440	2.305	5.704	1.257	0.844	0.889	0.647	1.106	1.009	0.740	12.700
24	8.060	1.221	1.924	3.530	1.352	0.777	1.043	0.654	3.073	1.026	0.763	5.068
25	4.201	2.102	1.484	2.168	1.699	0.742	5.135	0.658	2.389	0.909	0.976	3.816
26	11.870	3.987	1.164	1.769	1.280	0.734	1.973	0.661	1.677	0.868	0.997	2.600
27	7.121	2.574	1.824	1.473	2.702	0.687	1.950	0.613	1.192	0.861	0.978	14.270
28	5.829	1.790	1.822	1.358	4.777	0.650	2.051	0.609	1.024	0.838	0.896	13.510
29	4.144		23.460	1.203	4.806	0.638	2.091	0.613	4.540	0.815	15.330	9.658
30	3.096		10.230	1.141	18.770	0.615	1.298	0.610	6.101	0.792	3.081	3.982
31	2.633		6.392		6.643		1.216	0.557		0.775		2.555
Average	6.703	1.602	2.585	5.844	4.214	1.380	1.712	1.586	2.325	1.870	1.678	7.859
Lowest	1.223	1.080	0.935	1.141	0.762	0.615	0.554	0.557	0.517	0.775	0.676	2.341
Highest	19.890	3.987	23.460	34.350	20.890	4.155	5.758	7.426	11.060	5.347	15.330	29.010
Peak flow	58.21	5.43	40.96	110.00	49.94	5.50	10.07	19.89	26.61	10.33	44.25	56.86
Day of peak	14	26	29	4	15	2	14	11	10	3	29	27
Monthly total (million cu m)	17.95	3.88	6.92	15.15	11.29	3.58	4.59	4.25	6.03	5.01	4.35	21.05
Runoff (mm)	182	39	70	153	114	36	46	43	61	51	44	213
Rainfall (mm)	147	36	89	139	179	56	108	63	112	51	66	251

Statistics of monthly data for previous record (Dec 1972 to Dec 1992)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean flows:	Avg.	5.205	3.956	3.439	2.058	1.458	1.072	0.958	1.542	2.175	3.867	3.947	4.473
	Low	2.609	0.847	1.384	0.870	0.282	0.340	0.191	0.212	0.414	1.841	0.815	2.218
	(year)	1989	1986	1973	1984	1984	1984	1984	1983	1991	1973	1983	1987
	High	7.902	8.037	5.407	4.758	3.909	2.389	1.924	5.077	6.371	6.337	8.405	7.077
	(year)	1974	1990	1992	1989	1981	1982	1990	1985	1985	1981	1982	1978
Runoff:	Avg.	141	98	93	54	39	28	26	42	57	105	103	121
	Low	71	21	37	23	8	9	5	6	11	50	21	60
	High	214	197	146	125	106	63	52	137	167	172	220	192
Rainfall:	Avg.	144	97	113	71	70	73	78	95	100	139	122	126
	Low	63	5	36	22	14	37	26	23	15	53	33	58
	High	221	217	191	149	161	150	144	218	213	233	196	206

Summary statistics

	For 1993		For record preceding 1993		1993 As % of pre-1993
Mean flow (m^3s^{-1})	3.299		2.843		116
Lowest yearly mean			2.165	1983	
Highest yearly mean			3.599	1981	
Lowest monthly mean	1.380	Jun	0.191	Jul 1984	
Highest monthly mean	7.859	Dec	8.405	Nov 1982	
Lowest daily mean	0.517	1 Sep	0.080	7 Sep 1976	
Highest daily mean	34.350	4 Apr	76.500	21 Oct 1987	
Peak	110.000	4 Apr	159.300	21 Oct 1987	
10% exceedance	7.776		6.621		117
50% exceedance	1.561		1.584		99
95% exceedance	0.612		0.313		196
Annual total (million cu m)	104.00		89.73		116
Annual runoff (mm)	1052		907		116
Annual rainfall (mm)	1297		1228		106
1941-70 rainfall average (mm)					

Factors affecting runoff

- Natural to within 10% at 95 percentile flow.

Station and catchment description

Velocity-area station with cableway. Geology: mainly basalt overlain by till with some peat. Significant proportion of upland, predominantly grassland or heath. No urban areas or major industry.

Part (ii) – The monthly flow data

The introductory information (measuring authority etc.) is as described in Part (i).

Hydrometric statistics for the year

The monthly average, peak flow, runoff and rainfall figures are equivalent to the summary information following the daily mean gauged discharges in Part (i). Because of the rounding of monthly runoff values the runoff for the year may differ slightly from the sum of the individual monthly totals.

Monthly and yearly statistics for previous record

Monthly mean flows (average, low and high) and the monthly rainfall and runoff figures are equivalent to those presented in Part (i). Again due to the rounding of monthly runoff values, the average runoff for the year derived from the previous record may differ slightly from the sum of the individual monthly totals. The peak flow is the highest discharge, in cubic metres per second, for each month. For many stations the archived series of monthly instantaneous maximum flows, from which the preceding record peak is abstracted, is incomplete, particularly for the earlier years, and certain of the peak flows are known to be of limited accuracy. Where the peak value – in an incomplete series – is exceeded by the highest daily mean flow on record, the latter is substituted; such substitutions are indicated by a 'd' flag. An examination of the quality of the peak flow figures is continuing and significant revision may be expected as this review proceeds. The figures are published primarily to provide a guide to the range of river flows experienced throughout the year at the featured gauging stations.

Factors Affecting Runoff

Code letters are used as described in Part (i).

Station type

The station type is coded by the list of abbreviations given below – two abbreviations may be applied to each station relating to the measurement of lower or higher flows. Where total flow is a summation of the flows measured in several component channels a '+' separates the code for the principal monitoring station from that of the subsidiary site(s).

B	Broad-crested weir
C	Crump (triangular profile) single crest weir
CB	Compound broad-crested weir. The compounding may include a mixture of types such as rectangular profiles, flumes and shallow-Vs and with or without divide walls
CC	Compound Crump weir
EM	Electromagnetic gauging station
EW	Essex weir (simple Crump weir modified with angled, sloping, triangular profile flanking crests) in trapezoidal channel
FL	Flume
FV	Flat-V triangular profile weir
MIS	Miscellaneous method
TP	Rectangular thin-plate weir
US	Ultrasonic gauging station
VA	Velocity-area gauging station
VN	Triangular (V notch) thin-plate weir

Comment

A note clarifying or qualifying data featured in the Hydrometric Statistics section; for instance to indicate that the runoff values have been derived from naturalised flows.

003002 Carron at Sgodachail 1993

Measuring authority: HRPB
First year: 1973

Grid reference: 28 (NH) 490 921
Level stn. (m OD): 70.70

Catchment area (sq km): 241.1
Max alt. (m OD): 954

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	25.220	13.880	9.154	4.966	6.153	3.666	6.323	3.259	3.117	17.840	2.390	12.670	**9.074**
m^3s^{-1}):	Peak	178.50	58.02	89.68	27.31	86.71	22.55	38.07	15.49	29.90	243.20	12.87	141.00	**243.20**
Runoff (mm)		280	139	102	53	68	39	70	36	34	198	26	141	**1187**
Rainfall (mm)		402	117	132	71	113	87	119	62	56	177	42	256	**1634**

Monthly and yearly statistics for previous record (Jan 1974 to Dec 1992)

Mean	Avg.	14.370	10.020	11.580	7.473	4.737	4.018	3.516	4.616	8.841	11.780	13.160	13.400	**8.958**
flows	Low	7.226	1.944	3.680	1.294	1.020	0.957	1.142	0.983	3.659	3.963	4.228	5.595	**6.846**
m^3s^{-1})	High	29.740	25.850	33.120	15.030	10.110	10.270	9.481	10.680	17.670	29.670	25.410	28.120	**12.192**
Peak flow (m^3s^{-1})		281.80	264.70	225.00	127.90	101.20	140.40	165.20	207.30	340.30	288.90	219.10	255.70	**340.30**
Runoff (mm)		160	102	129	80	53	43	39	51	95	131	141	149	**1173**
Rainfall (mm)*		262	169	240	99	95	94	92	132	210	247	237	244	**2121**

*(1981-1992)

Factors affecting runoff: H
Station type: VA

1993 runoff is 101% of previous mean
rainfall 77%

004001 Conon at Moy Bridge 1993

Measuring authority: HRPB
First year: 1947

Grid reference: 28 (NH) 482 547
Level stn. (m OD): 10.00

Catchment area (sq km): 961.8
Max alt. (m OD): 1052

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	133.700	75.390	69.040	41.680	18.930	14.180	26.930	22.480	16.140	40.700	23.200	67.950	**45.859**
m^3s^{-1}):	Peak	491.60	146.00	160.30	119.70	121.30	65.29	80.84	55.69	49.27	137.80	84.25	328.80	**491.60**
Runoff (mm)		372	190	192	112	53	38	75	63	43	113	63	189	**1504**
Rainfall (mm)		399	112	152	53	92	64	128	67	44	136	50	281	**1578**

Monthly and yearly statistics for previous record (Oct 1947 to Dec 1992—incomplete or missing months total 5.7 years)

Mean	Avg.	70.020	62.040	60.500	42.780	31.680	21.930	21.570	28.250	41.850	55.870	65.780	72.780	**47.869**
flows	Low	31.690	25.810	18.670	13.940	10.940	8.861	2.959	8.162	12.510	23.090	24.090	27.970	**29.991**
m^3s^{-1})	High	138.300	164.600	191.500	75.730	53.050	47.560	40.010	45.140	94.870	94.030	121.700	165.100	**77.537**
Peak flow (m^3s^{-1})		617.00	703.90	507.00	203.90	232.20	165.20	247.40	254.90	223.70	324.80	411.80	1076.00	**1076.00**
Runoff (mm)		195	158	168	115	88	59	60	79	113	156	177	203	**1571**
Rainfall (mm)*		198	142	173	104	102	94	105	128	169	212	206	226	**1859**

*(1953-1992)

Factors affecting runoff: H
Station type: VA

1993 runoff is 96% of previous mean
rainfall 85%

006008 Enrick at Mill of Tore 1993

Measuring authority: HRPB
First year: 1979

Grid reference: 28 (NH) 450 300
Level stn. (m OD): 109.40

Catchment area (sq km): 105.9
Max alt. (m OD): 678

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	14.910	2.344	2.946	1.245	3.096	0.816	0.190	0.206	0.166	4.851	1.206	6.795	**3.264**
m^3s^{-1}):	Peak	83.62	6.95	14.83	6.30	21.87	4.23	0.37	0.58	0.30	50.13	6.32	56.46	**83.62**
Runoff (mm)		377	54	75	30	78	20	5	5	4	123	30	172	**972**
Rainfall (mm)		397	59	95	38	113	42	45	35	41	154	42	235	**1296**

Monthly and yearly statistics for previous record (Dec 1979 to Dec 1992)

Mean	Avg.	5.874	5.026	4.894	1.928	1.341	0.956	0.984	0.998	2.415	4.376	5.008	5.431	**3.264**
flows	Low	1.947	0.707	1.154	0.422	0.184	0.087	0.054	0.020	0.398	2.654	1.685	1.422	**2.118**
m^3s^{-1})	High	9.679	18.220	13.880	3.466	4.386	1.959	3.332	3.235	3.994	7.068	9.382	9.554	**4.986**
Peak flow (m^3s^{-1})		56.60	77.96	51.08	20.17	18.65	19.34	59.86	15.83	51.30	50.41	60.67	49.72	**77.96**
Runoff (mm)		149	116	124	47	34	23	25	25	59	111	123	137	**973**
Rainfall (mm)		183	119	160	64	70	75	70	91	141	165	165	184	**1487**

Factors affecting runoff: N
Station type: VA

1993 runoff is 100% of previous mean
rainfall 87%

008007 Spey at Invertruim 1993

Measuring authority: NERPB
First year: 1952

Grid reference: 27 (NN) 687 962
Level stn. (m OD): 242.50

Catchment area (sq km): 400.4
Max alt. (m OD): 951

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	27.710	7.244	7.004	4.026	5.273	3.078	3.133	2.579	2.489	4.077	2.516	9.743	**6.606**
m^3s^{-1}):	Peak	261.10	37.18	90.12	10.38	92.03	5.33	4.94	3.96	11.98	14.21	3.72	74.86	**261.10**
Runoff (mm)		185	44	47	26	35	20	21	17	16	27	16	65	**520**
Rainfall (mm)		441	51	124	63	128	52	73	52	66	89	45	227	**1411**

Monthly and yearly statistics for previous record (Oct 1952 to Dec 1992)

Mean	Avg.	9.522	7.519	7.553	4.232	3.561	2.935	2.836	3.329	4.757	6.863	7.611	9.377	**5.839**
flows	Low	3.314	1.953	2.722	2.075	1.413	1.123	1.042	0.852	1.454	1.638	3.235	3.518	**3.935**
m^3s^{-1})	High	23.280	39.990	42.630	7.126	6.210	6.269	5.021	7.545	14.650	14.830	15.960	24.970	**11.121**
Peak flow (m^3s^{-1})		264.50	269.10	274.50	61.90	43.92	45.93	72.83	75.00	108.00	106.90	170.60	259.50	**274.50**
Runoff (mm)		64	46	51	27	24	19	19	22	31	46	49	63	**460**
Rainfall (mm)		167	115	131	75	85	76	86	106	136	167	163	179	**1486**

Factors affecting runoff: H
Station type: VA

1993 runoff is 113% of previous mean
rainfall 95%

009001 Deveron at Avochie 1993

Measuring authority: NERPB
First year: 1959

Grid reference: 38 (NJ) 532 464
Level stn. (m OD): 81.80

Catchment area (sq km): 441.6
Max alt. (m OD): 775

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	10.830	6.097	5.737	5.675	6.864	4.571	3.362	3.983	7.326	24.310	5.634	9.522	**7.862**
m^3s^{-1}):	Peak	57.80	9.68	34.70	15.64	70.45	28.50	11.51	15.64	69.06	124.30	8.29	65.83	**124.30**
Runoff (mm)		66	33	35	33	42	27	20	24	43	147	33	58	**561**
Rainfall (mm)		86	35	30	57	108	67	71	75	97	205	31	88	**950**

Monthly and yearly statistics for previous record (Oct 1959 to Dec 1992)

Mean	Avg.	11.820	10.300	11.450	9.958	7.528	5.138	4.610	5.777	5.643	8.941	10.710	11.130	**8.579**
flows	Low	3.527	3.052	3.391	4.314	3.274	2.610	1.766	1.621	2.092	1.934	2.668	3.504	**4.051**
m^3s^{-1})	High	24.440	19.720	22.230	21.500	21.930	11.130	9.841	19.110	16.040	28.210	29.790	23.590	**12.437**
Peak flow (m^3s^{-1})		120.50	84.90	118.00	76.13	183.70	153.10	146.40	236.50	155.70	221.90	177.70	157.10	**236.50**
Runoff (mm)		72	57	69	58	46	30	28	35	33	54	63	68	**613**
Rainfall (mm)		89	64	78	69	72	69	74	92	83	102	103	87	**982**

Factors affecting runoff: N
Station type: VA

1993 runoff is 92% of previous mean
rainfall 97%

010002 Ugie at Inverugie 1993

Measuring authority: NERPB
First year: 1971

Grid reference: 48 (NK) 101 485
Level stn. (m OD): 8.50

Catchment area (sq km): 325.0
Max alt. (m OD): 234

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.987	3.106	2.422	2.849	2.399	2.006	2.273	3.622	2.345	9.785	4.545	9.155	**4.146**
m^3s^{-1}):	Peak	12.29	4.18	4.36	11.46	11.66	4.98	9.30	16.21	4.90	39.85	14.68	33.27	**39.85**
Runoff (mm)		41	23	20	23	20	16	19	30	19	81	36	75	**402**
Rainfall (mm)		54	25	25	53	77	54	88	67	37	116	53	82	**731**

Monthly and yearly statistics for previous record (Feb 1971 to Dec 1992)

Mean	Avg.	7.388	6.310	5.705	4.173	3.350	2.279	1.969	2.070	2.439	4.838	6.454	7.011	**4.493**
flows	Low	2.085	2.088	1.791	1.624	1.467	1.200	0.927	0.858	0.912	0.894	1.531	1.360	**2.069**
m^3s^{-1})	High	11.300	14.620	9.751	7.785	8.103	4.296	4.901	6.225	7.052	9.079	18.230	13.320	**6.505**
Peak flow (m^3s^{-1})		66.40	96.74	66.40	40.26	35.57	13.29	23.66	21.24	36.25	94.52	99.28	87.75	**99.28**
Runoff (mm)		61	48	47	33	28	18	16	17	19	40	51	58	**436**
Rainfall (mm)		75	49	66	51	49	54	56	64	80	88	89	74	**795**

Factors affecting runoff: N
Station type: VA

1993 runoff is 92% of previous mean
rainfall 92%

011001 Don at Parkhill 1993

Measuring authority: NERPB
First year: 1969

Grid reference: 38 (NJ) 887 141
Level stn. (m OD): 9.90

Catchment area (sq km): 1273.0
Max alt. (m OD): 872

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	25.480	17.280	15.020	20.190	19.710	14.600	14.230	15.960	20.590	56.480	20.150	29.080	**22.478**
m^3s^{-1}):	Peak	82.18	26.95	48.26	66.96	70.79	23.27	65.41	39.96	76.06	191.10	40.48	77.12	**191.10**
Runoff (mm)		54	33	32	41	41	30	30	34	42	119	41	61	**557**
Rainfall (mm)		81	29	35	69	99	58	90	71	90	163	42	82	**909**

Monthly and yearly statistics for previous record (Dec 1969 to Dec 1992)

Mean	Avg.	28.320	26.540	27.450	24.130	16.190	11.770	10.450	11.290	10.750	18.590	23.040	25.740	**19.492**
flows	Low	8.070	6.557	6.274	8.487	7.514	6.424	5.128	4.644	5.019	4.567	5.692	7.738	**8.833**
m^3s^{-1})	High	48.660	52.240	48.950	44.750	34.770	27.560	27.530	40.150	36.470	51.940	86.230	50.960	**29.185**
Peak flow (m^3s^{-1})		185.90	131.00	143.70	107.50	92.06	101.60	118.10	277.40	107.20	273.10	213.20	154.50	**277.40**
Runoff (mm)		60	51	58	49	34	24	22	24	22	39	47	54	**483**
Rainfall (mm)		89	58	74	62	62	63	67	74	73	89	87	75	**873**

Factors affecting runoff: N
Station type: VA

1993 runoff is 115% of previous mean
rainfall 104%

012006 Gairn at Invergairn 1993

Measuring authority: NERPB
First year: 1978

Grid reference: 37 (NO) 353 971
Level stn. (m OD): 217.70

Catchment area (sq km): 150.0
Max alt. (m OD): 1171

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	8.637	5.047	3.535	3.363	4.125	1.896	1.259	1.289	3.559	9.839	1.752	3.545	**3.993**
m^3s^{-1}):	Peak	85.37	18.50	18.83	10.46	28.96	5.98	4.23	2.46	30.41	67.71	2.88	41.30	**85.37**
Runoff (mm)		154	81	63	58	74	33	22	23	62	176	30	63	**840**
Rainfall (mm)		177	32	52	64	111	39	56	62	110	199	36	91	**1029**

Monthly and yearly statistics for previous record (Nov 1978 to Dec 1992)

Mean	Avg.	4.556	4.212	5.605	5.277	3.765	2.704	1.840	2.097	2.548	4.445	4.490	4.737	**3.855**
flows	Low	2.698	1.548	3.565	2.110	1.732	0.952	0.743	0.612	0.999	1.319	1.257	1.832	**2.338**
m^3s^{-1})	High	8.758	7.692	7.418	9.595	7.605	5.608	3.036	5.057	6.389	12.420	12.420	7.661	**4.871**
Peak flow (m^3s^{-1})		37.70	38.88	88.91	37.34	27.41	47.25	24.92	65.69	58.09	95.09	61.22	48.55	**95.09**
Runoff (mm)		81	69	100	91	67	47	33	37	44	79	78	-- 85 -	**811**
Rainfall (mm)*		98	73	92	57	63	73	61	79	91	116	101	86	**990**

*(1981-1992)

Factors affecting runoff: N
Station type: VA

1993 runoff is 103% of previous mean
rainfall 104%

013007 North Esk at Logie Mill 1993

Measuring authority: TRPB
First year: 1976

Grid reference: 37 (NO) 699 640
Level stn. (m OD): 10.60

Catchment area (sq km): 730.0
Max alt. (m OD): 939

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	50.000	17.270	13.170	34.870	19.920	9.631	7.889	6.758	17.280	39.870	13.330	27.900	**21.555**
m^3s^{-1}):	Peak	315.60	49.13	172.40	277.90	186.40	25.56	67.10	21.55	181.70	320.80	46.39	131.30	**320.80**
Runoff (mm)		183	57	48	124	73	34	29	25	61	146	47	102	**931**
Rainfall (mm)		201	19	68	143	131	45	81	60	115	151	81	99	**1194**

Monthly and yearly statistics for previous record (Jan 1976 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	23.380	24.670	29.290	21.440	14.170	9.133	7.178	9.661	10.890	26.040	24.210	27.240	**18.928**
flows	Low	10.970	8.612	14.620	7.156	4.110	3.684	2.685	2.548	3.622	4.099	5.281	9.359	**11.043**
m^3s^{-1})	High	48.600	46.630	45.240	34.750	36.420	24.300	18.060	35.810	30.540	80.410	91.170	59.880	**24.927**
Peak flow (m^3s^{-1})		240.80	195.00	279.30	230.40	180.80	271.90	133.00	320.60	342.80	452.80	462.10	398.10	**462.10**
Runoff (mm)		86	83	107	76	52	32	26	35	39	96	86	100	**818**
Rainfall (mm)		112	84	109	60	73	70	71	86	97	136	104	112	**1114**

Factors affecting runoff: S P I
Station type: VA

1993 runoff is 114% of previous mean
rainfall 107%

014001 Eden at Kemback 1993

Measuring authority: TRPB
First year: 1967

Grid reference: 37 (NO) 415 158
Level stn. (m OD): 6.20

Catchment area (sq km): 307.4
Max alt. (m OD): 522

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	18.380	4.242	2.798	6.479	6.112	3.262	1.948	1.638	1.783	8.163	3.591	8.843	**5.634**
m^3s^{-1}):	Peak	55.64	7.45	4.38	39.56	36.50	7.89	4.91	4.06	5.50	47.78	9.80	28.35	**55.64**
Runoff (mm)		160	33	24	55	53	28	17	14	15	71	30	77	**578**
Rainfall (mm)		213	7	47	98	110	59	56	57	77	119	63	105	**1011**

Monthly and yearly statistics for previous record (Oct 1967 to Dec 1992)

Mean	Avg.	6.964	6.294	5.063	3.776	2.935	2.147	1.514	1.664	2.018	3.132	4.419	5.534	**3.777**
flows	Low	2.546	2.170	1.408	1.199	1.406	1.077	0.861	0.799	0.749	0.833	0.830	1.731	**1.446**
m^3s^{-1})	High	10.890	19.460	8.238	7.243	8.335	6.651	3.390	6.038	11.260	6.880	14.440	12.390	**5.593**
Peak flow (m^3s^{-1})		59.05	71.31	64.71	62.06	47.48	41.93	26.20	17.19	53.64	35.97	39.37	47.82	**71.31**
Runoff (mm)		61	50	44	32	26	18	13	14	17	27	37	48	**388**
Rainfall (mm)		85	57	67	45	61	58	58	63	73	77	72	73	**789**

Factors affecting runoff: S GEI
Station type: VA

1993 runoff is 149% of previous mean
rainfall 128%

015011 Lyon at Comrie Bridge 1993

Measuring authority: TRPB
First year: 1958

Grid reference: 27 (NN) 786 486
Level stn. (m OD): 92.10

Catchment area (sq km): 391.1
Max alt. (m OD): 1215

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	40.560	13.020	14.160	14.070	10.590	5.263	4.460	4.700	5.699	13.720	5.986	19.020	**12.654**
m^3s^{-1}):	Peak	370.90	52.30	189.00	80.41	181.70	18.54	18.93	18.82	59.82	103.00	27.86	157.80	**370.90**
Runoff (mm)		278	81	97	93	73	35	31	32	38	94	40	130	**1020**
Rainfall (mm)		545	56	213	145	155	66	125	72	108	139	104	306	**2034**

Monthly and yearly statistics for previous record (Jan 1958 to Dec 1992)

Mean	Avg.	17.810	14.840	15.930	10.210	9.308	6.437	6.140	7.545	10.470	14.840	14.740	15.720	**11.994**
flows	Low	3.596	3.198	4.219	4.002	3.537	3.470	3.062	2.221	2.843	3.662	5.320	6.182	**8.330**
m^3s^{-1})	High	43.920	54.190	67.160	17.390	24.520	18.870	20.800	28.940	28.120	29.930	30.550	32.780	**19.871**
Peak flow (m^3s^{-1})		254.70	377.90	311.30	129.00	124.90	109.70	154.70	128.70	145.10	191.90	271.30	199.60	**377.90**
Runoff (mm)		122	93	109	68	64	43	42	52	69	102	98	108	**968**
Rainfall (mm)*		271	164	216	90	101	88	104	129	187	216	233	237	**2036**

*(1971-1992)

Factors affecting runoff: H
Station type: VA

1993 runoff is 105% of previous mean
rainfall 100%

016003 Ruchill Water at Cultybraggan 1993

Measuring authority: TRPB
First year: 1970

Grid reference: 27 (NN) 764 204
Level stn. (m OD): 62.30

Catchment area (sq km): 99.5
Max alt. (m OD): 985

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	19.720	2.923	7.841	8.053	4.880	2.086	1.600	1.534	2.222	4.094	2.752	11.160	**5.783**
m^3s^{-1}):	Peak	228.20	13.42	179.60	90.24	131.90	12.23	32.70	19.19	56.28	49.55	44.71	139.20	**228.20**
Runoff (mm)		531	71	211	210	131	54	43	41	58	110	72	300	**1833**
Rainfall (mm)		575	41	243	202	189	80	108	61	116	116	123	333	**2187**

Monthly and yearly statistics for previous record (Oct 1970 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	8.029	6.595	6.973	3.234	2.559	1.818	1.820	2.746	4.899	6.204	7.403	7.304	**4.960**
flows	Low	2.263	1.050	1.802	0.758	0.304	0.381	0.239	0.164	0.345	0.789	2.306	1.630	**3.281**
m^3s^{-1})	High	15.240	20.280	13.660	7.109	10.120	4.562	5.739	9.246	10.260	12.130	16.550	12.350	**6.586**
Peak flow (m^3s^{-1})		250.40	189.20	165.30	87.32	165.00	221.30	160.00	143.00	227.30	176.50	183.30	174.50	**250.40**
Runoff (mm)		216	162	188	84	69	47	49	74	128	167	193	197	**1573**
Rainfall (mm)		247	173	193	95	110	96	115	141	196	210	228	227	**2031**

Factors affecting runoff: N
Station type: VA

1993 runoff is 116% of previous mean
rainfall 108%

016004 Earn at Forteviot Bridge 1993

Measuring authority: TRPB
First year: 1972
Grid reference: 37 (NO) 043 184
Level stn. (m OD): 7.80
Catchment area (sq km): 782.2
Max alt. (m OD): 985

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	116.500	25.820	26.830	51.570	30.710	16.850	9.313	7.727	8.908	30.520	16.140	57.970	**33.407**
m^3s^{-1}):	Peak	415.00	46.63	226.40	209.40	186.50	50.32	31.61	22.75	72.15	146.00	52.46	220.80	**415.00**
Runoff (mm)		399	80	92	171	105	56	32	26	30	105	53	199	**1347**
Rainfall (mm)		435	24	154	144	156	74	92	52	100	121	93	230	**1675**

Monthly and yearly statistics for previous record (Oct 1972 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	49.710	40.860	40.280	22.330	14.270	9.237	8.519	11.750	20.890	31.710	40.620	42.480	**27.671**
flows	Low	19.630	16.070	12.310	8.389	4.906	4.095	2.658	2.456	5.302	5.984	15.120	15.060	**15.508**
m^3s^{-1})	High	85.510	127.100	74.340	45.860	47.200	20.070	24.620	46.660	55.680	61.980	89.750	79.160	**33.908**
Peak flow (m^3s^{-1})		277.50	337.00	264.60	162.20	155.20	114.90	142.30	169.70	271.80	241.20	328.60	238.70	**337.00**
Runoff (mm)		170	128	138	74	49	31	29	40	69	109	135	145	**1116**
Rainfall (mm)		174	119	147	64	77	74	85	107	149	151	160	161	**1468**

Factors affecting runoff: P H
Station type: VA

1993 runoff is 121% of previous mean rainfall 114%

017001 Carron at Headswood 1993

Measuring authority: FRPB
First year: 1969
Grid reference: 26 (NS) 832 820
Level stn. (m OD): 17.10
Catchment area (sq km): 122.3
Max alt. (m OD): 570

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	15.330	2.198	2.891	3.935	2.269	1.326	1.039	1.859	1.089	2.328	2.156	8.427	**3.768**
m^3s^{-1}):	Peak	122.30	8.88	32.99	27.32	21.79	9.69	4.63	7.00	7.99	29.50	26.32	55.30	**122.30**
Runoff (mm)		336	43	63	83	50	28	23	41	23	51	46	185	**972**
Rainfall (mm)		354	31	141	137	130	86	101	65	84	104	93	257	**1583**

Monthly and yearly statistics for previous record (Aug 1969 to Dec 1992)

Mean	Avg.	6.048	4.403	4.356	2.121	1.487	1.161	1.119	1.637	3.029	3.967	5.166	5.198	**3.304**
flows	Low	1.943	1.018	1.232	0.807	0.590	0.580	0.549	0.557	0.467	0.424	1.412	1.084	**2.108**
m^3s^{-1})	High	11.300	14.130	9.819	4.616	5.724	2.834	4.650	8.092	16.720	10.270	9.759	10.470	**4.606**
Peak flow (m^3s^{-1})		138.10	147.70	132.90	43.62	51.35	33.74	65.38	84.48	124.30	124.80	105.80	147.90	**147.90**
Runoff (mm)		132	88	95	45	33	25	24	36	64	87	109	114	**853**
Rainfall (mm)		178	121	149	78	84	86	89	120	156	165	178	167	**1571**

Factors affecting runoff: S E
Station type: VA

1993 runoff is 114% of previous mean rainfall 101%

017002 Leven at Leven 1993

Measuring authority: FRPB
First year: 1969
Grid reference: 37 (NO) 369 006
Level stn. (m OD): 4.10
Catchment area (sq km): 424.0
Max alt. (m OD): 522

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	26.030	8.824	3.612	8.620	10.240	5.725	1.968	2.508	2.171	8.717	5.622	11.410	**7.973**
m^3s^{-1}):	Peak	85.42	22.32	11.40	42.29	38.62	25.49	13.13	6.69	6.82	48.50	8.01	24.05	**85.42**
Runoff (mm)		164	50	23	53	65	35	12	16	13	55	34	72	**593**
Rainfall (mm)		229	9	61	105	129	74	66	43	86	112	69	141	**1124**

Monthly and yearly statistics for previous record (Aug 1969 to Dec 1992)

Mean	Avg.	11.650	10.450	8.013	5.367	3.598	3.104	2.094	3.301	4.043	5.976	8.273	10.000	**6.304**
flows	Low	4.786	2.882	1.543	1.413	2.012	1.166	0.902	0.820	0.970	0.795	0.972	3.462	**2.269**
m^3s^{-1})	High	20.700	22.660	14.670	10.630	12.050	7.044	5.300	11.840	21.040	13.170	26.510	19.200	**9.294**
Peak flow (m^3s^{-1})		53.54	128.00	69.64	70.96	44.54	26.93	28.83	25.69	84.25	40.67	56.76	62.69	**128.00**
Runoff (mm)		74	60	51	33	23	19	13	21	25	38	51	63	**469**
Rainfall (mm)		98	66	83	49	58	67	65	77	89	89	94	91	**926**

Factors affecting runoff: SR El
Station type: VA

1993 runoff is 126% of previous mean rainfall 121%

018003 Teith at Bridge of Teith 1993

Measuring authority: FRPB
First year: 1957
Grid reference: 27 (NN) 725 011
Level stn. (m OD): 14.70
Catchment area (sq km): 518.0
Max alt. (m OD): 1165

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	99.850	15.000	32.480	40.090	15.180	10.010	9.486	11.470	8.645	13.240	11.400	46.570	**26.304**
m^3s^{-1}):	Peak	378.30	26.31											
Runoff (mm)		516	70	168	201	79	50	49	59	43	68	57	241	**1601**
Rainfall (mm)		551	50	244	189	154	74	128	77	105	89	131	345	**2137**

Monthly and yearly statistics for previous record (Jan 1957 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	36.840	30.480	29.680	16.670	14.270	9.236	9.659	13.610	20.770	27.780	31.560	34.460	**22.898**
flows	Low	9.608	5.743	6.589	5.612	4.017	3.953	3.781	3.135	3.635	5.897	9.842	11.790	**15.094**
m^3s^{-1})	High	72.430	109.100	81.670	44.110	55.000	21.520	26.390	54.210	51.520	66.410	70.650	72.370	**32.716**
Peak flow (m^3s^{-1})		373.70	361.80	217.40	182.40	158.00	161.70	118.30	174.40	184.10	242.60	245.10	241.10	**373.70**
Runoff (mm)		191	144	153	83	74	46	50	70	104	144	158	178	**1395**
Rainfall (mm)*		239	160	189	97	115	103	111	139	201	220	221	219	**2014**

*(1963-1992)

Factors affecting runoff: S P I
Station type: VA

1993 runoff is 115% of previous mean rainfall 106%

018005 Allan Water at Bridge of Allan 1993

Measuring authority: FRPB
First year: 1971

Grid reference: 26 (NS) 786 980
Level stn. (m OD): 11.20

Catchment area (sq km): 210.0
Max alt. (m OD): 633

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	28.580	4.315	8.568	10.410	8.251	3.976	2.842	2.403	1.983	6.403	3.846	14.530	**8.072**
m^3s^{-1}):	Peak	194.30	8.71	68.90	69.15	68.05	15.37	19.55	7.96	12.42	54.67	24.03	71.40	**194.30**
Runoff (mm)		364	50	109	129	105	49	36	31	24	82	47	185	**1212**
Rainfall (mm)		379	25	122	123	144	79	90	45	73	88	81	213	**1462**

Monthly and yearly statistics for previous record (Jul 1971 to Dec 1992)

Mean	Avg.	11.500	9.101	9.488	5.016	3.625	2.574	2.250	3.185	5.327	7.222	9.075	9.834	**6.508**
flows	Low	4.751	3.631	3.152	1.654	1.189	0.945	0.726	0.648	0.907	0.971	3.642	3.709	**4.269**
m^3s^{-1})	High	18.550	22.270	18.170	9.120	15.430	5.423	6.309	12.390	15.180	12.420	17.760	17.140	**9.090**
Peak flow (m^3s^{-1})		136.80	81.93	83.43	69.63	72.11	61.86	66.37	67.48	105.60	111.00	97.89	112.60	**136.80**
Runoff (mm)		147	106	121	62	46	32	29	41	66	92	112	125	**978**
Rainfall (mm)		153	102	128	65	74	73	81	99	129	133	137	141	**1315**

Factors affecting runoff: I
Station type: VA

1993 runoff is 124% of previous mean
rainfall 111%

018018 Kirkton Burn at Balquhidder 1993

Measuring authority: IH
First year: 1983

Grid reference: 27 (NN) 532 219
Level stn. (m OD): 246.00

Catchment area (sq km): 6.8
Max alt. (m OD): 852

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.280	0.368	0.582	0.557	0.290	0.126	0.141	0.204	0.170	0.301	0.178	0.709	**0.411**
m^3s^{-1}):	Peak	12.53	1.11	8.28	2.63	8.51	0.43	1.06	1.49	3.57	2.11	1.39	7.50	**12.53**
Runoff (mm)		501	130	228	211	114	48	55	80	64	118	67	277	**1891**
Rainfall (mm)		616	55	280	192	162	68	134	79	115	112	139	374	**2326**

Monthly and yearly statistics for previous record (Jan 1983 to Dec 1992)

Mean	Avg.	0.618	0.530	0.617	0.357	0.215	0.143	0.203	0.336	0.404	0.615	0.529	0.632	**0.428**
flows	Low	0.178	0.105	0.214	0.190	0.066	0.055	0.047	0.031	0.070	0.242	0.221	0.339	**0.346**
m^3s^{-1})	High	0.920	1.489	1.144	0.687	0.847	0.261	0.539	0.767	0.726	0.906	1.028	1.052	**47.362**
Peak flow (m^3s^{-1})		13.57	7.66	8.69	4.01	4.28	2.56	5.98	10.90	7.45	12.20	9.25	10.09	**13.57**
Runoff (mm)		264	189	241	135	84	54	79	131	153	244	200	247	**1971**
Rainfall (mm)*		324	254	309	126	104	95	132	193	193	266	229	276	**2501**

*(1986-1992)

Factors affecting runoff: N
Station type: C

1993 runoff is 96% of previous mean
rainfall 93%

020001 Tyne at East Linton 1993

Measuring authority: FRPB
First year: 1961

Grid reference: 36 (NT) 591 768
Level stn. (m OD): 16.50

Catchment area (sq km): 307.0
Max alt. (m OD): 528

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.912	1.911	1.201	2.759	6.137	1.762	0.951	0.880	1.219	9.421	2.297	9.447	**3.691**
m^3s^{-1}):	Peak	42.87	3.34	1.89	15.02	91.06	5.78	3.52	1.16	5.25	86.34	6.45	49.82	**91.06**
Runoff (mm)		52	15	10	23	54	15	8	8	10	82	19	82	**379**
Rainfall (mm)		83	9	23	85	105	61	42	43	76	143	49	121	**840**

Monthly and yearly statistics for previous record (Jan 1961 to Dec 1992)

Mean	Avg.	4.621	3.887	3.931	2.920	2.282	1.421	1.263	1.593	1.712	2.285	3.464	3.675	**2.750**
flows	Low	1.032	0.783	0.531	0.644	0.781	0.586	0.500	0.468	0.461	0.451	0.524	0.582	**0.709**
m^3s^{-1})	High	11.540	8.625	8.789	7.824	11.600	6.142	4.393	9.855	8.490	7.402	11.210	8.405	**4.146**
Peak flow (m^3s^{-1})		93.02	53.51	118.80	143.00	119.70	59.12	70.18	112.70	90.84	148.50	127.50	52.02	**148.50**
Runoff (mm)		40	31	34	25	20	12	11	14	14	20	29	32	**283**
Rainfall (mm)		64	44	59	46	57	54	61	77	68	69	69	60	**728**

Factors affecting runoff: EI
Station type: VA

1993 runoff is 134% of previous mean
rainfall 115%

021006 Tweed at Boleside 1993

Measuring authority: TWRP
First year: 1961

Grid reference: 36 (NT) 498 334
Level stn. (m OD): 94.50

Catchment area (sq km): 1500.0
Max alt. (m OD): 839

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	99.180	22.140	21.340	58.920	59.970	20.540	12.310	15.120	19.570	58.250	18.890	100.4	**42.520**
m^3s^{-1}):	Peak	411.00	48.09	157.10	168.40	385.00	46.21	28.96	53.31	61.40	265.50	41.88	360.30	**411.00**
Runoff (mm)		177	36	38	102	107	36	22	27	34	104	33	179	**895**
Rainfall (mm)		220	18	69	138	151	66	69	60	101	127	62	221	**1302**

Monthly and yearly statistics for previous record (Jan 1961 to Dec 1992)

Mean	Avg.	57.740	47.930	44.970	30.960	23.340	15.400	14.790	21.790	29.070	40.210	50.810	53.610	**35.841**
flows	Low	14.300	10.480	14.930	9.896	7.605	5.515	6.362	5.012	4.572	4.435	11.570	22.450	**18.578**
m^3s^{-1})	High	110.700	152.200	101.000	66.020	64.330	32.820	40.970	81.400	95.510	96.720	119.800	100.400	**46.896**
Peak flow (m^3s^{-1})		678.60	507.60	469.80	447.30	182.80	125.90	342.40	444.30	496.30	1019.00	486.30	571.90	**1019.00**
Runoff (mm)		107	81	84	56	43	28	28	42	54	77	92	100	**792**
Rainfall (mm)		126	88	105	70	82	77	85	108	116	124	123	121	**1225**

Factors affecting runoff: S P
Station type: VA

1993 runoff is 113% of previous mean
rainfall 106%

Comment: Monthly naturalised flows used

021012 Teviot at Hawick 1993

Measuring authority: TWRP
First year: 1963
Grid reference: 36 (NT) 522 159
Level stn. (m OD): 90.10
Catchment area (sq km): 323.0
Max alt. (m OD): 608

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	26.500	4.204	3.859	13.040	15.250	3.869	1.719	1.733	2.689	8.660	4.046	26.550	**9.423**
m^3s^{-1}):	Peak	190.70	9.65	20.77	53.61	135.00	16.70	6.17	13.90	13.51	67.40	31.17	147.70	**190.70**
Runoff (mm)		220	31	32	105	126	31	14	14	22	72	32	220	**920**
Rainfall (mm)		237	21	65	138	163	60	66	52	95	104	67	239	**1307**

Monthly and yearly statistics for previous record (Jan 1963 to Dec 1992)

Mean	Avg.	13.840	11.220	11.120	6.678	5.454	3.867	3.424	4.695	6.358	9.851	12.670	13.750	**8.570**
flows	Low	3.586	2.601	2.991	2.189	1.296	1.099	0.675	0.734	0.915	0.816	2.555	4.522	**4.183**
m^3s^{-1})	High	28.560	34.800	27.700	14.200	17.340	10.500	12.300	19.120	18.960	25.690	29.930	25.460	**11.285**
Peak flow (m^3s^{-1})		257.40	235.30	182.40	179.00	117.80	89.41	148.30	178.60	185.90	273.40	188.50	230.00	**273.40**
Runoff (mm)		117	86	89	55	45	30	28	42	54	83	101	114	**844**
Rainfall (mm)		120	85	106	67	83	77	86	102	105	119	123	125	**1198**

Factors affecting runoff: N
Station type: VA
1993 runoff is 109% of previous mean rainfall 109%

Comment: Monthly naturalised flows used

021018 Lyne Water at Lyne Station 1993

Measuring authority: TWRP
First year: 1968
Grid reference: 36 (NT) 209 401
Level stn. (m OD): 168.00
Catchment area (sq km): 175.0
Max alt. (m OD): 562

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	7.600	2.411	1.816	3.926	4.792	2.303	1.253	1.352	1.980	6.624	2.372	8.550	**3.771**
m^3s^{-1}):	Peak	32.12	4.47	3.66	16.71	23.97	9.75	6.05	4.13	8.18	37.27	5.70	35.14	**37.27**
Runoff (mm)		116	33	28	58	73	34	19	21	29	101	35	131	**678**
Rainfall (mm)		151	13	48	96	117	70	67	59	89	134	53	168	**1065**

Monthly and yearly statistics for previous record (Jan 1968 to Dec 1992)

Mean	Avg.	5.105	4.358	3.866	2.774	1.868	1.360	1.248	1.428	2.035	2.948	4.250	4.478	**2.970**
flows	Low	1.682	2.158	1.357	1.127	0.882	0.787	0.675	0.605	0.591	0.597	0.977	1.618	**1.428**
m^3s^{-1})	High	8.774	11.090	7.325	5.979	4.813	2.653	3.884	5.364	10.440	6.579	8.611	8.374	**4.078**
Peak flow (m^3s^{-1})		52.31	41.55	41.21	41.08	18.30	16.46	31.72	20.77	58.74	73.75	53.60	37.98	**73.75**
Runoff (mm)		77	60	61	42	31	22	21	27	38	53	67	70	**568**
Rainfall (mm)		94	65	84	53	59	64	69	82	93	97	97	91	**948**

Factors affecting runoff: S P
Station type: VA
1993 runoff is 119% of previous mean rainfall 112%

Comment: Monthly naturalised flows used

021022 Whiteadder Water at Hutton Castle 1993

Measuring authority: TWRP
First year: 1969
Grid reference: 36 (NT) 881 550
Level stn. (m OD): 29.00
Catchment area (sq km): 503.0
Max alt. (m OD): 533

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	10.170	4.372	2.882	10.040	12.130	4.504	2.093	1.553	2.870	14.390	4.292	18.660	**7.375**
m^3s^{-1}):	Peak	74.47	7.13	7.70	69.61	115.10	18.50	4.13	3.75	16.18	115.30	13.60	86.71	**115.30**
Runoff (mm)		54	21	15	52	65	23	11	8	15	77	22	99	**462**
Rainfall (mm)		81	12	22	107	109	56	39	43	96	139	53	130	**887**

Monthly and yearly statistics for previous record (Sep 1969 to Dec 1992)

Mean	Avg.	10.930	9.877	9.438	7.402	4.899	3.237	2.346	2.849	3.021	5.140	7.320	8.469	**6.227**
flows	Low	2.143	1.557	1.108	1.325	1.420	1.393	1.245	1.144	0.990	1.001	1.100	1.347	**1.828**
m^3s^{-1})	High	25.990	27.300	19.220	15.850	24.050	8.835	6.626	8.184	16.360	16.670	27.680	20.660	**8.847**
Peak flow (m^3s^{-1})		265.90	160.90	247.60	274.70	226.20	75.82	84.85	181.10	105.80	226.20	279.80	108.10	**279.80**
Runoff (mm)		60	49	51	39	27	18	13	16	17	30	40	47	**406**
Rainfall (mm)		78	53	74	51	61	59	59	70	69	74	73	68	**789**

Factors affecting runoff: S P
Station type: CC
1993 runoff is 114% of previous mean rainfall 112%

Comment: Monthly naturalised flows used

021024 Jed Water at Jedburgh 1993

Measuring authority: TWRP
First year: 1971
Grid reference: 36 (NT) 655 214
Level stn. (m OD): 67.50
Catchment area (sq km): 139.0
Max alt. (m OD): 553

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	7.389	1.228	1.106	3.726	3.675	0.968	0.577	0.805	0.976	3.899	1.311	6.665	**2.716**
m^3s^{-1}):	Peak	106.30	1.96	3.31	20.12	38.25	2.15	1.13	17.68	7.19	56.67	15.27	41.29	**106.30**
Runoff (mm)		142	21	21	69	71	18	11	16	18	75	24	128	**616**
Rainfall (mm)		164	17	31	121	114	46	44	66	81	123	49	165	**1021**

Monthly and yearly statistics for previous record (Jan 1971 to Dec 1992)

Mean	Avg.	4.121	3.294	3.128	2.012	1.427	1.072	1.086	1.195	1.125	2.059	3.079	3.614	**2.265**
flows	Low	1.482	0.997	0.782	0.733	0.635	0.444	0.352	0.312	0.346	0.327	0.698	0.967	**1.068**
m^3s^{-1})	High	7.748	9.041	6.822	4.556	4.864	2.345	4.770	4.329	3.883	5.002	9.432	6.961	**3.013**
Peak flow (m^3s^{-1})		104.00	74.82	84.94	68.83	37.82	58.35	66.25	63.76	50.94	71.65	167.10	85.25	**167.10**
Runoff (mm)		77	55	57	38	30	20	20	25	29	40	59	67	**516**
Rainfall (mm)		92	65	83	54	64	63	72	80	70	88	88	95	**914**

Factors affecting runoff: N
Station type: VA
1993 runoff is 119% of previous mean rainfall 112%

Comment: Monthly naturalised flows used

022006 Blyth at Hartford Bridge 1993

Measuring authority: NRA-NY
First year: 1966
Grid reference: 45 (NZ) 243 800
Level stn. (m OD): 24.60
Catchment area (sq km): 269.4
Max alt. (m OD): 259

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	3.826	1.151	0.616	4.749	5.502	0.510	0.211	0.325	1.158	2.813	2.664	6.938	**2.553**
m^3s^{-1}):	Peak	23.02	3.10	1.10	26.24	101.50	1.07	0.61	2.66	11.90	22.10	23.69	53.80	**101.50**
Runoff (mm)		38	10	6	46	55	5	2	3	11	28	26	69	**299**
Rainfall (mm)		64	12	20	110	112	36	41	68	96	84	57	92	**792**

Monthly and yearly statistics for previous record (Oct 1966 to Dec 1992—incomplete or missing months total 0.4 years)

Mean	Avg.	4.294	3.668	3.560	2.473	1.262	0.572	0.425	0.614	0.665	1.523	2.358	3.524	**2.072**
flows	Low	0.587	0.398	0.245	0.359	0.212	0.161	0.096	0.067	0.107	0.111	0.162	0.274	**0.537**
m^3s^{-1})	High	10.150	7.997	11.090	10.360	4.948	1.895	1.800	2.963	2.695	9.680	5.735	12.500	**3.410**
Peak flow (m^3s^{-1})		146.60	59.52	150.20	162.80	38.86	31.54	21.52	61.09	30.02	56.84	69.20	122.30	**162.80**
Runoff (mm)		43	33	35	24	13	6	4	6	6	15	23	35	**243**
Rainfall (mm)		64	48	62	45	53	51	57	69	61	61	65	63	**699**

Factors affecting runoff: E
Station type: FV

1993 runoff is 123% of previous mean
rainfall 113%

023001 Tyne at Bywell 1993

Measuring authority: NRA-NY
First year: 1956
Grid reference: 45 (NZ) 038 617
Level stn. (m OD): 14.00
Catchment area (sq km): 2175.6
Max alt. (m OD): 893

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	103.500	27.100	18.450	67.620	53.580	18.070	19.510	25.120	42.670	47.200	33.520	123.000	**48.28**
m^3s^{-1}):	Peak	713.70	55.54		402.80	550.90		83.11	255.90	239.50	342.30	220.00	521.80	
Runoff (mm)		127	30	23	81	66	22	24	31	51	58	40	151	**704**
Rainfall (mm)		172	17	40	138	122	44	82	69	106	85	59	192	**1126**

Monthly and yearly statistics for previous record (Oct 1956 to Dec 1992—incomplete or missing months total 0.3 years)

Mean	Avg.	73.250	61.620	56.970	37.960	24.330	17.590	19.070	28.140	33.590	46.000	62.360	69.110	**44.104**
flows	Low	19.220	14.360	20.150	8.461	7.246	4.910	5.199	3.403	4.155	4.727	18.090	23.080	**25.849**
m^3s^{-1})	High	150.800	162.800	150.900	75.620	60.650	50.010	58.000	77.360	106.600	147.200	147.000	112.000	**63.834**
Peak flow (m^3s^{-1})		1525.00	1198.00	1472.00	905.60	476.30	440.30	1105.00	1561.00	1243.00	1586.00	1382.00	1317.00	**1586.00**
Runoff (mm)		90	69	70	45	30	21	23	35	40	57	74	85	**640**
Rainfall (mm)		103	77	88	63	67	68	82	96	89	96	104	105	**1038**

Factors affecting runoff: S
Station type: VA

1993 runoff is 110% of previous mean
rainfall 108%

Comment: The March flows derive from station 023023

023006 South Tyne at Featherstone 1993

Measuring authority: NRA-NY
First year: 1966
Grid reference: 35 (NY) 672 611
Level stn. (m OD): 131.70
Catchment area (sq km): 321.9
Max alt. (m OD): 893

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	23.130	4.000	4.733	17.370	13.490	4.054	7.410	7.711	12.770	7.125	5.896	27.310	**11.323**
m^3s^{-1}):	Peak	218.60	7.20	25.00	178.00	131.30	26.57	73.29	110.60	108.50	68.05	92.00	216.90	**218.60**
Runoff (mm)		192	30	39	140	112	33	62	64	103	59	47	227	**1109**
Rainfall (mm)		230	23	47	190	179	46	138	86	151	65	79	274	**1508**

Monthly and yearly statistics for previous record (Oct 1966 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	15.840	12.900	13.910	9.038	5.905	4.920	5.042	6.669	9.099	12.600	15.580	15.680	**10.592**
flows	Low	6.606	3.380	5.860	1.850	1.311	1.465	1.123	0.960	1.467	1.181	6.616	5.110	**7.630**
m^3s^{-1})	High	25.510	33.950	30.210	17.020	13.850	12.740	17.170	19.240	23.670	30.330	24.670	28.810	**12.915**
Peak flow (m^3s^{-1})		292.10	255.30	260.80	140.70	118.20	164.70	273.60	297.30	264.70	263.10	309.90	283.70	**309.90**
Runoff (mm)		132	98	116	73	49	40	42	55	73	105	125	130	**1038**
Rainfall (mm)		136	99	125	78	82	88	99	115	124	141	144	139	**1370**

Factors affecting runoff: N
Station type: CC

1993 runoff is 107% of previous mean
rainfall 110%

023011 Kielder Burn at Kielder 1993

Measuring authority: NRA-NY
First year: 1970
Grid reference: 35 (NY) 644 946
Level stn. (m OD): 214.00
Catchment area (sq km): 58.8
Max alt. (m OD): 602

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.618	0.745	1.247	2.984	2.308	0.704	0.511	1.202	1.248	2.055	1.069	5.113	**1.999**
m^3s^{-1}):	Peak	95.31	1.68	8.59	24.61	33.09	3.85	3.73	45.12	8.09	24.69	10.83	65.78	**95.31**
Runoff (mm)		210	31	57	132	105	31	23	55	55	94	47	233	**1072**
Rainfall (mm)		223	22	52	166	141	48	70	83	101	121	68	257	**1352**

Monthly and yearly statistics for previous record (Jul 1970 to Dec 1992—incomplete or missing months total 2.2 years)

Mean	Avg.	2.972	2.447	2.504	1.545	1.137	1.029	0.869	1.215	1.368	2.042	2.696	2.799	**1.883**
flows	Low	1.646	0.722	0.945	0.389	0.331	0.316	0.302	0.243	0.316	0.247	0.694	1.011	**1.201**
m^3s^{-1})	High	4.893	6.677	4.882	3.209	2.605	2.134	2.632	4.407	3.296	3.589	6.000	4.705	**2.470**
Peak flow (m^3s^{-1})		83.02	73.28	44.44	35.55	60.14	95.07	39.21	138.90	56.86	128.80	118.70	67.89	**138.90**
Runoff (mm)		135	102	114	68	52	45	40	55	60	93	119	127	**1011**
Rainfall (mm)		136	100	118	70	75	74	90	104	102	125	135	141	**1270**

Factors affecting runoff: N
Station type: FVVA

1993 runoff is 106% of previous mean
rainfall 106%

024004 Bedburn Beck at Bedburn 1993

Measuring authority: NRA-NY
First year: 1959
Grid reference: 45 (NZ) 118 322
Level stn. (m OD): 109.00
Catchment area (sq km): 74.9
Max alt. (m OD): 535

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.340	0.708	0.481	1.895	2.085	0.565	0.327	0.579	1.772	1.775	0.841	3.330	**1.399**
m^3s^{-1}):	Peak	23.80	1.33	2.48	9.89	33.41	1.72	2.89	6.75	14.43	19.59	6.71	16.24	**33.41**
Runoff (mm)		84	23	17	66	75	20	12	21	61	63	29	119	**589**
Rainfall (mm)		124	17	24	132	145	31	70	88	139	86	64	135	**1055**

Monthly and yearly statistics for previous record (Oct 1959 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	2.080	1.804	1.815	1.364	0.849	0.519	0.433	0.543	0.567	1.152	1.538	1.839	**1.206**
flows	Low	0.515	0.472	0.436	0.316	0.270	0.191	0.152	0.120	0.110	0.146	0.244	0.444	**0.667**
m^3s^{-1})	High	4.341	4.011	5.128	2.986	2.231	1.524	1.522	1.465	1.790	4.346	3.722	4.488	**1.842**
Peak flow (m^3s^{-1})		34.67	39.16	38.51	35.09	24.06	21.66	27.72	46.19	32.30	38.06	34.26	42.93	**46.19**
Runoff (mm)		74	59	65	47	30	18	15	19	20	41	53	66	**508**
Rainfall (mm)		89	67	74	59	60	57	63	76	70	81	89	86	**871**

Factors affecting runoff: N
Station type: CC

1993 runoff is 116% of previous mean rainfall 121%

024009 Wear at Chester le Street 1993

Measuring authority: NRA-NY
First year: 1977
Grid reference: 45 (NZ) 283 512
Level stn. (m OD): 5.50
Catchment area (sq km): 1008.3
Max alt. (m OD): 747

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	28.260	7.301	6.216	22.120	25.520	6.586	4.554	6.847	23.480	19.250	12.410	39.070	**16.886**
m^3s^{-1}):	Peak	206.60	13.37	24.58	119.70	314.40	23.63	10.04	67.43	203.70	186.60	138.80	175.90	**314.40**
Runoff (mm)		75	18	17	57	68	17	12	18	60	51	32	104	**528**
Rainfall (mm)		102	17	21	122	127	32	60	88	139	80	64	122	**974**

Monthly and yearly statistics for previous record (Sep 1977 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	23.970	22.110	23.800	17.210	9.437	6.770	5.586	6.509	5.925	10.710	16.880	23.570	**14.343**
flows	Low	8.610	8.101	13.300	4.738	3.941	3.447	2.948	3.057	3.054	4.563	4.812	12.780	**8.661**
m^3s^{-1})	High	40.980	39.880	64.200	36.800	30.170	14.650	14.010	19.300	12.080	27.060	35.820	50.640	**19.785**
Peak flow (m^3s^{-1})		309.80	263.70	349.60	277.60	157.60	200.60	226.50	354.40	105.50	273.40	254.10	353.10	**354.40**
Runoff (mm)		64	54	83	44	25	17	15	17	15	28	43	63	**449**
Rainfall (mm)		84	65	85	57	55	62	55	77	64	83	88	96	**871**

Factors affecting runoff: R G
Station type: FV

1993 runoff is 118% of previous mean rainfall 112%

025001 Tees at Broken Scar 1993

Measuring authority: NRA-NY
First year: 1956
Grid reference: 45 (NZ) 259 137
Level stn. (m OD): 37.20
Catchment area (sq km): 818.4
Max alt. (m OD): 893

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	41.710	8.901	7.446	25.800	24.980	9.195	8.838	10.260	20.460	15.860	8.951	43.580	**18.943**
m^3s^{-1}):	Peak	362.20	19.54	44.02	176.90	274.90	31.75	37.28	107.10	210.70	134.80	77.69	277.10	**362.20**
Runoff (mm)		137	26	24	82	82	29	29	34	65	52	28	143	**730**
Rainfall (mm)		168	21	31	142	155	34	84	87	140	75	65	189	**1191**

Monthly and yearly statistics for previous record (Oct 1956 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	29.620	25.090	24.180	18.460	9.929	6.486	6.675	9.750	10.820	17.700	22.750	28.750	**17.493**
flows	Low	2.906	2.804	5.482	2.539	2.007	0.502	1.794	0.458	0.638	2.707	4.060	5.778	**9.383**
m^3s^{-1})	High	57.570	64.770	68.660	60.870	27.020	15.270	25.090	28.520	25.800	53.940	51.580	50.040	**25.160**
Peak flow (m^3s^{-1})		590.80	521.10	679.30	350.90	311.50	191.90	380.70	709.80	331.30	525.80	416.30	565.10	**709.80**
Runoff (mm)		97	75	79	58	32	21	22	32	34	58	72	94	**675**
Rainfall (mm)		120	90	98	75	74	73	81	99	94	106	113	124	**1147**

Factors affecting runoff: SRP
Station type: CC

1993 runoff is 108% of previous mean rainfall 104%

025019 Leven at Easby 1993

Measuring authority: NRA-NY
First year: 1971
Grid reference: 45 (NZ) 585 087
Level stn. (m OD): 101.30
Catchment area (sq km): 14.8
Max alt. (m OD): 335

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.165	0.116	0.130	0.230	0.165	0.095	0.066	0.178	0.529	0.360	0.281	0.324	**0.220**
m^3s^{-1}):	Peak	0.32	0.15	0.49	2.00	0.63	0.16	0.13	2.96	16.00	6.11	5.20	1.57	**16.00**
Runoff (mm)		30	19	24	40	30	17	12	32	93	65	49	59	**469**
Rainfall (mm)		46	27	10	103	69	40	40	131	192	100	79	84	**921**

Monthly and yearly statistics for previous record (May 1971 to Dec 1992)

Mean	Avg.	0.288	0.284	0.279	0.243	0.164	0.121	0.101	0.118	0.110	0.157	0.191	0.266	**0.193**
flows	Low	0.082	0.094	0.076	0.066	0.069	0.058	0.044	0.038	0.039	0.049	0.058	0.129	**0.083**
m^3s^{-1})	High	0.630	0.729	0.821	0.771	0.544	0.239	0.189	0.427	0.532	0.556	0.507	0.543	**0.305**
Peak flow (m^3s^{-1})		3.56	4.38	5.68	9.36	7.56	1.99	3.14	15.53	12.83	3.50	4.01	7.66	**15.53**
Runoff (mm)		52	47	50	43	30	21	18	21	19	28	33	48	**412**
Rainfall (mm)		75	52	70	58	55	61	61	73	69	78	77	77	**806**

Factors affecting runoff: N
Station type: FV

1993 runoff is 114% of previous mean rainfall 114%

026003 Foston Beck at Foston Mill — 1993

Measuring authority: NRA-NY
First year: 1959

Grid reference: 54 (TA) 093 548
Level stn. (m OD): 6.40

Catchment area (sq km): 57.2
Max alt. (m OD): 164

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.885	0.839	0.676	0.595	0.585	0.591	0.468	0.378	0.352	0.323	0.422	0.748	**0.571**
m^3s^{-1}):	Peak	1.14	0.90	0.81	0.89	0.81	0.71	0.52	0.47	0.50	0.35	0.99	1.12	**1.14**
Runoff (mm)		41	35	32	27	27	27	22	18	16	15	19	35	**315**
Rainfall (mm)		48	25	14	96	56	35	47	77	117	44	81	91	**731**

Monthly and yearly statistics for previous record (Oct 1959 to Dec 1992)

Mean	Avg.	0.776	1.026	1.013	0.926	0.795	0.618	0.483	0.379	0.312	0.300	0.375	0.535	**0.626**
flows	Low	0.113	0.105	0.087	0.096	0.098	0.083	0.101	0.089	0.091	0.077	0.073	0.122	**0.141**
m^3s^{-1})	High	2.224	2.332	2.242	2.070	1.708	1.231	0.882	0.675	0.567	0.612	1.845	2.379	**1.282**
Peak flow (m^3s^{-1})		2.89	3.31	2.69	2.70	1.95	2.01	1.47	0.99	0.80	1.22	2.49	2.86	**3.31**
Runoff (mm)		36	44	47	42	37	28	23	18	14	14	17	25	**345**
Rainfall (mm)		68	50	57	51	50	53	55	62	57	66	73	74	**716**

Factors affecting runoff: N G
Station type: TP

1993 runoff is 91% of previous mean
rainfall 102%

026005 Gypsey Race at Boynton — 1993

Measuring authority: NRA-NY
First year: 1981

Grid reference: 54 (TA) 137 677
Level stn. (m OD): 16.80

Catchment area (sq km): 240.0
Max alt. (m OD): 211

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.021	0.045	0.014	0.017	0.017	0.010	0.001	0.002	0.014	0.012	0.022	0.190	**0.030**
m^3s^{-1}):	Peak	0.04	0.06	0.04	0.04	0.06	0.02	0.00	0.01	0.06	0.03	0.10	0.91	**0.91**
Runoff (mm)		0	0	0	0	0	0	0	0	0	0	0	2	**4**
Rainfall (mm)		50	25	15	102	59	40	47	81	123	46	85	92	**765**

Monthly and yearly statistics for previous record (Feb 1981 to Dec 1992)

Mean	Avg.	0.162	0.302	0.327	0.428	0.392	0.238	0.134	0.060	0.028	0.014	0.013	0.034	**0.177**
flows	Low	0.006	0.005	0.005	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	**0.004**
m^3s^{-1})	High	0.475	0.887	0.872	1.585	1.217	0.623	0.351	0.184	0.098	0.055	0.033	0.082	**0.349**
Peak flow (m^3s^{-1})		0.72	1.00	1.86	1.87	1.58	0.86	0.60	0.28	0.29	0.14	0.08	0.28	**1.87**
Runoff (mm)		2	3	4	5	4	3	2	1	0	0	0	0	**23**
Rainfall (mm)		61	50	69	50	43	53	55	57	57	66	68	64	**693**

Factors affecting runoff: G I
Station type: FV

1993 runoff is 17% of previous mean
rainfall 110%

027007 Ure at Westwick Lock — 1993

Measuring authority: NRA-NY
First year: 1958

Grid reference: 44 (SE) 356 671
Level stn. (m OD): 14.20

Catchment area (sq km): 914.6
Max alt. (m OD): 713

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	57.740	11.440	8.875	24.680	31.290	11.240	10.610	13.950	28.560	21.590	10.230	59.920	**24.342**
m^3s^{-1}):	Peak	214.00	24.32	24.78	109.30	248.50	77.76	72.13	140.20	276.50	101.20	64.51	231.50	**276.50**
Runoff (mm)		169	30	26	70	92	32	31	41	81	63	29	175	**839**
Rainfall (mm)		201	22	28	122	151	45	88	89	150	76	51	211	**1234**

Monthly and yearly statistics for previous record (Oct 1958 to Dec 1992—incomplete or missing months total 0.5 years)

Mean	Avg.	33.910	30.590	27.800	20.230	12.260	8.328	7.782	11.250	13.230	21.290	28.790	33.210	**20.682**
flows	Low	4.009	3.886	10.250	5.674	3.831	3.024	2.202	1.287	1.450	5.856	7.078	11.330	**12.946**
m^3s^{-1})	High	59.590	84.770	60.330	40.980	29.500	21.400	20.130	31.600	33.030	68.480	65.010	57.370	**27.066**
Peak flow (m^3s^{-1})		537.90	625.90	413.10	263.30	170.80	161.50	153.30	271.90	296.20	266.50	288.80	320.80	**625.90**
Runoff (mm)		99	82	81	57	36	24	23	33	38	62	82	97	**714**
Rainfall (mm)		120	88	98	78	70	70	74	90	92	107	120	125	**1132**

Factors affecting runoff: S P
Station type: B VA

1993 runoff is 118% of previous mean
rainfall 109%

027025 Rother at Woodhouse Mill — 1993

Measuring authority: NRA-NY
First year: 1961

Grid reference: 43 (SK) 432 857
Level stn. (m OD): 28.70

Catchment area (sq km): 352.2
Max alt. (m OD): 367

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.677	2.371	1.500	4.103	2.036	5.285	2.533	1.798	5.127	6.221	3.868	13.360	**4.506**
m^3s^{-1}):	Peak	32.12	3.90	3.99	23.00	16.35	49.41	16.25	4.03	39.88	41.57	39.12	49.89	**49.89**
Runoff (mm)		43	16	11	30	15	39	19	14	38	47	28	102	**404**
Rainfall (mm)		73	9	12	88	61	86	86	36	127	74	53	139	**844**

Monthly and yearly statistics for previous record (Oct 1961 to Dec 1992—incomplete or missing months total 2.5 years)

Mean	Avg.	6.837	6.651	6.175	5.049	3.564	2.834	1.944	1.949	2.080	2.836	4.483	6.302	**4.214**
flows	Low	1.287	1.424	1.830	1.400	1.257	1.166	0.934	0.760	0.712	0.693	1.023	2.393	**2.540**
m^3s^{-1})	High	13.000	22.440	14.330	13.160	10.110	10.840	4.907	3.323	7.786	7.600	8.200	18.140	**6.364**
Peak flow (m^3s^{-1})		60.30	78.80	53.21	78.14	61.40	105.40	45.63	33.55	45.59	41.74	50.55	91.46	**105.40**
Runoff (mm)		52	46	47	37	27	21	15	15	15	22	33	48	**378**
Rainfall (mm)		71	58	66	61	59	65	54	61	60	65	74	76	**770**

Factors affecting runoff: SRPGEI
Station type: VA

1993 runoff is 107% of previous mean
rainfall 110%

027042 Dove at Kirkby Mills 1993

Measuring authority: NRA-NY
First year: 1972
Grid reference: 44 (SE) 705 855
Level stn. (m OD): 35.60
Catchment area (sq km): 59.2
Max alt. (m OD): 433

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.141	0.690	0.747	1.447	1.057	0.583	0.327	0.824	2.621	1.469	1.739	2.119	**1.231**
m^3s^{-1}:	Peak	2.31	1.12	3.33	7.72	10.18	1.30	0.96	14.42	46.34	5.64	49.59	7.65	**49.59**
Runoff (mm)		52	28	34	63	48	26	15	37	115	66	76	96	**656**
Rainfall (mm)		63	31	15	132	81	56	46	126	154	71	98	108	**981**

Monthly and yearly statistics for previous record (Feb 1972 to Dec 1992)

Mean	Avg.	1.616	1.595	1.623	1.206	0.767	0.592	0.490	0.521	0.604	0.953	1.153	1.618	**1.059**
flows	Low	0.589	0.541	0.347	0.376	0.329	0.257	0.211	0.161	0.170	0.251	0.499	0.664	**0.576**
m^3s^{-1})	High	2.861	3.180	4.701	2.915	1.702	1.099	1.021	1.397	2.743	2.683	2.032	3.237	**1.554**
Peak flow (m^3s^{-1})		37.45	41.51	40.93	27.63	30.01	7.43	19.33	32.36	56.38	24.71	23.85	53.38	**56.38**
Runoff (mm)		73	66	73	53	35	26	22	24	26	43	51	73	**565**
Rainfall (mm)		91	63	87	61	60	63	67	74	80	91	87	92	**916**

Factors affecting runoff: N
Station type: FV

1993 runoff is 116% of previous mean
rainfall 107%

027047 Snaizeholme Beck at Low Houses 1993

Measuring authority: NRA-NY
First year: 1972
Grid reference: 34 (SD) 833 883
Level stn. (m OD): 260.00
Catchment area (sq km): 10.2
Max alt. (m OD): 668

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.362	0.110	0.186	0.637	0.758	0.172	0.409	0.395	0.543	0.283	0.226	1.609	**0.563**
m^3s^{-1}):	Peak	14.72	0.82	1.24	7.35	12.31	1.45	7.07	7.67	14.20	3.42	2.88	14.72	**14.72**
Runoff (mm)		358	26	49	162	199	44	107	104	138	74	57	422	**1740**
Rainfall (mm)		327	23	51	180	215	64	158	115	168	63	66	393	**1823**

Monthly and yearly statistics for previous record (Aug 1972 to Dec 1992—incomplete or missing months total 1.0 years)

Mean	Avg.	0.910	0.762	0.740	0.355	0.233	0.200	0.221	0.340	0.495	0.677	0.882	0.972	**0.565**
flows	Low	0.428	0.222	0.224	0.047	0.024	0.025	0.021	0.029	0.049	0.153	0.389	0.376	**0.425**
m^3s^{-1})	High	1.498	1.774	1.689	0.700	0.724	0.510	0.798	0.738	0.995	1.124	1.365	1.611	**0.644**
Peak flow (m^3s^{-1})		14.82	15.46	14.45	12.66	14.67	11.58	10.47	14.90	15.74	12.22	16.10	14.85	**16.10**
Runoff (mm)		239	183	194	90	61	51	58	89	126	178	224	255	**1748**
Rainfall (mm)		193	139	165	87	86	93	104	141	153	175	213	217	**1766**

Factors affecting runoff: N
Station type: FV

1993 runoff is 100% of previous mean
rainfall 103%

027050 Esk at Sleights 1993

Measuring authority: NRA-NY
First year: 1970
Grid reference: 45 (NZ) 865 081
Level stn. (m OD): 4.90
Catchment area (sq km): 308.0
Max alt. (m OD): 435

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.739	2.131	2.212	6.666	4.082	1.533	0.753	4.316	19.130	16.150	14.760	12.170	**7.396**
m^3s^{-1}):	Peak	12.99	3.24	11.03	41.98	31.66	3.16	1.54	93.70	347.90	108.30	243.00	75.58	**347.90**
Runoff (mm)		41	17	19	56	36	13	7	38	161	140	124	106	**757**
Rainfall (mm)		60	27	12	118	73	43	42	135	172	85	95	110	**972**

Monthly and yearly statistics for previous record (Oct 1970 to Dec 1992—incomplete or missing months total 1.6 years)

Mean	Avg.	8.011	7.202	7.472	5.129	3.120	2.113	1.882	2.490	1.764	3.621	5.756	8.489	**4.747**
flows	Low	1.823	1.917	1.497	1.041	1.004	0.749	0.453	0.268	0.446	0.675	1.794	2.539	**2.228**
m^3s^{-1})	High	13.110	21.220	30.470	19.380	9.565	5.231	6.585	8.767	3.778	11.350	13.140	18.770	**7.574**
Peak flow (m^3s^{-1})		159.30	198.10	358.70	191.70	144.00	106.80	165.70	276.00	115.00	156.80	88.38	350.10	**358.70**
Runoff (mm)		70	57	65	43	27	18	16	22	15	31	48	74	**487**
Rainfall (mm)*		72	63	86	59	43	75	66	82	59	106	84	83	**878**

*(1980-1992)

Factors affecting runoff: N
Station type: B VA

1993 runoff is 156% of previous mean
rainfall 111%

027053 Nidd at Birstwith 1993

Measuring authority: NRA-NY
First year: 1975
Grid reference: 44 (SE) 230 603
Level stn. (m OD): 67.40
Catchment area (sq km): 217.6
Max alt. (m OD): 705

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	13.020	2.592	1.159	3.388	6.132	1.983	1.609	2.167	11.300	4.443	2.029	14.490	**5.390**
m^3s^{-1}):	Peak	88.01	6.74	2.34	26.59	96.48	10.92	22.64	18.85	221.10	17.11	16.43	116.80	**221.10**
Runoff (mm)		160	29	14	40	75	24	20	27	135	55	24	178	**781**
Rainfall (mm)		208	26	30	132	167	42	105	91	197	69	53	236	**1356**

Monthly and yearly statistics for previous record (Apr 1975 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	9.750	8.380	7.960	4.396	2.575	1.665	1.202	1.759	2.043	4.451	6.657	9.562	**5.023**
flows	Low	3.073	2.933	1.916	1.363	0.837	0.771	0.808	0.531	0.523	0.743	1.893	3.612	**3.642**
m^3s^{-1})	High	16.110	18.220	21.140	12.770	7.061	3.131	2.164	5.690	3.955	15.120	12.830	20.280	**7.148**
Peak flow (m^3s^{-1})		204.40	282.80	203.40	154.70	52.23	38.77	29.50	67.77	33.64	113.60	83.49	196.00	**282.80**
Runoff (mm)		120	94	98	52	32	20	15	22	24	55	79	118	**729**
Rainfall (mm)*		140	102	129	77	72	78	62	102	105	132	130	153	**1282**

*(1976-1992)

Factors affecting runoff: SRP
Station type: VA

1993 runoff is 107% of previous mean
rainfall 106%

027071 Swale at Crakehill 1993

Measuring authority: NRA-NY
First year: 1980
Grid reference: 44 (SE) 425 734
Level stn. (m OD): 12.00
Catchment area (sq km): 1363.0
Max alt. (m OD): 713

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	44.550	12.360	9.541	22.550	30.610	9.218	6.130	12.070	28.890	25.520	14.340	52.070	**22.442**
m^3s^{-1}):	Peak	148.90	21.17	25.75	83.30	194.30	56.25	17.07	106.30	194.70	107.50	87.32	173.70	**194.70**
Runoff (mm)		88	22	19	43	60	18	12	24	55	50	27	102	**519**
Rainfall (mm)		116	23	19	102	111	41	55	96	117	74	52	124	**930**

Monthly and yearly statistics for previous record (Nov 1955 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	32.710	29.010	26.420	19.430	12.740	9.282	8.468	11.750	11.390	18.380	23.550	29.490	**19.349**
flows	Low	6.906	5.465	7.465	7.120	4.585	3.739	2.712	1.959	2.082	4.270	7.131	9.007	**11.155**
m^3s^{-1})	High	56.800	64.050	71.680	46.690	32.370	23.110	21.790	50.310	33.140	53.710	52.200	62.830	**26.046**
Peak flow (m^3s^{-1})		230.70	225.50	255.70	183.30	165.90	129.80	136.50	199.80	175.10	232.70	197.90	219.40	**255.70**
Runoff (mm)		64	52	52	37	25	18	17	23	22	36	45	58	**448**
Rainfall (mm)		84	62	67	57	56	61	66	83	70	75	79	86	**846**

Factors affecting runoff: N
Station type: C VA

1993 runoff is 116% of previous mean
rainfall 110%

028015 Idle at Mattersey 1993

Measuring authority: NRA-ST
First year: 1961
Grid reference: 43 (SK) 690 895
Level stn. (m OD): 3.80
Catchment area (sq km): 529.0
Max alt. (m OD): 195

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	3.019	2.057	1.690	2.370	1.598	2.530	1.667	1.469	2.434	3.919	2.905	5.218	**2.577**
m^3s^{-1}):	Peak	7.84	2.51	2.18	4.05	3.32	7.66	3.65	2.03	6.01	11.33	7.32	9.93	**11.33**
Runoff (mm)		15	9	9	12	8	12	8	7	12	20	14	26	**154**
Rainfall (mm)		55	9	10	82	57	90	85	44	114	77	52	93	**768**

Monthly and yearly statistics for previous record (Jun 1965 to Dec 1992—incomplete or missing months total 12.3 years)

Mean	Avg.	4.290	4.504	4.171	4.066	3.384	2.814	2.308	2.271	2.300	2.564	2.868	3.838	**3.275**
flows	Low	1.851	1.590	1.689	1.476	0.587	0.324	1.072	0.808	0.990	1.452	1.896	1.697	**1.620**
m^3s^{-1})	High	6.417	8.714	7.853	6.351	6.624	5.423	6.123	5.805	4.692	4.209	5.257	8.959	**5.180**
Peak flow (m^3s^{-1})		13.31	15.12	14.89	15.01	15.16	18.52	10.28	11.30	6.17	10.52	13.77	14.11	**18.52**
Runoff (mm)		22	21	21	20	17	14	12	12	11	13	14	19	**195**
Rainfall (mm)		58	41	57	57	62	54	47	54	48	56	64	59	**657**

Factors affecting runoff: SR GE
Station type: EM

1993 runoff is 79% of previous mean
rainfall 117%

028018 Dove at Marston on Dove 1993

Measuring authority: NRA-ST
First year: 1961
Grid reference: 43 (SK) 235 288
Level stn. (m OD): 47.20
Catchment area (sq km): 883.2
Max alt. (m OD): 555

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	18.650	9.418	6.114	14.160	7.303	8.684	6.572	5.894	8.727	11.930	11.810	38.870	**12.385**
m^3s^{-1}):	Peak	68.84	14.70	7.44	69.47	27.11	33.98	18.55	16.12	36.32	47.44	93.11	132.80	**132.80**
Runoff (mm)		57	26	19	42	22	25	20	18	26	36	35	118	**442**
Rainfall (mm)		87	11	16	103	76	69	96	52	104	67	67	182	**930**

Monthly and yearly statistics for previous record (Oct 1961 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	22.030	19.400	17.720	14.320	11.280	8.733	7.240	7.384	7.920	10.640	16.300	21.250	**13.662**
flows	Low	7.822	4.615	8.943	6.195	4.831	3.452	2.434	1.913	2.777	3.222	5.684	7.907	**7.724**
m^3s^{-1})	High	32.880	55.910	36.570	24.550	22.480	16.280	15.530	14.630	29.350	22.830	31.070	56.460	**19.411**
Peak flow (m^3s^{-1})		191.40	194.60	129.70	121.00	121.40	73.02	77.10	113.60	113.90	132.10	130.80	223.40	**223.40**
Runoff (mm)		67	54	54	42	34	26	22	22	23	32	48	64	**488**
Rainfall (mm)		90	67	78	66	70	76	66	80	77	83	94	95	**942**

Factors affecting runoff: SRPG
Station type: FVVA

1993 runoff is 91% of previous mean
rainfall 99%

028024 Wreake at Syston Mill 1993

Measuring authority: NRA-ST
First year: 1967
Grid reference: 43 (SK) 615 124
Level stn. (m OD): 47.70
Catchment area (sq km): 413.8
Max alt. (m OD): 230

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	6.110	1.810	1.205	3.446	1.216	2.919	2.296	0.616	2.244	5.114	5.639	11.910	**3.728**
m^3s^{-1}):	Peak	35.07	2.72	1.86	21.87	5.81	23.38	18.17	2.03	23.73	31.94	41.44	40.63	**41.44**
Runoff (mm)		40	11	8	22	8	18	15	4	14	33	35	77	**284**
Rainfall (mm)		57	10	14	73	49	81	95	40	95	56	67	94	**731**

Monthly and yearly statistics for previous record (Aug 1967 to Dec 1992—incomplete or missing months total 1.6 years)

Mean	Avg.	5.565	5.800	4.665	3.390	2.022	1.136	0.926	0.833	0.918	1.517	2.519	4.302	**2.786**
flows	Low	0.959	0.619	0.494	0.358	0.286	0.222	0.138	0.122	0.254	0.264	0.418	0.745	**0.923**
m^3s^{-1})	High	10.150	21.740	12.630	8.772	8.117	2.776	4.547	3.230	5.367	6.897	7.618	11.850	**4.396**
Peak flow (m^3s^{-1})		43.11	73.37	99.82	97.07	51.83	39.17	26.88	30.44	32.52	32.40	50.25	52.95	**99.82**
Runoff (mm)		36	34	30	21	13	7	6	5	6	10	16	28	**212**
Rainfall (mm)*		54	44	53	47	49	60	49	58	54	54	51	56	**629**

*(1971-1992)

Factors affecting runoff: GE
Station type: EM

1993 runoff is 134% of previous mean
rainfall 116%

028026 Anker at Polesworth 1993

Measuring authority: NRA-ST
First year: 1966
Grid reference: 43 (SK) 263 034
Level stn. (m OD): 60.40
Catchment area (sq km): 368.0
Max alt. (m OD): 278

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.709	1.849	1.381	4.267	2.041	4.541	1.638	1.352	2.701	8.109	6.289	9.320	**4.114**
m^3s^{-1}):	Peak	59.20	2.56	1.97	24.91	13.98	47.95	5.11	3.24	9.44	42.46	68.52	35.52	**68.52**
Runoff (mm)		42	12	10	30	15	32	12	10	19	59	44	68	**353**
Rainfall (mm)		59	9	14	86	65	84	76	39	94	95	75	97	**793**

Monthly and yearly statistics for previous record (Oct 1966 to Dec 1992—incomplete or missing months total 2.7 years)

Mean	Avg.	5.242	5.234	4.134	2.835	2.236	1.740	1.357	1.347	1.327	1.929	2.694	4.229	**2.848**
flows	Low	1.298	0.953	0.650	0.657	0.686	0.484	0.343	0.405	0.711	0.728	0.855	1.175	**1.213**
m^3s^{-1})	High	9.572	16.200	9.233	6.629	8.389	4.650	5.580	4.173	3.363	4.611	7.309	9.473	**3.724**
Peak flow (m^3s^{-1})		75.63	73.18	56.09	45.84	59.77	52.68	59.34	45.03	37.59	36.25	45.77	74.01	**75.63**
Runoff (mm)		38	35	30	20	16	12	10	10	9	14	19	31	**244**
Rainfall (mm)*		58	50	54	45	50	61	50	57	59	56	53	60	**653**

*(1971-1992)

Factors affecting runoff: GE
Station type: C VA

1993 runoff is 144% of previous mean
rainfall 121%

028031 Manifold at Ilam 1993

Measuring authority: NRA-ST
First year: 1968
Grid reference: 43 (SK) 140 507
Level stn. (m OD): 131.00
Catchment area (sq km): 148.5
Max alt. (m OD): 513

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.647	2.039	1.065	3.960	1.838	2.977	1.825	1.696	2.883	3.310	2.885	10.450	**3.310**
m^3s^{-1}):	Peak	20.70	3.64	1.41	33.13	17.19	24.79	11.01	10.25	17.68	23.33	39.13	60.46	**60.46**
Runoff (mm)		84	33	19	69	33	52	33	31	50	60	50	188	**703**
Rainfall (mm)		98	14	17	119	87	80	109	55	118	68	70	211	**1046**

Monthly and yearly statistics for previous record (May 1968 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	6.069	5.036	4.983	3.647	2.325	1.840	1.477	1.759	1.728	2.975	4.937	5.422	**3.510**
flows	Low	2.561	2.489	2.528	1.277	0.812	0.745	0.493	0.386	0.458	0.716	1.555	2.135	**2.241**
m^3s^{-1})	High	8.522	12.710	9.455	6.200	5.713	5.150	3.506	4.560	4.147	6.697	8.198	9.995	**4.806**
Peak flow (m^3s^{-1})		80.13	74.53	66.72	47.36	52.40	39.58	37.29	137.00	45.69	75.78	91.61	160.50	**160.50**
Runoff (mm)		109	83	90	64	42	32	27	32	30	54	86	98	**746**
Rainfall (mm)*		117	82	97	73	70	82	72	81	82	99	117	112	**1084**

*(1969-1992)

Factors affecting runoff: P E
Station type: C

1993 runoff is 94% of previous mean
rainfall 96%

028039 Rea at Calthorpe Park 1993

Measuring authority: NRA-ST
First year: 1967
Grid reference: 42 (SP) 071 847
Level stn. (m OD): 104.20
Catchment area (sq km): 74.0
Max alt. (m OD): 291

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.086	0.433	0.375	0.935	0.715	0.983	0.508	0.353	0.504	0.794	0.943	1.300	**0.746**
m^3s^{-1}):	Peak	29.50	1.28	3.13	17.35	21.45	31.59	7.32	4.30	10.37	14.14	16.59	18.17	**31.59**
Runoff (mm)		39	14	14	33	26	34	18	13	18	29	33	47	**318**
Rainfall (mm)		75	8	21	75	87	81	77	33	74	77	83	106	**797**

Monthly and yearly statistics for previous record (May 1967 to Dec 1992—incomplete or missing months total 1.2 years)

Mean	Avg.	1.194	1.037	1.002	0.794	0.716	0.647	0.548	0.636	0.604	0.680	0.844	1.096	**0.816**
flows	Low	0.483	0.464	0.475	0.316	0.319	0.287	0.257	0.287	0.295	0.320	0.493	0.380	**0.602**
m^3s^{-1})	High	1.985	2.610	2.101	1.489	1.780	1.324	1.018	1.366	1.423	1.408	1.753	1.934	**1.058**
Peak flow (m^3s^{-1})		38.71	27.44	28.64	25.15	30.37	37.44	46.86	46.38	40.85	24.68	24.97	54.02	**54.02**
Runoff (mm)		43	34	36	28	26	23	20	23	21	25	30	40	**348**
Rainfall (mm)*		77	58	66	57	63	63	58	72	66	64	72	76	**792**

*(1968-1992)

Factors affecting runoff: E
Station type: C B

1993 runoff is 91% of previous mean
rainfall 101%

028052 Sow at Great Bridgford 1993

Measuring authority: NRA-ST
First year: 1971
Grid reference: 33 (SJ) 883 270
Level stn. (m OD): 77.10
Catchment area (sq km): 163.0
Max alt. (m OD): 168

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.843	0.914	0.658	0.779	0.796	0.996	0.581	0.507	0.553	0.681	1.158	2.975	**1.039**
m^3s^{-1}):	Peak	8.97	1.31	0.77	2.44	3.96	6.42	1.36	0.79	0.82	10.21	9.19	8.82	**10.21**
Runoff (mm)		30	14	11	12	13	16	10	8	9	11	18	49	**201**
Rainfall (mm)		74	11	15	56	94	82	85	48	68	49	59	131	**772**

Monthly and yearly statistics for previous record (Jun 1971 to Dec 1992—incomplete or missing months total 2.5 years)

Mean	Avg.	1.818	1.831	1.604	1.220	0.880	0.764	0.587	0.731	0.543	0.820	1.079	1.570	**1.118**
flows	Low	0.753	0.625	0.832	0.520	0.474	0.315	0.174	0.138	0.277	0.317	0.379	0.524	**0.711**
m^3s^{-1})	High	2.715	4.607	3.448	2.258	1.925	1.426	1.388	3.047	0.818	1.731	2.461	2.561	**1.593**
Peak flow (m^3s^{-1})		11.07	18.82	9.21	9.86	18.05	9.78	10.89	15.11	3.51	9.55	9.51	12.72	**18.82**
Runoff (mm)		30	27	26	19	14	12	10	12	9	13	17	26	**216**
Rainfall (mm)		69	56	64	47	56	63	55	62	69	67	72	70	**750**

Factors affecting runoff: GE
Station type: FVVA

1993 runoff is 93% of previous mean
rainfall 103%

028067 Derwent at Church Wilne 1993

Measuring authority: NRA-ST
First year: 1973
Grid reference: 43 (SK) 438 316
Level stn. (m OD): 31.00
Catchment area (sq km): 1177.5
Max alt. (m OD): 636

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	24.320	13.320	8.793	14.950	9.527	12.390	10.130	9.152	17.130	21.450	15.380	57.850	**17.935**
m^3s^{-1}):	Peak	79.03	22.19	11.06	58.06	21.70	44.49	24.81	13.91	63.17	90.12	76.23	164.40	**164.40**
Runoff (mm)		55	27	20	33	22	27	23	21	38	49	34	132	**480**
Rainfall (mm)		95	12	15	103	70	76	108	54	130	71	67	210	**1011**

Monthly and yearly statistics for previous record (May 1973 to Dec 1992)

Mean	Avg.	33.220	30.970	28.720	21.640	13.830	11.220	8.687	8.080	8.204	13.420	19.190	28.000	**18.714**
flows	Low	13.270	10.020	10.210	7.891	6.652	5.411	4.445	3.965	4.429	4.933	5.152	9.272	**10.267**
m^3s^{-1})	High	52.530	81.270	59.290	40.240	28.060	23.060	22.050	16.600	14.200	31.970	35.860	46.890	**25.542**
Peak flow (m^3s^{-1})		194.10	215.70	173.60	158.40	142.20	118.70	156.20	153.60	71.96	146.50	94.66	214.70	**215.70**
Runoff (mm)		76	64	65	48	31	25	20	18	18	31	42	64	**502**
Rainfall (mm)		107	77	92	64	62	77	62	76	78	96	94	109	**994**

Factors affecting runoff: S P EI
Station type: FV

1993 runoff is 96% of previous mean
rainfall 102%

028082 Soar at Littlethorpe 1993

Measuring authority: NRA-ST
First year: 1971
Grid reference: 42 (SP) 542 973
Level stn. (m OD): 61.40
Catchment area (sq km): 183.9
Max alt. (m OD): 151

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.736	0.874	0.614	1.736	0.727	1.645	0.706	0.385	0.819	3.434	2.296	4.366	**1.702**
m^3s^{-1}):	Peak	19.79	1.27	1.02	10.20	2.55	12.73	3.79	1.00	4.25	20.60	18.87	17.01	**20.60**
Runoff (mm)		40	11	9	24	11	23	10	6	12	50	32	64	**292**
Rainfall (mm)		66	10	14	79	56	90	85	36	94	102	73	96	**801**

Monthly and yearly statistics for previous record (Aug 1971 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	2.629	2.552	2.212	1.515	1.003	0.897	0.540	0.651	0.594	0.908	1.326	2.284	**1.421**
flows	Low	0.713	0.568	0.424	0.346	0.350	0.245	0.164	0.225	0.307	0.338	0.398	0.553	**0.644**
m^3s^{-1})	High	4.661	6.868	5.031	3.105	2.654	2.346	1.447	2.242	1.770	2.921	3.279	5.101	**2.133**
Peak flow (m^3s^{-1})		23.49	24.47	20.78	21.18	14.93	15.78	13.71	20.41	15.94	19.81	16.59	22.46	**24.47**
Runoff (mm)		38	34	32	21	15	13	8	9	8	13	19	33	**244**
Rainfall (mm)*		56	45	52	44	50	63	49	59	53	55	53	61	**640**

*(1972-1992)

Factors affecting runoff: E
Station type: EM

1993 runoff is 120% of previous mean
rainfall 125%

029003 Lud at Louth 1993

Measuring authority: NRA-A
First year: 1968
Grid reference: 53 (TF) 337 879
Level stn. (m OD): 15.40
Catchment area (sq km): 55.2
Max alt. (m OD): 149

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.617	0.439	0.339	0.402	0.344	0.340	0.220	0.190	0.240	0.660	0.680	0.980	**0.455**
m^3s^{-1}):	Peak	3.07	0.59	0.55	2.06	0.91	1.15	3.93	0.74	1.36	5.39	2.14	2.83	**5.39**
Runoff (mm)		30	19	16	19	17	16	11	9	11	32	32	48	**260**
Rainfall (mm)		66	27	13	97	34	42	91	45	136	109	88	93	**841**

Monthly and yearly statistics for previous record (Aug 1968 to Dec 1992)

Mean	Avg.	0.585	0.738	0.706	0.653	0.531	0.413	0.320	0.268	0.230	0.239	0.297	0.395	**0.446**
flows	Low	0.139	0.157	0.162	0.150	0.156	0.131	0.112	0.097	0.108	0.093	0.088	0.090	**0.145**
m^3s^{-1})	High	1.279	1.428	1.338	1.289	1.177	0.687	0.507	0.414	0.625	0.719	1.158	0.912	**0.703**
Peak flow (m^3s^{-1})		3.70	3.81	3.58	5.06	3.51	3.27	3.40	3.10	3.30	2.96	6.77	3.10	**6.77**
Runoff (mm)		28	33	34	31	26	19	16	13	11	12	14	19	**255**
Rainfall (mm)		65	46	62	50	51	57	51	59	54	56	66	63	**680**

Factors affecting runoff: G
Station type: C

1993 runoff is 102% of previous mean
rainfall 124%

030004 Partney Lymn at Partney Mill 1993

Measuring authority: NRA-A
First year: 1962
Grid reference: 53 (TF) 402 676
Level stn. (m OD): 14.90
Catchment area (sq km): 61.6
Max alt. (m OD): 142

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.736	0.340	0.294	0.643	0.257	0.188	0.133	0.140	0.485	1.071	1.027	1.250	**0.548**
m^3s^{-1}):	Peak	8.62	0.44	0.66	4.95	0.57	0.40	0.26	0.37	3.51	10.46	7.62	6.86	**10.46**
Runoff (mm)		32	13	13	27	11	8	6	6	20	47	43	54	**281**
Rainfall (mm)		65	19	18	94	36	39	70	53	136	106	93	89	**818**

Monthly and yearly statistics for previous record (Jun 1962 to Dec 1992—incomplete or missing months total 0.3 years)

Mean	Avg.	0.806	0.738	0.688	0.590	0.433	0.310	0.263	0.273	0.274	0.381	0.530	0.692	**0.497**
flows	Low	0.351	0.264	0.276	0.220	0.169	0.116	0.088	0.083	0.119	0.134	0.190	0.210	**0.224**
m^3s^{-1})	High	1.574	1.838	1.538	1.518	0.886	0.691	0.863	0.593	0.917	1.144	1.112	1.804	**0.754**
Peak flow (m^3s^{-1})		10.01	12.59	7.71	13.34	11.30	8.13	13.38	7.06	6.64	8.07	10.17	8.48	**13.38**
Runoff (mm)		35	29	30	25	19	13	11	12	12	17	22	30	**255**
Rainfall (mm)		60	46	60	52	54	57	53	64	53	53	68	62	**682**

Factors affecting runoff: P I
Station type: C

1993 runoff is 110% of previous mean
rainfall 120%

030012 Stainfield Beck at Stainfield 1993

Measuring authority: NRA-A
First year: 1970
Grid reference: 53 (TF) 127 739
Level stn. (m OD): 7.70
Catchment area (sq km): 37.4
Max alt. (m OD): 134

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.513	0.177	0.136	0.427	0.099	0.048	0.075	0.047	0.559		0.725	0.807	
m^3s^{-1}):	Peak		0.28	0.45	4.32	0.22	0.16		0.15			7.42		
Runoff (mm)		37	11	10	30	7	3	5	3	41		50	58	
Rainfall (mm)		61	18	13	82	34	41	90	54	125	98	81	76	**773**

Monthly and yearly statistics for previous record (Dec 1970 to Dec 1992—incomplete or missing months total 0.7 years)

Mean	Avg.	0.540	0.535	0.462	0.268	0.167	0.084	0.069	0.044	0.048	0.134	0.205	0.396	**0.245**
flows	Low	0.093	0.114	0.078	0.050	0.032	0.019	0.006	0.004	0.007	0.009	0.017	0.024	**0.061**
m^3s^{-1})	High	1.050	1.521	1.078	0.838	0.496	0.202	0.524	0.161	0.197	0.780	0.729	1.084	**0.414**
Peak flow (m^3s^{-1})		21.53	11.04	10.00	12.42	8.58	4.23	17.57	5.91	3.93	12.33	6.41	7.83	**21.53**
Runoff (mm)		39	35	33	19	12	6	5	3	3	10	14	28	**207**
Rainfall (mm)		59	43	58	45	48	53	46	54	48	52	55	57	**618**

Factors affecting runoff: N
Station type: CC
1993 runoff is % of previous mean rainfall 125%

031002 Glen at Kates Brdg and King St Brdg 1993

Measuring authority: NRA-A
First year: 1960
Grid reference: 53 (TF) 106 149
Level stn. (m OD): 6.10
Catchment area (sq km): 341.9
Max alt. (m OD): 129

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.		1.488	0.862	1.663	0.696	0.480	0.256	0.157	0.446	2.039	2.295	4.354	
m^3s^{-1}):	Peak		2.17	1.47	12.48	3.87	1.64	0.52	0.36	2.96	12.57	17.60	14.89	
Runoff (mm)			11	7	13	5	4	2	1	3	16	17	34	
Rainfall (mm)		54	14	13	78	63	52	83	49	118	57	67	79	**727**

Monthly and yearly statistics for previous record (Oct 1960 to Dec 1992—incomplete or missing months total 0.6 years)

Mean	Avg.	1.950	2.301	2.190	1.789	1.365	0.735	0.407	0.345	0.327	0.488	0.851	1.435	**1.176**
flows	Low	0.093	0.048	0.033	0.018	0.008	0.004	0.000	0.001	0.008	0.019	0.017	0.026	**0.154**
m^3s^{-1})	High	6.351	10.110	6.317	4.903	5.060	2.182	1.465	1.615	1.873	2.810	5.552	7.868	**2.333**
Peak flow (m^3s^{-1})		16.00	15.32	10.32	11.95	9.85	1.26	0.83	3.50	16.13	10.71	13.56	14.08	**16.13**
Runoff (mm)		15	16	17	14	11	6	3	3	2	4	6	11	**109**
Rainfall (mm)		52	40	48	51	49	53	49	61	53	51	56	54	**617**

Factors affecting runoff: G I
Station type: FV+FL
1993 runoff is % of previous mean rainfall 118%

031010 Chater at Fosters Bridge 1993

Measuring authority: NRA-A
First year: 1968
Grid reference: 43 (SK) 961 030
Level stn. (m OD): 38.40
Catchment area (sq km): 68.9
Max alt. (m OD): 230

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.161	0.393	0.233	0.605	0.230	0.626	0.364	0.180	0.372	0.967	0.812	1.891	**0.656**
m^3s^{-1}):	Peak	16.19	0.57	0.30	6.69	0.93	7.97	3.27	0.35	3.39	5.42	10.52	14.69	**16.19**
Runoff (mm)		45	14	9	23	9	24	14	7	14	38	31	74	**300**
Rainfall (mm)		63	11	13	81	51	90	110	41	95	60	70	93	**778**

Monthly and yearly statistics for previous record (Feb 1968 to Dec 1992)

Mean	Avg.	0.926	0.930	0.823	0.629	0.427	0.278	0.189	0.180	0.199	0.327	0.455	0.727	**0.505**
flows	Low	0.147	0.106	0.090	0.065	0.051	0.033	0.024	0.044	0.061	0.048	0.073	0.098	**0.198**
m^3s^{-1})	High	1.724	3.094	1.677	1.670	1.471	0.717	0.867	0.818	0.997	1.188	1.343	1.468	**0.828**
Peak flow (m^3s^{-1})		15.99	16.06	15.77	15.07	16.44	11.78	20.64	20.76	15.04	9.04	12.48	11.00	**20.76**
Runoff (mm)		36	33	32	24	17	10	7	7	7	13	17	28	**232**
Rainfall (mm)		58	44	54	51	52	59	54	64	53	53	59	57	**658**

Factors affecting runoff: N
Station type: CC
1993 runoff is 130% of previous mean rainfall 118%

032003 Harpers Brook at Old Mill Bridge 1993

Measuring authority: NRA-A
First year: 1938
Grid reference: 42 (SP) 983 799
Level stn. (m OD): 30.30
Catchment area (sq km): 74.3
Max alt. (m OD): 146

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.988	0.270	0.168	0.656	0.227	0.616	0.208	0.127	0.191	0.751	0.856	1.749	**0.570**
m^3s^{-1}):	Peak	14.75		0.27	10.55	1.89	11.44	1.03	0.65	0.95	8.33	13.47	15.01	
Runoff (mm)		36	9	6	23	8	21	8	5	7	27	30	63	**242**
Rainfall (mm)		56	11	15	71	56	90	82	35	84	65	69	92	**726**

Monthly and yearly statistics for previous record (Dec 1938 to Dec 1992—incomplete or missing months total 0.7 years)

Mean	Avg.	0.766	0.790	0.695	0.482	0.300	0.196	0.145	0.154	0.140	0.225	0.430	0.583	**0.407**
flows	Low	0.097	0.080	0.076	0.066	0.056	0.049	0.052	0.048	0.049	0.057	0.069	0.077	**0.159**
m^3s^{-1})	High	2.766	2.485	2.363	1.334	1.246	0.606	0.685	0.791	1.147	1.176	1.688	1.762	**0.676**
Peak flow (m^3s^{-1})		16.06	18.58	17.01	22.00	18.65	10.54	12.49	20.50	6.80	16.58	11.74	17.90	**22.00**
Runoff (mm)		28	26	25	17	11	7	5	6	5	8	15	21	**173**
Rainfall (mm)		58	42	48	45	50	52	53	62	50	53	61	56	**630**

Factors affecting runoff: N
Station type: CC
1993 runoff is 140% of previous mean rainfall 115%

033006 Wissey at Northwold 1993

Measuring authority: NRA-A
First year: 1956
Grid reference: 52 (TL) 771 965
Level stn. (m OD): 5.30
Catchment area (sq km): 274.5
Max alt. (m OD): 95

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.783	2.148	2.237	1.924	1.241	0.873	0.668	0.626	0.828	2.316	2.850	3.609	**1.842**
m^3s^{-1}):	Peak	4.65	2.82	3.97	2.72	2.49	1.21	0.86	1.01	2.13				
Runoff (mm)		27	19	22	18	12	8	7	6	8	23	27	35	**212**
Rainfall (mm)		65	31	23	62	63	32	79	57	108	105	91	97	**813**

Monthly and yearly statistics for previous record (Mar 1956 to Dec 1992)

Mean	Avg.	2.846	2.933	2.662	2.387	1.809	1.339	1.082	0.904	0.862	1.062	1.573	2.266	**1.805**
flows	Low	0.903	0.909	1.026	1.015	0.767	0.490	0.319	0.264	0.228	0.242	0.419	0.536	**0.684**
m^3s^{-1})	High	5.422	5.288	4.702	4.586	3.833	2.592	2.234	2.229	2.481	3.243	4.569	4.768	**2.760**
Peak flow (m^3s^{-1})		9.31	11.29	12.23	8.47	5.82	3.50	3.39	4.00	4.06	7.15	13.30	8.72	**13.30**
Runoff (mm)		28	26	26	23	18	13	11	9	8	10	15	22	**207**
Rainfall (mm)		57	41	47	45	46	56	59	57	55	57	66	61	**647**

Factors affecting runoff: PGEI
Station type: FL

1993 runoff is 102% of previous mean
rainfall 126%

033012 Kym at Meagre Farm 1993

Measuring authority: NRA-A
First year: 1960
Grid reference: 52 (TL) 155 631
Level stn. (m OD): 17.20
Catchment area (sq km): 137.5
Max alt. (m OD): 101

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.964	0.238	0.138	1.418	0.158	0.257	0.073	0.045	0.110	1.537	1.526	3.348	**0.907**
m^3s^{-1}):	Peak		0.38	0.27		0.67	3.14	0.38	0.17	1.02			14.00	
Runoff (mm)		38	4	3	27	3	5	1	1	2	30	29	65	**208**
Rainfall (mm)		58	11	19	79	51	61	62	37	87	82	64	87	**698**

Monthly and yearly statistics for previous record (May 1960 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	1.303	1.320	1.102	0.762	0.344	0.226	0.132	0.102	0.104	0.419	0.655	0.973	**0.617**
flows	Low	0.074	0.047	0.044	0.041	0.024	0.009	0.001	0.004	0.017	0.015	0.022	0.050	**0.103**
m^3s^{-1})	High	3.296	5.577	3.474	2.107	1.469	1.489	2.438	1.096	1.685	3.515	3.718	3.328	**1.048**
Peak flow (m^3s^{-1})		25.26	22.70	30.24	30.75	20.61	24.10	16.68	23.42	23.40	25.91	34.71	33.98	**34.71**
Runoff (mm)		25	23	21	14	7	4	3	2	2	8	12	19	**142**
Rainfall (mm)		50	39	46	48	50	58	50	55	49	52	54	54	**605**

Factors affecting runoff: EI
Station type: CB

1993 runoff is 147% of previous mean
rainfall 115%

033024 Cam at Dernford 1993

Measuring authority: NRA-A
First year: 1949
Grid reference: 52 (TL) 466 506
Level stn. (m OD): 14.70
Catchment area (sq km): 198.0
Max alt. (m OD): 146

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.893	0.965	0.770	0.948	0.626	0.592	0.406	0.333	0.359	1.273	1.005	1.923	**0.926**
m^3s^{-1}):	Peak	7.39	1.43	0.95	3.27	1.07	1.72	0.51	0.67	0.82	9.32	6.18	5.16	**9.32**
Runoff (mm)		26	12	10	12	8	8	5	5	5	17	13	26	**148**
Rainfall (mm)		63	14	15	68	51	63	46	46	90	98	46	84	**684**

Monthly and yearly statistics for previous record (Mar 1949 to Dec 1992—incomplete or missing months total 1.2 years)

Mean	Avg.	1.392	1.450	1.315	1.163	0.953	0.758	0.613	0.581	0.558	0.738	0.930	1.141	**0.964**
flows	Low	0.284	0.302	0.353	0.351	0.294	0.240	0.184	0.248	0.155	0.217	0.271	0.233	**0.333**
m^3s^{-1})	High	3.592	2.703	2.608	2.431	2.144	1.338	1.608	1.542	1.965	2.970	2.790	3.492	**1.506**
Peak flow (m^3s^{-1})		13.30	14.09	10.22	9.94	13.63	6.94	5.28	10.70	10.99	12.70	12.50	12.06	**14.09**
Runoff (mm)		19	18	18	15	13	10	8	8	7	10	12	15	**154**
Rainfall (mm)*		49	38	43	42	45	50	54	58	52	54	58	54	**597**

*(1950-1992)

Factors affecting runoff: GEI
Station type: TP

1993 runoff is 96% of previous mean
rainfall 115%

033027 Rhee at Wimpole 1993

Measuring authority: NRA-A
First year: 1965
Grid reference: 52 (TL) 333 485
Level stn. (m OD): 17.90
Catchment area (sq km): 119.1
Max alt. (m OD): 168

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.607	0.635	0.452	0.893	0.394	0.325	0.195	0.147	0.176	1.525	0.788	1.582	**0.729**
m^3s^{-1}):	Peak	4.60	0.78	0.56	3.50	0.62	0.86	0.30	0.26	3.01	9.19	4.62	3.81	**9.19**
Runoff (mm)		36	13	10	19	9	7	4	3	4	34	17	36	**193**
Rainfall (mm)		55	11	18	71	54	50	50	46	102	84	45	73	**659**

Monthly and yearly statistics for previous record (Jul 1965 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	0.850	0.939	0.776	0.722	0.525	0.344	0.211	0.183	0.208	0.329	0.461	0.619	**0.512**
flows	Low	0.088	0.092	0.089	0.099	0.067	0.041	0.022	0.014	0.040	0.053	0.058	0.065	**0.079**
m^3s^{-1})	High	2.687	1.911	2.077	2.074	1.579	0.936	0.434	0.586	1.090	1.751	1.848	1.718	**0.945**
Peak flow (m^3s^{-1})		8.79	6.00	5.29	5.19	8.87	4.55	1.11	5.72	5.62	6.38	7.14	7.11	**8.87**
Runoff (mm)		19	19	17	16	12	7	5	4	5	7	10	14	**136**
Rainfall (mm)		47	34	42	44	50	51	50	52	51	51	53	51	**576**

Factors affecting runoff: GEI
Station type: FL

1993 runoff is 142% of previous mean
rainfall 114%

033032 Heacham at Heacham 1993

Measuring authority: NRA-A
First year: 1965
Grid reference: 53 (TF) 685 375
Level stn. (m OD): 9.40
Catchment area (sq km): 59.0
Max alt. (m OD): 88

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.237	0.228	0.213	0.235	0.217	0.187	0.156	0.125	0.122	0.308	0.425	0.590	**0.254**
m^3s^{-1}):	Peak			0.24	0.30	0.32	0.24	0.19	0.19	0.19	0.46	0.55	0.75	
Runoff (mm)		11	9	10	10	10	8	7	6	5	14	19	27	**136**
Rainfall (mm)		54	38	24	78	62	27	95	57	135	94	96	95	**855**

Monthly and yearly statistics for previous record (Nov 1965 to Dec 1992)

Mean	Avg.	0.215	0.295	0.301	0.287	0.252	0.210	0.165	0.136	0.118	0.112	0.116	0.159	**0.197**
flows	Low	0.028	0.045	0.053	0.060	0.061	0.053	0.043	0.034	0.030	0.025	0.022	0.018	**0.057**
m^3s^{-1})	High	0.435	0.671	0.671	0.776	0.636	0.441	0.300	0.256	0.371	0.399	0.319	0.327	**0.331**
Peak flow (m^3s^{-1})		0.70	0.95	1.04	1.11	0.82	0.90	0.68	1.21	0.52	0.53	0.47	0.45	**1.21**
Runoff (mm)		10	12	14	13	11	9	8	6	5	5	5	7	**105**
Rainfall (mm)		58	42	52	48	56	56	58	61	56	56	72	62	**677**

Factors affecting runoff: G I
Station type: C

1993 runoff is 129% of previous mean
rainfall 126%

Comment: January and February 1993 flows are estimates

034004 Wensum at Costessey Mill 1993

Measuring authority: NRA-A
First year: 1960
Grid reference: 63 (TG) 177 128
Level stn. (m OD): 5.20
Catchment area (sq km): 570.9
Max alt. (m OD): 94

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.363	3.403	3.399	2.995	2.376	1.557	1.526	1.461	2.601	8.377	8.685	10.670	**4.380**
m^3s^{-1}):	Peak											22.68	16.72	
Runoff (mm)		25	14	16	14	11	7	7	7	12	39	39	50	**242**
Rainfall (mm)		68	32	22	60	56	25	90	54	115	121	95	103	**841**

Monthly and yearly statistics for previous record (Feb 1960 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	6.566	6.147	5.185	4.554	3.431	2.507	2.210	2.146	2.464	3.230	4.218	5.385	**3.994**
flows	Low	2.415	1.761	2.355	2.064	1.430	1.079	0.786	0.516	0.866	1.211	1.914	1.822	**1.909**
m^3s^{-1})	High	11.270	15.960	10.740	8.923	6.699	4.220	3.871	6.130	7.689	11.060	9.312	11.150	**5.765**
Peak flow (m^3s^{-1})		34.00	29.20	22.32	21.28	27.20	10.33	7.83	24.00	20.13	21.99	21.74	24.44	**34.00**
Runoff (mm)		31	26	24	21	16	11	10	10	11	15	19	25	**221**
Rainfall (mm)		59	42	50	49	47	53	57	59	57	61	74	63	**671**

Factors affecting runoff: G I
Station type: CB

1993 runoff is 110% of previous mean
rainfall 125%

035008 Gipping at Stowmarket 1993

Measuring authority: NRA-A
First year: 1966
Grid reference: 62 (TM) 058 578
Level stn. (m OD): 25.10
Catchment area (sq km): 128.9
Max alt. (m OD): 98

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.300	0.395	0.630	0.495	0.199	0.172	0.162	0.113	0.409	1.788	1.969	3.125	**0.902**
m^3s^{-1}):	Peak	6.81	0.85	6.13	6.05	0.82	0.79	3.52	0.64	2.84	25.30	23.21	13.26	**25.30**
Runoff (mm)		27	7	13	10	4	3	3	2	8	37	40	65	**221**
Rainfall (mm)		52	25	14	55	47	44	68	44	100	88	77	95	**709**

Monthly and yearly statistics for previous record (Apr 1964 to Dec 1992—incomplete or missing months total 1.1 years)

Mean	Avg.	1.398	1.144	0.917	0.642	0.367	0.235	0.146	0.176	0.228	0.388	0.666	0.887	**0.597**
flows	Low	0.161	0.125	0.159	0.156	0.119	0.083	0.072	0.069	0.072	0.092	0.101	0.131	**0.149**
m^3s^{-1})	High	4.383	3.527	2.626	2.012	1.244	1.616	0.501	1.490	1.880	3.251	3.433	2.033	**1.043**
Peak flow (m^3s^{-1})		28.13	34.39	18.60	19.30	20.18	7.98	6.22	23.77	24.19	24.23	19.74	25.54	**34.39**
Runoff (mm)		29	22	19	13	8	5	3	4	5	8	13	18	**146**
Rainfall (mm)*		51	37	44	42	45	49	47	48	50	53	60	52	**578**

*(1965-1992)

Factors affecting runoff: GEI
Station type: CC

1993 runoff is 151% of previous mean
rainfall 123%

036006 Stour at Langham 1993

Measuring authority: NRA-A
First year: 1962
Grid reference: 62 (TM) 020 344
Level stn. (m OD): 6.40
Catchment area (sq km): 578.0
Max alt. (m OD): 128

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	6.899	2.298	1.921	2.756	1.389	1.108	1.030	0.982	1.580	5.708	4.461		
m^3s^{-1}):	Peak	20.46	3.82	6.73	15.92	4.42	2.35	1.79	1.96	8.43	33.89	27.63		
Runoff (mm)		32	10	9	12	6	5	5	5	7	26	20		
Rainfall (mm)		58	17	14	63	58	49	56	42	98	80	62	95	**692**

Monthly and yearly statistics for previous record (Oct 1962 to Dec 1992)

Mean	Avg.	5.356	4.945	4.633	3.608	2.379	1.661	1.122	1.158	1.171	1.949	2.932	4.009	**2.901**
flows	Low	1.398	0.884	1.597	1.218	0.757	0.453	0.190	0.209	0.395	0.509	0.578	0.693	**1.428**
m^3s^{-1})	High	16.080	12.980	9.776	9.335	7.253	5.999	2.956	6.237	4.944	13.170	11.340	10.550	**5.119**
Peak flow (m^3s^{-1})		48.47	41.27	38.37	28.45	39.31	20.64	17.06	39.52	91.00	53.63	38.93	43.85	**91.00**
Runoff (mm)		25	21	21	16	11	7	5	5	5	9	13	19	**158**
Rainfall (mm)		49	35	47	45	45	53	47	50	51	51	59	51	**583**

Factors affecting runoff: RPG I
Station type: FL

1993 runoff is % of previous mean
rainfall 119%

037001 Roding at Redbridge 1993

Measuring authority: NRA-T
First year: 1950

Grid reference: 51 (TQ) 415 884
Level stn. (m OD): 5.70

Catchment area (sq km): 303.3
Max alt. (m OD): 117

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.969	1.077	0.588	2.344	0.724	1.861	0.455	0.332	0.915	6.194	1.932	5.747	**2.277**
m^3s^{-1}):	Peak	18.10	1.99	2.02	10.20	3.40	21.80	3.75	3.23	7.82	35.50	13.50	16.00	**35.50**
Runoff (mm)		44	9	5	20	6	16	4	3	8	55	17	51	**237**
Rainfall (mm)		62	8	15	73	53	62	55	33	104	106	45	75	**691**

Monthly and yearly statistics for previous record (Feb 1950 to Dec 1992)

Mean	Avg.	3.680	3.411	2.675	1.875	1.170	0.823	0.619	0.651	0.819	1.414	2.172	2.846	**1.839**
flows	Low	0.382	0.379	0.537	0.482	0.280	0.226	0.202	0.224	0.197	0.283	0.364	0.392	**0.801**
m^3s^{-1})	High	10.920	10.670	6.862	6.768	4.044	2.953	1.975	3.925	4.009	7.883	10.340	9.455	**2.809**
Peak flow (m^3s^{-1})		42.00	40.10	38.10	27.70	32.70	21.70	24.50	31.30	25.60	35.60	62.40	36.40	**62.40**
Runoff (mm)		33	27	24	16	10	7	5	6	7	12	19	25	**191**
Rainfall (mm)		52	41	46	44	48	52	52	56	57	57	61	56	**622**

Factors affecting runoff: S EI
Station type: EW

1993 runoff is 124% of previous mean
rainfall 111%

037005 Colne at Lexden 1993

Measuring authority: NRA-A
First year: 1959

Grid reference: 52 (TL) 962 261
Level stn. (m OD): 8.20

Catchment area (sq km): 238.2
Max alt. (m OD): 114

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.547	0.857	0.665	1.017	0.529	0.526	0.286	0.226	0.495	1.712	1.527	3.817	**1.190**
m^3s^{-1}):	Peak	9.56	1.32	1.12	4.16	0.93	1.78	0.47	0.46	2.45	12.03	10.58	10.22	**12.03**
Runoff (mm)		29	9	7	11	6	6	3	3	5	19	17	43	**157**
Rainfall (mm)		57	13	13	60	52	57	44	33	100	79	56	85	**649**

Monthly and yearly statistics for previous record (Oct 1959 to Dec 1992)

Mean	Avg.	1.972	1.749	1.597	1.188	0.759	0.490	0.368	0.355	0.395	0.757	1.151	1.477	**1.018**
flows	Low	0.460	0.346	0.380	0.358	0.229	0.146	0.101	0.088	0.175	0.188	0.288	0.352	**0.362**
m^3s^{-1})	High	6.543	4.684	3.556	3.344	2.353	1.528	0.907	1.558	1.099	4.838	5.521	4.200	**1.732**
Peak flow (m^3s^{-1})		21.13	22.65	20.68	13.34	12.56	8.07	6.41	8.86	10.50	24.81	21.29	20.58	**24.81**
Runoff (mm)		22	18	18	13	9	5	4	4	4	9	13	17	**135**
Rainfall (mm)		48	34	44	43	43	49	47	49	51	53	58	53	**572**

Factors affecting runoff: RP I
Station type: FL

1993 runoff is 117% of previous mean
rainfall 113%

037010 Blackwater at Appleford Bridge 1993

Measuring authority: NRA-A
First year: 1962

Grid reference: 52 (TL) 845 158
Level stn. (m OD): 14.60

Catchment area (sq km): 247.3
Max alt. (m OD): 127

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.654	0.939	0.686	1.182	0.559	0.731	0.528	0.503	0.742	2.435	1.463	3.639	**1.345**
m^3s^{-1}):	Peak	9.68	1.34	1.41	4.97	0.97	2.92	1.15	0.89	1.96	16.20	9.78	10.05	**16.20**
Runoff (mm)		29	9	7	12	6	8	6	5	8	26	15	39	**172**
Rainfall (mm)		59	12	15	66	52	66	47	34	99	86	50	82	**668**

Monthly and yearly statistics for previous record (Oct 1962 to Dec 1992)

Mean	Avg.	2.089	1.964	1.887	1.477	1.049	0.803	0.579	0.514	0.539	0.837	1.225	1.650	**1.214**
flows	Low	0.532	0.460	0.479	0.479	0.341	0.356	0.182	0.161	0.215	0.288	0.325	0.379	**0.822**
m^3s^{-1})	High	7.181	4.889	3.583	3.843	2.860	1.777	1.359	1.738	1.651	4.955	4.676	4.307	**1.659**
Peak flow (m^3s^{-1})		26.80	21.60	20.00	12.31	17.80	7.76	4.10	13.75	15.25	26.08	20.20	21.60	**26.80**
Runoff (mm)		23	19	20	15	11	8	6	6	6	9	13	18	**155**
Rainfall (mm)		48	34	47	44	45	53	47	50	50	50	58	51	**577**

Factors affecting runoff: RPG I
Station type: FL

1993 runoff is 111% of previous mean
rainfall 116%

038021 Turkey Brook at Albany Park 1993

Measuring authority: NRA-T
First year: 1971

Grid reference: 51 (TQ) 359 985
Level stn. (m OD): 16.60

Catchment area (sq km): 42.2
Max alt. (m OD): 128

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.576	0.052	0.024	0.292	0.038	0.184	0.044	0.017	0.085	0.614	0.175	0.724	**0.238**
m^3s^{-1}):	Peak	7.39	0.13	0.25	5.13	0.49	4.77	1.14	0.25	1.73	10.70	3.03	3.76	**10.70**
Runoff (mm)		37	3	2	18	2	11	3	1	5	39	11	46	**178**
Rainfall (mm)		77	7	19	84	55	95	73	33	108	119	45	103	**818**

Monthly and yearly statistics for previous record (Sep 1971 to Dec 1992)

Mean	Avg.	0.413	0.348	0.326	0.213	0.157	0.088	0.043	0.049	0.056	0.171	0.238	0.312	**0.201**
flows	Low	0.019	0.022	0.024	0.020	0.009	0.021	0.009	0.008	0.008	0.013	0.019	0.022	**0.057**
m^3s^{-1})	High	1.180	0.988	0.811	0.626	0.626	0.240	0.087	0.171	0.228	0.941	1.158	0.704	**0.339**
Peak flow (m^3s^{-1})		10.50	11.50	7.68	7.72	20.70	15.30	2.38	2.76	7.55	10.70	12.80	10.50	**20.70**
Runoff (mm)		26	20	21	13	10	5	3	3	3	11	15	20	**150**
Rainfall (mm)		61	43	57	49	55	56	47	53	59	63	61	61	**665**

Factors affecting runoff: PG
Station type: FV

1993 runoff is 118% of previous mean
rainfall 123%

039002 Thames at Days Weir 1993

Measuring authority: NRA-T
First year: 1938
Grid reference: 41 (SU) 568 935
Level stn. (m OD): 46.00
Catchment area (sq km): 3444.7
Max alt. (m OD): 330

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	92.810	34.210	16.220	37.400	22.530	20.710	10.840	5.890	8.200	32.740	25.450	70.230	**31.506**
m^3s^{-1}):	Peak	168.00	58.50	29.30	103.00	65.70	33.40	18.80	10.70	16.80	89.70	79.50	130.00	**168.00**
Runoff (mm)		72	24	13	28	18	16	8	5	6	25	19	55	**288**
Rainfall (mm)		92	8	27	75	85	52	62	30	88	88	51	109	**767**

Monthly and yearly statistics for previous record (Oct 1938 to Dec 1992)

Mean	Avg.	54.380	55.940	45.050	30.570	20.210	14.310	8.480	7.228	8.790	14.980	31.300	44.960	**27.880**
flows	Low	6.250	5.554	5.620	4.253	2.855	1.502	0.399	0.296	1.741	2.778	3.748	5.312	**10.095**
m^3s^{-1})	High	133.600	120.800	163.200	85.070	61.140	41.560	48.820	18.690	38.630	74.570	128.100	128.700	**51.292**
Peak flow (m^3s^{-1})														
Runoff (mm)		42	40	35	23	16	11	7	6	7	12	24	35	**255**
Rainfall (mm)		66	47	54	47	58	55	54	66	60	64	71	71	**713**

Factors affecting runoff: P EI
Station type: MIS
1993 runoff is 113% of previous mean rainfall 108%

039005 Beverley Brook at Wimbledon Common 1993

Measuring authority: NRA-T
First year: 1935
Grid reference: 51 (TQ) 216 717
Level stn. (m OD): 11.00
Catchment area (sq km): 43.6
Max alt. (m OD): 190

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.758	0.428	0.408	0.780	0.528	0.509	0.481	0.426	0.701	0.928	0.456	0.798	**0.601**
m^3s^{-1}):	Peak	5.56	1.15	2.25	13.50	5.51	7.41	4.03	4.13	7.58	9.87	2.91	8.23	**13.50**
Runoff (mm)		47	24	25	46	32	30	30	26	42	57	27	49	**435**
Rainfall (mm)		65	6	19	84	52	44	43	31	124	99	30	82	**679**

Monthly and yearly statistics for previous record (Mar 1935 to Dec 1992—incomplete or missing months total 23.4 years)

Mean	Avg.	0.706	0.611	0.563	0.553	0.482	0.484	0.446	0.450	0.494	0.519	0.588	0.634	**0.544**
flows	Low	0.280	0.244	0.290	0.257	0.214	0.157	0.211	0.189	0.224	0.161	0.274	0.247	**0.291**
m^3s^{-1})	High	1.237	1.208	1.023	1.538	1.092	0.956	0.920	0.970	1.340	1.321	1.415	1.057	**0.695**
Peak flow (m^3s^{-1})		10.90	14.10	7.51	22.40	14.80	12.90	16.50	17.30	16.50	15.90	11.10	14.00	**22.40**
Runoff (mm)		43	34	35	33	30	29	27	28	29	32	35	39	**394**
Rainfall (mm)		58	39	45	43	49	54	49	56	56	61	63	62	**635**

Factors affecting runoff: GE
Station type: FL
1993 runoff is 111% of previous mean rainfall 107%

039007 Blackwater at Swallowfield 1993

Measuring authority: NRA-T
First year: 1952
Grid reference: 41 (SU) 731 648
Level stn. (m OD): 42.30
Catchment area (sq km): 354.8
Max alt. (m OD): 225

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	6.423	3.035	2.438	4.697	2.228	2.443	1.674	1.418	2.101	5.696	2.582	5.827	**3.388**
m^3s^{-1}):	Peak	24.10	3.95	5.92	24.30	6.17	11.40	3.42	3.77	6.38	27.80	7.43	21.30	**27.80**
Runoff (mm)		48	21	18	34	17	18	13	11	15	43	19	44	**301**
Rainfall (mm)		90	5	27	81	43	66	46	30	99	125	38	106	**756**

Monthly and yearly statistics for previous record (Oct 1952 to Dec 1992)

Mean	Avg.	4.653	4.221	3.858	3.129	2.530	2.011	1.528	1.525	1.810	2.544	3.342	3.999	**2.923**
flows	Low	1.758	1.687	1.323	1.521	1.081	0.766	0.711	0.723	0.638	0.907	1.262	1.298	**1.466**
m^3s^{-1})	High	8.000	11.010	6.898	5.600	5.946	6.472	2.829	2.622	6.609	7.613	8.019	7.022	**3.777**
Peak flow (m^3s^{-1})		25.60	25.90	30.50	23.10	24.40	25.20	11.80	11.20	41.00	24.90	28.60	26.90	**41.00**
Runoff (mm)		35	29	29	23	19	15	12	12	13	19	24	30	**260**
Rainfall (mm)		67	46	54	46	53	52	54	58	63	71	71	72	**707**

Factors affecting runoff: GE
Station type: CC
1993 runoff is 116% of previous mean rainfall 107%

039014 Ver at Hansteads 1993

Measuring authority: NRA-T
First year: 1956
Grid reference: 52 (TL) 151 016
Level stn. (m OD): 61.30
Catchment area (sq km): 132.0
Max alt. (m OD): 243

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.476	0.445	0.372	0.488	0.370	0.397	0.337	0.305	0.362	0.715	0.665	0.842	**0.482**
m^3s^{-1}):	Peak	1.10	0.50	0.57	1.16	0.50	0.63	0.44	0.45	0.57	1.44	0.95	1.17	**1.44**
Runoff (mm)		10	8	8	10	8	8	7	6	7	15	13	17	**115**
Rainfall (mm)		86	7	21	101	49	94	54	41	122	117	54	106	**852**

Monthly and yearly statistics for previous record (Oct 1956 to Dec 1992)

Mean	Avg.	0.453	0.517	0.542	0.519	0.456	0.398	0.333	0.292	0.260	0.283	0.333	0.386	**0.397**
flows	Low	0.079	0.076	0.074	0.093	0.069	0.045	0.028	0.016	0.025	0.057	0.039	0.048	**0.095**
m^3s^{-1})	High	0.981	1.336	1.312	1.254	1.028	0.857	0.651	0.564	0.660	0.668	0.791	0.977	**0.752**
Peak flow (m^3s^{-1})		1.77	1.91	1.88	1.90	2.07	1.65	1.44	1.13	2.34	1.50	2.31	2.64	**2.64**
Runoff (mm)		9	10	11	10	9	8	7	6	5	6	7	8	**95**
Rainfall (mm)		64	47	56	52	54	60	54	58	61	67	67	72	**712**

Factors affecting runoff: G
Station type: CC
1993 runoff is 121% of previous mean rainfall 120%

039016 Kennet at Theale 1993

Measuring authority: NRA-T
First year: 1961
Grid reference: 41 (SU) 649 708
Level stn. (m OD): 43.40
Catchment area (sq km): 1033.4
Max alt. (m OD): 297

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	22.990	15.920	11.510	13.980	10.000	8.956	6.967	5.740	6.028	12.070	8.635	16.160	**11.568**
m^3s^{-1}):	Peak	41.30	20.10	13.80	32.00	31.50	13.50	9.35	8.25	9.08	38.20	18.10	39.00	**41.30**
Runoff (mm)		60	37	30	35	26	22	18	15	15	31	22	42	**353**
Rainfall (mm)		101	8	35	87	97	48	59	32	94	124	49	124	**858**

Monthly and yearly statistics for previous record (Oct 1961 to Dec 1992)

Mean	Avg.	12.680	14.400	14.240	12.330	9.989	8.278	6.320	5.557	5.276	6.002	7.817	10.290	**9.406**
flows	Low	4.144	4.401	4.190	3.429	2.739	2.041	1.620	1.377	2.787	3.596	3.943	4.333	**4.056**
m^3s^{-1})	High	22.680	27.780	22.010	19.790	15.430	18.600	11.120	9.542	10.000	13.970	17.710	23.850	**12.882**
Peak flow (m^3s^{-1})		48.30	52.10	44.30	36.90	30.10	70.00	19.00	20.50	33.40	29.60	43.50	47.30	**70.00**
Runoff (mm)		33	34	37	31	26	21	16	14	13	16	20	27	**287**
Rainfall (mm)		74	52	68	51	58	61	50	66	66	68	75	80	**769**

Factors affecting runoff: R G I
Station type: C

1993 runoff is 123% of previous mean
rainfall 112%

039019 Lambourn at Shaw 1993

Measuring authority: NRA-T
First year: 1962
Grid reference: 41 (SU) 470 682
Level stn. (m OD): 75.60
Catchment area (sq km): 234.1
Max alt. (m OD): 261

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	3.854	3.581	2.903	2.487	2.137	2.182	1.845	1.277	0.937	1.266	1.444	1.970	**2.150**
m^3s^{-1}):	Peak	4.30	4.03	3.30	3.63	4.97	2.47	2.14	1.65	1.08	1.89	1.89	2.78	**4.97**
Runoff (mm)		44	37	33	28	24	24	21	15	10	14	16	23	**290**
Rainfall (mm)		95	7	31	84	119	47	54	33	88	117	43	110	**828**

Monthly and yearly statistics for previous record (Oct 1962 to Dec 1992)

Mean	Avg.	1.678	2.142	2.394	2.329	2.062	1.778	1.466	1.248	1.135	1.114	1.197	1.418	**1.660**
flows	Low	0.797	0.787	0.743	0.695	0.639	0.573	0.538	0.485	0.681	0.683	0.757	0.710	**0.739**
m^3s^{-1})	High	3.410	3.719	3.583	3.550	2.979	2.764	2.359	2.048	1.699	1.921	2.392	3.200	**2.151**
Peak flow (m^3s^{-1})		3.93	4.20	4.39	4.08	3.76	4.34	3.06	3.54	3.75	3.17	5.02	4.15	**5.02**
Runoff (mm)		19	22	27	26	24	20	17	14	13	13	13	16	**224**
Rainfall (mm)		68	49	64	49	57	59	51	62	62	63	73	75	**732**

Factors affecting runoff: R G
Station type: C

1993 runoff is 129% of previous mean
rainfall 113%

039021 Cherwell at Enslow Mill 1993

Measuring authority: NRA-T
First year: 1965
Grid reference: 42 (SP) 482 183
Level stn. (m OD): 65.00
Catchment area (sq km): 551.7
Max alt. (m OD): 239

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	10.430	4.598	2.869	5.849	2.837	2.637	1.506	0.983	1.430	4.414	4.800	9.293	**4.308**
m^3s^{-1}):	Peak	19.10	6.74	3.74	17.00	4.04	7.16	2.63	1.62	2.63	12.60	15.70	15.40	**19.10**
Runoff (mm)		51	20	14	27	14	12	7	5	7	21	23	45	**246**
Rainfall (mm)		76	9	25	77	65	57	62	30	87	77	61	93	**719**

Monthly and yearly statistics for previous record (Feb 1965 to Dec 1992)

Mean	Avg.	7.076	6.964	6.152	4.388	3.217	2.334	1.505	1.422	1.468	2.216	3.350	5.730	**3.805**
flows	Low	0.919	0.905	0.754	0.566	0.445	0.309	0.156	0.132	0.468	0.630	0.730	0.915	**1.370**
m^3s^{-1})	High	12.040	15.900	12.090	8.710	8.674	6.632	4.997	2.634	5.577	7.615	9.223	13.330	**5.373**
Peak flow (m^3s^{-1})		22.50	23.80	26.70	20.70	19.30	17.60	24.50	10.30	20.80	17.40	22.00	30.20	**30.20**
Runoff (mm)		34	31	30	21	16	11	7	7	7	11	16	28	**218**
Rainfall (mm)		61	45	55	46	57	60	56	63	57	58	59	67	**684**

Factors affecting runoff: P E
Station type: CC

1993 runoff is 113% of previous mean
rainfall 105%

039023 Wye at Hedsor 1993

Measuring authority: NRA-T
First year: 1964
Grid reference: 41 (SU) 896 867
Level stn. (m OD): 26.80
Catchment area (sq km): 137.3
Max alt. (m OD): 244

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.699	1.641	1.520	1.588	1.309	1.165	1.032	0.904	0.929	1.070	0.963	1.139	**1.244**
m^3s^{-1}):	Peak	2.95	1.95	2.02	3.44	1.85	1.99	1.60	1.98	2.50	3.55	1.80	2.12	**3.55**
Runoff (mm)		33	29	30	30	26	22	20	18	18	21	18	22	**286**
Rainfall (mm)		103	9	27	104	42	49	63	38	115	119	64	119	**852**

Monthly and yearly statistics for previous record (Dec 1964 to Dec 1992)

Mean	Avg.	0.937	1.038	1.124	1.150	1.110	1.077	0.983	0.928	0.850	0.823	0.817	0.871	**0.975**
flows	Low	0.419	0.484	0.467	0.470	0.432	0.380	0.370	0.314	0.381	0.395	0.375	0.340	**0.442**
m^3s^{-1})	High	1.518	1.933	1.976	1.891	1.842	1.582	1.434	1.317	1.182	1.180	1.329	1.452	**1.365**
Peak flow (m^3s^{-1})		3.49	2.92	3.21	3.26	3.98	3.51	2.94	4.17	4.43	3.15	2.79	3.19	**4.43**
Runoff (mm)		18	18	22	22	22	20	19	18	16	16	15	17	**224**
Rainfall (mm)		70	51	60	54	61	62	57	66	67	68	71	76	**763**

Factors affecting runoff: G I
Station type: C

1993 runoff is 128% of previous mean
rainfall 112%

039029 Tillingbourne at Shalford 1993

Measuring authority: NRA-T
First year: 1968
Grid reference: 51 (TQ) 000 478
Level stn. (m OD): 31.70
Catchment area (sq km): 59.0
Max alt. (m OD): 294

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.585	0.438	0.391	0.566	0.369	0.343	0.301	0.296	0.365	0.599	0.416	0.575	**0.437**
m^3s^{-1}):	Peak	1.58	0.48	0.56	2.99	0.58	0.55	0.46	0.41	0.82	1.91	1.44	1.25	**2.99**
Runoff (mm)		27	18	18	25	17	15	14	13	16	27	18	26	**234**
Rainfall (mm)		96	8	27	99	58	52	48	37	141	135	46	121	**868**

Monthly and yearly statistics for previous record (Jun 1968 to Dec 1992)

Mean	Avg.	0.651	0.637	0.614	0.585	0.539	0.494	0.452	0.444	0.462	0.503	0.545	0.593	**0.543**
flows	Low	0.322	0.346	0.350	0.357	0.308	0.257	0.283	0.292	0.280	0.292	0.353	0.319	**0.353**
m^3s^{-1})	High	0.998	1.072	0.900	0.897	0.819	0.830	0.599	0.619	0.885	0.938	0.883	0.840	**0.686**
Peak flow (m^3s^{-1})		4.54	3.04	3.23	3.00	1.91	2.79	1.65	2.36	6.09	5.09	3.65	3.25	**6.09**
Runoff (mm)		30	26	28	26	24	22	21	20	20	23	24	27	**290**
Rainfall (mm)		85	52	67	56	56	58	53	60	71	77	81	79	**795**

Factors affecting runoff: N G I
Station type: C

1993 runoff is 81% of previous mean
rainfall 109%

039049 Silk Stream at Colindeep Lane 1993

Measuring authority: NRA-T
First year: 1973
Grid reference: 51 (TQ) 217 895
Level stn. (m OD): 39.90
Catchment area (sq km): 29.0
Max alt. (m OD): 153

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.488	0.102	0.092	0.370	0.132	0.341	0.152	0.087	0.285	0.634	0.221	0.593	**0.293**
m^3s^{-1}):	Peak	6.13	0.46	1.25	5.90	2.94	16.30	3.79	3.14	9.15	14.80	2.86	3.53	**16.30**
Runoff (mm)		45	9	9	33	12	30	14	8	25	59	20	55	**318**
Rainfall (mm)		80	6	19	78	44	90	64	29	113	124	45	99	**791**

Monthly and yearly statistics for previous record (Dec 1973 to Dec 1992—incomplete or missing months total 4.4 years)

Mean	Avg.	0.360	0.286	0.317	0.252	0.218	0.195	0.151	0.126	0.148	0.276	0.314	0.305	**0.246**
flows	Low	0.093	0.102	0.104	0.030	0.035	0.061	0.047	0.053	0.057	0.062	0.096	0.096	**0.178**
m^3s^{-1})	High	0.790	0.725	0.677	0.560	0.570	0.566	0.248	0.204	0.505	0.808	0.967	0.581	**0.308**
Peak flow (m^3s^{-1})		8.54	14.30	6.26	10.26	17.10	14.90	14.50	14.20	17.20	17.30	13.00	16.00	**17.30**
Runoff (mm)		33	24	29	23	20	17	14	12	13	25	28	28	**267**
Rainfall (mm)		61	41	58	49	61	59	51	52	62	70	61	60	**685**

Factors affecting runoff:
Station type: FV

1993 runoff is 119% of previous mean
rainfall 115%

039069 Mole at Kinnersley Manor 1993

Measuring authority: NRA-T
First year: 1972
Grid reference: 51 (TQ) 262 462
Level stn. (m OD): 48.00
Catchment area (sq km): 142.0
Max alt. (m OD): 178

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.449	1.281	0.877	3.189	1.070	1.104	0.886	0.679	1.543	7.388	2.206	6.494	**2.614**
m^3s^{-1}):	Peak	34.90	2.30	4.58	19.40	6.72	12.30	4.54	5.94	16.70	71.90	23.60	42.20	**71.90**
Runoff (mm)		84	22	17	58	20	20	17	13	28	139	40	122	**581**
Rainfall (mm)		83	7	24	95	60	51	62	32	132	137	56	133	**872**

Monthly and yearly statistics for previous record (Dec 1972 to Dec 1992—incomplete or missing months total 1.5 years)

Mean	Avg.	3.782	3.070	2.589	1.904	1.397	1.037	0.796	0.804	0.939	1.926	2.448	3.431	**2.005**
flows	Low	0.940	0.829	0.833	0.388	0.305	0.221	0.296	0.169	0.281	0.207	0.260	1.071	**0.950**
m^3s^{-1})	High	9.375	8.634	4.668	3.666	3.552	2.225	2.818	2.864	5.419	8.486	5.894	5.474	**2.424**
Peak flow (m^3s^{-1})		42.30	46.50	22.30	47.00	32.90	23.30	28.90	29.80	40.70	56.40	56.70	68.50	**68.50**
Runoff (mm)		71	53	49	35	26	19	15	15	17	36	45	65	**446**
Rainfall (mm)		79	55	65	52	52	60	49	56	64	89	79	88	**788**

Factors affecting runoff: E
Station type: MIS

1993 runoff is 130% of previous mean
rainfall 111%

040009 Teise at Stone Bridge 1993

Measuring authority: NRA-S
First year: 1961
Grid reference: 51 (TQ) 718 399
Level stn. (m OD): 24.50
Catchment area (sq km): 136.2
Max alt. (m OD): 201

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.591	0.935	0.514	1.365	1.394	1.034	0.967	0.752	0.857	1.831	0.956	3.789	**1.423**
m^3s^{-1}):	Peak					21.46	2.36	1.53	1.08	3.41	25.58	12.88	34.57	
Runoff (mm)		51	17	10	26	27	20	19	15	16	36	18	75	**330**
Rainfall (mm)		94	8	25	98	91	43	58	41	111	122	52	166	**909**

Monthly and yearly statistics for previous record (Oct 1961 to Dec 1992)

Mean	Avg.	2.361	1.973	1.694	1.367	1.033	0.795	0.612	0.597	0.709	1.034	1.636	1.851	**1.302**
flows	Low	0.463	0.462	0.405	0.323	0.238	0.130	0.231	0.100	0.170	0.128	0.276	0.454	**0.559**
m^3s^{-1})	High	5.757	6.241	3.928	2.781	2.306	2.628	1.359	1.132	2.359	4.786	6.344	5.334	**2.101**
Peak flow (m^3s^{-1})		41.63	48.27	34.43	24.78	38.95	29.22	13.87	10.61	23.88	29.17	47.12	48.29	**48.29**
Runoff (mm)		46	35	33	26	20	15	12	12	13	20	31	36	**302**
Rainfall (mm)		79	54	66	55	53	57	51	58	68	83	89	82	**795**

Factors affecting runoff: RPGE
Station type: B VA

1993 runoff is 109% of previous mean
rainfall 114%

040010 Eden at Penshurst 1993

Measuring authority: NRA-S
First year: 1961
Grid reference: 51 (TQ) 520 437
Level stn. (m OD): 27.80
Catchment area (sq km): 224.3
Max alt. (m OD): 267

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.390	0.954	0.362	2.802	0.821	0.620	0.392	0.333	0.653	5.486	1.523	5.459	**1.998**
m^3s^{-1}):	Peak					1.95	3.32	0.81	0.77	4.52	46.15	17.05	29.26	
Runoff (mm)		52	10	4	32	10	7	5	4	8	66	18	65	**281**
Rainfall (mm)		79	9	22	92	53	48	55	33	120	131	51	121	**814**

Monthly and yearly statistics for previous record (Oct 1961 to Dec 1992—incomplete or missing months total 1.8 years)

Mean	Avg.	3.759	3.226	2.612	1.755	1.275	0.902	0.498	0.518	0.703	1.193	2.413	2.851	**1.802**
flows	Low	0.412	0.515	0.605	0.396	0.283	0.193	0.182	0.201	0.223	0.265	0.314	0.672	**0.810**
m^3s^{-1})	High	9.957	8.346	6.040	4.373	4.842	4.132	2.125	1.438	5.243	4.276	8.909	7.260	**2.627**
Peak flow (m^3s^{-1})		45.56	64.44	32.28	34.03	39.16	31.85	24.70	17.42	22.02	31.43	55.21	60.00	**64.44**
Runoff (mm)		45	35	31	20	15	10	6	6	8	14	28	34	**254**
Rainfall (mm)		73	49	60	55	54	56	51	56	68	74	80	77	**753**

Factors affecting runoff: S E
Station type: C

1993 runoff is 111% of previous mean
rainfall 108%

040012 Darent at Hawley 1993

Measuring authority: NRA-S
First year: 1963
Grid reference: 51 (TQ) 551 718
Level stn. (m OD): 11.20
Catchment area (sq km): 191.4
Max alt. (m OD): 251

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.061	0.626	0.404	0.585	0.296	0.202	0.108	0.080	0.076	0.520	0.455	1.038	**0.454**
m^3s^{-1}):	Peak					0.47	0.41	0.18	0.16	0.25	1.18	1.16	2.14	
Runoff (mm)		15	8	6	8	4	3	2	1	1	7	6	15	**75**
Rainfall (mm)		70	10	22	82	51	44	48	32	109	107	52	110	**737**

Monthly and yearly statistics for previous record (Dec 1963 to Dec 1992)

Mean	Avg.	0.918	0.967	0.872	0.775	0.587	0.437	0.300	0.264	0.279	0.369	0.525	0.741	**0.584**
flows	Low	0.054	0.032	0.034	0.068	0.076	0.041	0.000	0.000	0.000	0.000	0.000	0.011	**0.101**
m^3s^{-1})	High	2.060	2.076	1.804	1.515	1.509	0.982	0.617	0.690	1.817	1.516	1.448	1.674	**1.067**
Peak flow (m^3s^{-1})		5.79	3.99	4.05	3.09	13.10	3.06	2.35	2.27	10.05	3.77	4.91	4.36	**13.10**
Runoff (mm)		13	12	12	10	8	6	4	4	4	5	7	10	**96**
Rainfall (mm)		70	48	58	55	54	56	54	56	66	67	73	71	**728**

Factors affecting runoff: G
Station type: C

1993 runoff is 78% of previous mean
rainfall 101%

041001 Nunningham Stream at Tilley Bridge 1993

Measuring authority: NRA-S
First year: 1950
Grid reference: 51 (TQ) 662 129
Level stn. (m OD): 3.80
Catchment area (sq km): 16.9
Max alt. (m OD): 137

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.537	0.112	0.065	0.275	0.070	0.044	0.027	0.023	0.047	0.205	0.120		
m^3s^{-1}):	Peak					0.26	0.49	0.07	0.12	0.59	1.89	1.89	8.84	
Runoff (mm)		85	16	10	42	11	7	4	4	7	32	18		
Rainfall (mm)		94	8	27	109	49	51	65	39	125	98	62	160	**887**

Monthly and yearly statistics for previous record (Apr 1950 to Dec 1992)

Mean	Avg.	0.423	0.330	0.236	0.142	0.076	0.053	0.035	0.038	0.050	0.122	0.290	0.352	**0.178**
flows	Low	0.062	0.094	0.054	0.034	0.023	0.012	0.010	0.008	0.009	0.013	0.019	0.033	**0.053**
m^3s^{-1})	High	1.108	0.958	0.577	0.390	0.195	0.319	0.210	0.125	0.359	0.576	1.017	1.082	**0.306**
Peak flow (m^3s^{-1})		8.84	8.60	8.49	5.94	6.20	7.92	1.89	9.32	8.92	8.82	11.90	8.84	**11.90**
Runoff (mm)		67	48	37	22	12	8	6	6	8	19	45	56	**333**
Rainfall (mm)		83	58	60	50	50	56	57	69	72	91	98	92	**836**

Factors affecting runoff: R
Station type: MIS

1993 runoff is % of previous mean
rainfall 106%

041006 Uck at Isfield 1993

Measuring authority: NRA-S
First year: 1964
Grid reference: 51 (TQ) 459 190
Level stn. (m OD): 11.30
Catchment area (sq km): 87.8
Max alt. (m OD): 232

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.929	0.661	0.411	1.791	0.600	0.405	0.290	0.201	0.421	3.944	1.188	5.136	**1.511**
m^3s^{-1}):	Peak					6.09	5.60	2.57	0.72	6.59	57.35	30.83	70.91	
Runoff (mm)		89	18	13	53	18	12	9	6	12	120	35	157	**543**
Rainfall (mm)		103	8	25	108	65	52	70	37	121	112	61	172	**934**

Monthly and yearly statistics for previous record (Oct 1964 to Dec 1992)

Mean	Avg.	2.284	1.812	1.370	1.063	0.713	0.524	0.380	0.336	0.478	0.952	1.596	1.918	**1.116**
flows	Low	0.412	0.570	0.413	0.324	0.252	0.170	0.142	0.106	0.154	0.160	0.211	0.342	**0.480**
m^3s^{-1})	High	6.355	5.205	3.317	2.183	1.854	1.657	1.575	1.506	2.868	6.692	6.536	4.034	**1.945**
Peak flow (m^3s^{-1})		55.60	75.63	39.12	45.22	38.73	37.41	53.64	33.74	36.40	63.04	64.43	55.58	**75.63**
Runoff (mm)		70	50	42	31	22	15	12	10	14	29	47	59	**401**
Rainfall (mm)		85	59	64	52	51	63	53	61	70	88	92	85	**823**

Factors affecting runoff: E
Station type: C

1993 runoff is 135% of previous mean
rainfall 113%

041019 Arun at Alfoldean 1993

Measuring authority: NRA-S
First year: 1970
Grid reference: 51 (TQ) 117 331
Level stn. (m OD): 21.40
Catchment area (sq km): 139.0
Max alt. (m OD): 294

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.491	0.779	0.418	2.346	0.536	0.472	0.309	0.202	1.202	8.236	1.394	7.022	**2.306**
m^3s^{-1}):	Peak					2.25	5.38	6.95	1.03	47.66	74.94	18.19	65.93	
Runoff (mm)		87	14	8	44	10	9	6	4	22	159	26	135	**523**
Rainfall (mm)		91	7	26	87	59	53	67	34	145	138	54	134	**895**

Monthly and yearly statistics for previous record (May 1970 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	3.734	2.715	2.272	1.657	1.030	0.685	0.360	0.375	0.590	1.582	2.458	2.949	**1.697**
flows	Low	0.528	0.689	0.469	0.277	0.223	0.131	0.138	0.078	0.161	0.150	0.167	0.492	**0.589**
m^3s^{-1})	High	10.770	9.827	4.413	3.829	3.313	3.055	1.274	1.618	5.443	11.580	10.030	6.152	**2.845**
Peak flow (m^3s^{-1})		68.63	67.53	54.45	76.97	47.48	46.54	10.02	23.86	56.14	71.12	74.94	77.65	**77.65**
Runoff (mm)		72	48	44	31	20	13	7	7	11	30	46	57	**385**
Rainfall (mm)		84	52	67	53	52	58	48	57	66	83	84	83	**787**

Factors affecting runoff: E
Station type: CC

1993 runoff is 136% of previous mean rainfall 114%

041027 Rother at Princes Marsh 1993

Measuring authority: NRA-S
First year: 1972
Grid reference: 41 (SU) 772 270
Level stn. (m OD): 56.40
Catchment area (sq km): 37.2
Max alt. (m OD): 252

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.129	0.364	0.283	0.720	0.266	0.216	0.174	0.148	0.235	1.222	0.435	1.192	**0.535**
m^3s^{-1}):	Peak					0.44	0.69	0.75	0.52	1.57	27.76	4.23	11.93	
Runoff (mm)		81	24	20	50	19	15	13	11	16	88	30	86	**453**
Rainfall (mm)		124	6	38	114	44	59	62	38	141	163	69	151	**1009**

Monthly and yearly statistics for previous record (Nov 1972 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	0.834	0.745	0.653	0.487	0.363	0.269	0.211	0.215	0.255	0.443	0.573	0.771	**0.484**
flows	Low	0.258	0.320	0.237	0.194	0.158	0.121	0.120	0.106	0.140	0.165	0.167	0.248	**0.288**
m^3s^{-1})	High	1.485	2.228	1.220	0.694	0.641	0.471	0.300	0.493	0.949	1.088	1.855	1.384	**0.696**
Peak flow (m^3s^{-1})		15.63	17.79	10.71	8.75	7.20	4.68	2.17	4.55	12.97	68.03	16.60	22.62	**68.03**
Runoff (mm)		60	49	47	34	26	19	15	15	18	32	40	55	**410**
Rainfall (mm)		96	64	80	51	55	57	56	62	74	94	86	103	**878**

Factors affecting runoff: GE
Station type: C

1993 runoff is 110% of previous mean rainfall 115%

042003 Lymington at Brockenhurst Park 1993

Measuring authority: NRA-S
First year: 1960
Grid reference: 41 (SU) 318 019
Level stn. (m OD): 6.10
Catchment area (sq km): 98.9
Max alt. (m OD): 114

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.339	0.541	0.409	2.221	0.527	0.522	0.225	0.121	0.942	2.631	1.342	3.298	**1.266**
m^3s^{-1}):	Peak					7.71	9.64	2.41	1.26	9.64	10.11	10.09	10.11	
Runoff (mm)		63	13	11	58	14	14	6	3	25	71	35	89	**404**
Rainfall (mm)		113	10	51	102	68	61	72	40	147	164	89	182	**1099**

Monthly and yearly statistics for previous record (Oct 1960 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	1.804	1.651	1.444	1.018	0.731	0.426	0.235	0.238	0.398	0.937	1.313	1.539	**0.975**
flows	Low	0.330	0.439	0.327	0.168	0.128	0.042	0.013	0.014	0.042	0.128	0.198	0.522	**0.407**
m^3s^{-1})	High	3.723	3.680	3.089	2.169	1.569	1.247	1.603	0.847	2.308	4.841	5.283	3.294	**1.340**
Peak flow (m^3s^{-1})		10.13	13.62	10.13	10.13	13.98	9.94	11.38	8.16	8.47	11.28	13.54	14.91	**14.91**
Runoff (mm)		49	41	39	27	20	11	6	6	10	25	34	42	**311**
Rainfall (mm)		88	62	71	53	56	58	45	60	72	88	90	92	**835**

Factors affecting runoff: N
Station type: TP

1993 runoff is 130% of previous mean rainfall 132%

042004 Test at Broadlands 1993

Measuring authority: NRA-S
First year: 1957
Grid reference: 41 (SU) 354 188
Level stn. (m OD): 10.10
Catchment area (sq km): 1040.0
Max alt. (m OD): 297

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	18.950	14.810	12.270	15.790	12.460	10.800	8.967	7.489	7.974	14.450	12.230	14.280	**12.530**
m^3s^{-1}):	Peak													
Runoff (mm)		49	34	32	39	32	27	23	19	20	37	30	37	**380**
Rainfall (mm)		111	7	50	105	80	51	57	32	113	150	55	138	**949**

Monthly and yearly statistics for previous record (Oct 1957 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	14.270	15.460	14.960	13.370	11.410	9.570	7.878	7.344	7.499	8.764	10.250	12.210	**11.060**
flows	Low	6.415	6.882	6.686	6.107	4.861	4.558	3.708	4.263	5.377	5.786	5.304	6.069	**6.597**
m^3s^{-1})	High	34.670	32.680	24.430	19.050	16.320	13.540	10.850	10.440	12.810	27.060	33.510	35.180	**18.790**
Peak flow (m^3s^{-1})														
Runoff (mm)		37	36	39	33	29	24	20	19	19	23	26	31	**336**
Rainfall (mm)		84	56	68	51	54	59	49	64	68	79	82	90	**804**

Factors affecting runoff: N
Station type: VA

1993 runoff is 113% of previous mean rainfall 118%

042006 Meon at Mislingford 1993

Measuring authority: NRA-S
First year: 1958
Grid reference: 41 (SU) 589 141
Level stn. (m OD): 29.30
Catchment area (sq km): 72.8
Max alt. (m OD): 233

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.142	1.778	1.189	1.144	0.850	0.636	0.470	0.348	0.334	1.535	1.333	1.770	**1.125**
m^3s^{-1}):	Peak					1.05	0.94	0.69	0.59	0.85	2.66	1.88	3.38	
Runoff (mm)		79	59	44	41	31	23	17	13	12	56	47	65	**487**
Rainfall (mm)		119	9	37	117	44	61	76	41	155	164	75	160	**1058**

Monthly and yearly statistics for previous record (Oct 1958 to Dec 1992)

Mean	Avg.	1.441	1.740	1.592	1.348	0.997	0.719	0.510	0.381	0.334	0.489	0.771	1.079	**0.946**
flows	Low	0.332	0.353	0.356	0.335	0.164	0.120	0.079	0.068	0.102	0.110	0.124	0.179	**0.334**
m^3s^{-1})	High	3.470	3.310	2.820	2.024	1.738	1.220	0.827	0.657	0.882	2.309	4.126	3.917	**1.813**
Peak flow (m^3s^{-1})		3.84	4.27	3.26	2.83	2.07	1.50	1.23	1.08	0.96	1.68	2.83	3.77	**4.27**
Runoff (mm)		53	58	59	48	37	26	19	14	12	18	27	40	**410**
Rainfall (mm)		97	63	76	59	60	60	55	70	78	94	98	101	**911**

Factors affecting runoff: G
Station type: FL

1993 runoff is 119% of previous mean
rainfall 116%

043006 Nadder at Wilton Park 1993

Measuring authority: NRA-SW
First year: 1966
Grid reference: 41 (SU) 098 308
Level stn. (m OD): 51.10
Catchment area (sq km): 220.6
Max alt. (m OD): 277

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.839	3.722	2.180	3.284	2.187	1.998	1.407	1.145	1.261	4.526	2.706	5.938	**3.018**
m^3s^{-1}):	Peak	12.77	4.71	4.07	10.13	2.89	5.88	2.35	1.56	5.53	20.92	7.39	13.94	**20.92**
Runoff (mm)		71	41	26	39	27	23	17	14	15	55	32	72	**431**
Rainfall (mm)		112	8	50	90	59	72	64	34	122	149	60	172	**992**

Monthly and yearly statistics for previous record (Jan 1966 to Dec 1992)

Mean	Avg.	4.488	5.056	4.273	3.274	2.404	1.871	1.466	1.287	1.305	1.725	2.463	3.762	**2.770**
flows	Low	1.011	1.263	1.358	1.048	0.993	0.839	0.684	0.595	0.801	0.829	0.878	1.219	**1.535**
m^3s^{-1})	High	6.773	12.290	6.732	5.936	4.044	3.283	2.234	2.040	3.093	3.537	6.413	7.316	**3.821**
Peak flow (m^3s^{-1})		22.71	26.61	18.80	14.27	28.13	8.83	13.39	6.71	16.68	10.99	22.90	47.88	**47.88**
Runoff (mm)		54	56	52	38	29	22	18	16	15	21	29	46	**396**
Rainfall (mm)		95	73	78	53	63	63	53	70	75	85	87	101	**896**

Factors affecting runoff: N
Station type: C

1993 runoff is 109% of previous mean
rainfall 111%

043007 Stour at Throop Mill 1993

Measuring authority: NRA-SW
First year: 1973
Grid reference: 40 (SZ) 113 958
Level stn. (m OD): 4.40
Catchment area (sq km): 1073.0
Max alt. (m OD): 277

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	35.440	15.270	8.486	18.280	8.064	7.471	4.513	3.497	5.777	31.730	13.100	37.840	**15.844**
m^3s^{-1}):	Peak	104.60	22.15	16.02	45.34	10.36	21.74	7.27	5.45	20.21	128.70	37.58	123.00	**128.70**
Runoff (mm)		88	34	21	44	20	18	11	9	14	79	32	94	**466**
Rainfall (mm)		113	9	51	88	52	69	65	35	138	140	64	159	**983**

Monthly and yearly statistics for previous record (Jan 1973 to Dec 1992)

Mean	Avg.	23.220	25.340	20.230	14.180	9.175	6.271	4.417	4.073	4.893	8.188	13.010	22.160	**12.873**
flows	Low	4.319	6.826	7.548	4.483	3.157	2.231	1.614	1.358	1.892	2.716	2.823	6.386	**6.138**
m^3s^{-1})	High	38.730	69.370	32.620	27.070	18.900	16.940	7.932	8.998	20.340	29.770	36.730	42.950	**17.377**
Peak flow (m^3s^{-1})		116.60	137.70	110.20	88.24	150.00	180.00	47.60	32.41	90.33	101.90	133.40	280.00	**280.00**
Runoff (mm)		58	58	50	34	23	15	11	10	12	20	31	55	**379**
Rainfall (mm)		88	70	77	48	53	57	51	63	74	85	80	104	**850**

Factors affecting runoff: PGE
Station type: CC

1993 runoff is 123% of previous mean
rainfall 116%

043012 Wylye at Norton Bavant 1993

Measuring authority: NRA-SW
First year: 1969
Grid reference: 31 (ST) 909 428
Level stn. (m OD): 96.70
Catchment area (sq km): 112.4
Max alt. (m OD): 288

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.362	1.377	0.918	0.954	0.703	0.617	0.561	0.520	0.530	1.065	0.898	2.005	**1.043**
m^3s^{-1}):	Peak	4.63	1.91	3.32	2.38	1.11	1.74	1.45	0.95	1.64	3.64	2.15	4.67	**4.67**
Runoff (mm)		56	30	22	22	17	14	13	12	12	25	21	48	**293**
Rainfall (mm)		116	10	46	87	64	71	84	50	101	128	59	183	**999**

Monthly and yearly statistics for previous record (Jul 1971 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	1.645	1.909	1.598	1.335	0.961	0.741	0.599	0.554	0.568	0.662	0.868	1.364	**1.063**
flows	Low	0.454	0.468	0.503	0.482	0.450	0.335	0.279	0.287	0.405	0.413	0.456	0.523	**0.652**
m^3s^{-1})	High	2.444	4.465	2.403	2.230	1.454	1.238	0.771	0.694	1.033	1.387	1.731	2.628	**1.362**
Peak flow (m^3s^{-1})		5.90	7.26	5.24	3.84	6.74	2.98	3.44	2.76	7.19	2.88	3.39	6.33	**7.26**
Runoff (mm)		39	41	38	31	23	17	14	13	13	16	20	32	**298**
Rainfall (mm)		98	72	86	55	60	69	58	73	78	85	85	105	**924**

Factors affecting runoff: E
Station type: C

1993 runoff is 98% of previous mean
rainfall 108%

044002 Piddle at Baggs Mill 1993

Measuring authority: NRA-SW
First year: 1963

Grid reference: 30 (SY) 913 876
Level stn. (m OD): 2.10

Catchment area (sq km): 183.1
Max alt. (m OD): 275

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.912	4.058	2.407	2.759	1.991	1.656	1.240	1.044	1.322	3.285	2.873	4.921	**2.786**
m^3s^{-1}):	Peak	8.44	5.45	5.02	5.41	2.33	2.57	1.52	1.50	4.03	6.49	6.33	8.54	**8.54**
Runoff (mm)		86	54	35	39	29	23	18	15	19	48	41	72	**480**
Rainfall (mm)		127	11	53	93	45	68	69	40	159	143	90	189	**1087**

Monthly and yearly statistics for previous record (Oct 1963 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	3.470	4.308	3.809	2.975	2.145	1.632	1.219	1.055	1.069	1.386	2.027	2.866	**2.320**
flows	Low	1.045	1.020	1.093	0.945	0.757	0.571	0.483	0.433	0.598	0.707	0.721	0.853	**1.328**
m^3s^{-1})	High	5.959	8.785	6.202	4.782	3.376	2.907	1.755	1.526	2.300	3.106	5.047	5.654	**3.233**
Peak flow (m^3s^{-1})		11.87	10.02	9.37	6.48	8.11	9.23	4.79	4.50	8.18	9.29	9.20	8.62	**11.87**
Runoff (mm)		51	57	56	42	31	23	18	15	15	20	29	42	**400**
Rainfall (mm)		106	82	85	54	62	59	48	64	82	94	103	111	**950**

Factors affecting runoff: G
Station type: FL

1993 runoff is 120% of previous mean rainfall 114%

044009 Wey at Broadwey 1993

Measuring authority: NRA-SW
First year: 1975

Grid reference: 30 (SY) 666 839
Level stn. (m OD): 17.80

Catchment area (sq km): 7.0
Max alt. (m OD): 183

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.573	0.512	0.327	0.280	0.216	0.184	0.145	0.119	0.150	0.359	0.293	0.641	**0.316**
m^3s^{-1}):	Peak	0.79	0.64	0.47	0.55	0.36	0.39	0.31	0.29	0.53	0.98	0.53	5.47	**5.47**
Runoff (mm)		219	177	125	104	83	68	55	46	55	137	109	245	**1423**
Rainfall (mm)		112	12	54	77	47	85	79	42	148	130	94	204	**1084**

Monthly and yearly statistics for previous record (Jul 1975 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	0.420	0.531	0.521	0.442	0.302	0.242	0.183	0.144	0.121	0.141	0.193	0.326	**0.296**
flows	Low	0.100	0.100	0.126	0.117	0.099	0.093	0.095	0.085	0.076	0.067	0.070	0.076	**0.188**
m^3s^{-1})	High	0.698	0.970	0.896	0.730	0.486	0.450	0.318	0.211	0.178	0.290	0.390	0.698	**0.410**
Peak flow (m^3s^{-1})		1.46	1.79	2.86	1.23	3.31	3.18	2.29	1.25	0.65	0.70	1.26	2.35	**3.31**
Runoff (mm)		161	185	199	164	115	90	70	55	45	54	72	125	**1335**
Rainfall (mm)		86	84	91	51	50	53	50	58	70	95	84	106	**878**

Factors affecting runoff: N
Station type: FV

1993 runoff is 107% of previous mean rainfall 123%

045003 Culm at Wood Mill 1993

Measuring authority: NRA-SW
First year: 1962

Grid reference: 31 (ST) 021 058
Level stn. (m OD): 44.00

Catchment area (sq km): 226.1
Max alt. (m OD): 293

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.330	2.144	1.687	3.225	1.986	2.422	1.483	1.209	2.249	4.515	3.044	11.190	**3.391**
m^3s^{-1}):	Peak	35.94	4.43	2.65	29.66	11.95	13.83	7.16	3.03	16.54	34.69	26.70	105.00	**105.00**
Runoff (mm)		63	23	20	37	24	28	18	14	26	53	35	133	**473**
Rainfall (mm)		102	14	26	88	88	73	80	27	131	103	77	206	**1015**

Monthly and yearly statistics for previous record (Feb 1962 to Dec 1992)

Mean	Avg.	6.530	6.253	4.909	3.398	2.644	1.906	1.695	1.557	1.849	2.934	4.418	5.899	**3.655**
flows	Low	1.929	2.251	2.386	1.317	1.083	0.803	0.650	0.570	0.971	0.971	1.287	2.480	**2.277**
m^3s^{-1})	High	12.870	13.330	9.184	7.434	6.325	4.459	5.200	2.787	7.328	11.430	8.168	11.880	**4.840**
Peak flow (m^3s^{-1})		110.70	100.10	50.11	61.98	33.82	30.58	202.20	58.62	94.16	49.07	134.50	142.80	**202.20**
Runoff (mm)		77	67	58	39	31	22	20	18	21	35	51	70	**510**
Rainfall (mm)		108	83	85	60	64	63	60	67	77	91	97	108	**963**

Factors affecting runoff: PGEI
Station type: FVVA

1993 runoff is 93% of previous mean rainfall 105%

045004 Axe at Whitford 1993

Measuring authority: NRA-SW
First year: 1964

Grid reference: 30 (SY) 262 953
Level stn. (m OD): 7.30

Catchment area (sq km): 288.5
Max alt. (m OD): 316

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	8.764	2.557	2.150	6.592	2.560	3.479	1.705	1.385	3.998	11.460	6.147	15.430	**5.548**
m^3s^{-1}):	Peak	82.59	3.52	5.77	60.96	12.08	21.79	5.80	2.57	39.65	146.10	61.71	91.74	**146.10**
Runoff (mm)		81	21	20	59	24	31	16	13	36	106	55	143	**606**
Rainfall (mm)		111	12	44	100	88	72	67	36	152	142	96	202	**1122**

Monthly and yearly statistics for previous record (Oct 1964 to Dec 1992)

Mean	Avg.	9.091	8.347	6.465	4.286	3.460	2.467	1.950	2.056	2.507	4.128	5.789	8.247	**4.886**
flows	Low	1.891	2.448	2.542	1.567	1.176	0.817	0.626	0.554	1.222	1.243	1.714	2.829	**2.665**
m^3s^{-1})	High	15.730	18.720	11.670	8.346	7.284	4.678	5.312	4.935	9.911	16.440	11.980	14.410	**6.406**
Peak flow (m^3s^{-1})		110.60	114.60	93.02	75.42	173.40	75.04	228.80	128.00	88.95	99.72	116.90	244.00	**244.00**
Runoff (mm)		84	71	60	39	32	22	18	19	23	38	52	77	**534**
Rainfall (mm)		119	87	82	58	66	64	59	71	81	95	96	116	**994**

Factors affecting runoff: PGEI
Station type: CC

1993 runoff is 113% of previous mean rainfall 113%

046003 Dart at Austins Bridge — 1993

Measuring authority: NRA-SW
First year: 1958

Grid reference: 20 (SX) 751 659
Level stn. (m OD): 22.40

Catchment area (sq km): 247.6
Max alt. (m OD): 604

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	25.940	6.223	3.246	9.137	12.330	9.324	4.997	3.643	11.610	14.330	9.572	35.660	**12.241**
m^3s^{-1}):	Peak	186.50	12.38	5.28	82.49	68.90	26.77	24.40	19.10	217.60	69.62	84.82	161.50	**217.60**
Runoff (mm)		281	61	35	96	133	98	54	39	122	155	100	386	**1559**
Rainfall (mm)		299	35	43	149	227	80	143	48	261	158	158	442	**2043**

Monthly and yearly statistics for previous record (Oct 1958 to Dec 1992)

Mean	Avg.	19.610	17.220	13.930	9.908	6.870	4.781	3.866	4.670	5.757	10.640	15.050	19.060	**10.922**
flows	Low	5.428	4.270	5.704	3.275	1.942	1.447	0.994	0.713	0.905	1.229	5.048	8.229	**7.298**
m^3s^{-1})	High	36.680	43.870	33.520	22.720	14.530	14.260	10.930	12.590	26.290	28.000	33.400	35.540	**15.592**
Peak flow (m^3s^{-1})		284.00	309.40	236.10	187.40	98.88	253.00	206.50	222.20	327.60	168.20	317.80	549.70	**549.70**
Runoff (mm)		212	170	151	104	74	50	42	51	60	115	158	206	**1392**
Rainfall (mm)		227	165	165	115	98	94	94	121	134	180	199	228	**1820**

Factors affecting runoff: SR
Station type: VA

1993 runoff is 112% of previous mean
rainfall 112%

046005 East Dart at Bellever — 1993

Measuring authority: NRA-SW
First year: 1964

Grid reference: 20 (SX) 657 775
Level stn. (m OD): 309.00

Catchment area (sq km): 21.5
Max alt. (m OD): 604

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.610	0.613	0.385	1.000	1.403	1.108	0.801	0.506	1.550	1.323	1.009	3.703	**1.342**
m^3s^{-1}):	Peak	30.53	2.03	2.16	13.35	14.35	7.15	4.55	3.44	47.72	8.73	10.96	23.08	**47.72**
Runoff (mm)		325	69	48	121	175	134	100	63	187	165	122	461	**1969**
Rainfall (mm)		338	38	50	151	236	99	176	58	307	162	159	504	**2278**

Monthly and yearly statistics for previous record (Apr 1964 to Dec 1992)

Mean	Avg.	2.068	1.804	1.440	0.967	0.733	0.627	0.542	0.628	0.771	1.254	1.685	2.077	**1.214**
flows	Low	0.718	0.468	0.600	0.348	0.250	0.185	0.126	0.105	0.203	0.176	0.783	0.971	**0.808**
m^3s^{-1})	High	3.830	5.103	3.639	1.990	1.605	1.589	1.303	1.571	3.306	2.903	3.586	3.756	**1.775**
Peak flow (m^3s^{-1})		50.12	45.63	32.53	26.80	18.89	47.89	65.13	54.01	53.35	34.55	53.76	67.06	**67.06**
Runoff (mm)		258	205	179	117	91	76	68	78	93	156	203	259	**1782**
Rainfall (mm)		252	184	188	119	112	115	113	134	154	199	221	265	**2056**

Factors affecting runoff: N
Station type: VA

1993 runoff is 110% of previous mean
rainfall 111%

047001 Tamar at Gunnislake — 1993

Measuring authority: NRA-SW
First year: 1956

Grid reference: 20 (SX) 426 725
Level stn. (m OD): 8.20

Catchment area (sq km): 916.9
Max alt. (m OD): 586

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	50.610	10.800	6.191	13.580	14.920	32.990	18.750	8.826	15.940	39.610	18.160	71.410	**25.321**
m^3s^{-1}):	Peak	238.40	18.10	12.68	61.87	71.96	363.70	95.25	21.89	75.41	179.40	116.80	200.70	**363.70**
Runoff (mm)		148	29	18	38	44	93	55	26	45	116	51	209	**871**
Rainfall (mm)		178	24	31	87	136	126	162	33	162	129	97	264	**1429**

Monthly and yearly statistics for previous record (Jul 1956 to Dec 1992)

Mean	Avg.	44.790	36.760	25.870	16.560	11.000	6.566	6.032	8.375	11.470	22.060	35.260	44.100	**22.351**
flows	Low	8.476	9.161	11.250	5.681	3.112	1.995	1.181	0.757	1.118	1.540	4.213	13.710	**12.519**
m^3s^{-1})	High	89.410	86.960	65.520	35.210	32.370	20.630	28.730	42.100	59.840	65.080	78.760	91.700	**34.885**
Peak flow (m^3s^{-1})		347.90	306.70	411.70	268.00	154.50	177.70	96.00	238.00	401.40	373.50	530.20	714.60	**714.60**
Runoff (mm)		131	98	76	47	32	19	18	24	32	64	100	129	**769**
Rainfall (mm)		143	101	99	70	69	71	82	94	102	126	137	143	**1237**

Factors affecting runoff: SRP EI
Station type: VA

1993 runoff is 113% of previous mean
rainfall 116%

047008 Thrushel at Tinhay — 1993

Measuring authority: NRA-SW
First year: 1969

Grid reference: 20 (SX) 398 856
Level stn. (m OD): 55.50

Catchment area (sq km): 112.7
Max alt. (m OD): 375

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.450	2.203	0.918	1.355	1.673	2.330	2.131	1.148	2.033	3.691	2.157	6.426	**2.637**
m^3s^{-1}):	Peak	37.95	3.44	2.64	8.43	10.12	24.10	11.97	2.02	16.59	41.28	17.38	25.19	**41.28**
Runoff (mm)		130	47	22	31	40	54	51	27	47	88	50	153	**738**
Rainfall (mm)		158	20	31	73	122	108	152	30	158	129	85	241	**1307**

Monthly and yearly statistics for previous record (Oct 1969 to Dec 1992)

Mean	Avg.	4.900	3.967	3.043	1.637	1.035	0.694	0.479	0.786	1.002	2.269	3.737	4.584	**2.339**
flows	Low	1.317	0.951	1.150	0.482	0.239	0.110	0.028	0.019	0.116	0.069	0.442	1.662	**1.643**
m^3s^{-1})	High	9.727	8.846	7.477	4.038	4.209	2.501	1.417	2.916	6.687	6.878	7.195	8.122	**3.757**
Peak flow (m^3s^{-1})		53.32	61.78	61.46	27.72	38.72	57.13	10.91	33.64	75.12	66.18	57.07	124.40	**124.40**
Runoff (mm)		116	86	72	38	25	16	11	19	23	54	86	109	**655**
Rainfall (mm)*		141	101	100	63	62	73	70	89	91	118	130	135	**1173**

*(1970-1992)

Factors affecting runoff: S H
Station type: CC

1993 runoff is 113% of previous mean
rainfall 111%

048005 Kenwyn at Truro 1993

Measuring authority: NRA-SW
First year: 1968
Grid reference: 10 (SW) 820 450
Level stn. (m OD): 7.20
Catchment area (sq km): 19.1
Max alt. (m OD): 152

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.932	0.279	0.144	0.262	0.357	0.594	0.245	0.152	0.350	0.899	0.361	1.324	**0.494**
m^3s^{-1}):	Peak	5.81	0.52	0.41	1.20	4.56	3.10	1.50	0.49	3.67	7.99	2.58	14.76	**14.76**
Runoff (mm)		131	35	20	36	50	81	34	21	48	126	49	186	**816**
Rainfall (mm)		146	25	30	102	160	89	113	35	176	119	106	235	**1336**

Monthly and yearly statistics for previous record (Oct 1968 to Dec 1992)

Mean	Avg.	0.805	0.762	0.550	0.326	0.192	0.134	0.089	0.086	0.109	0.250	0.474	0.736	**0.374**
flows	Low	0.169	0.206	0.185	0.156	0.090	0.070	0.043	0.026	0.037	0.034	0.046	0.218	**0.263**
m^3s^{-1})	High	1.506	1.638	0.997	0.613	0.418	0.357	0.163	0.179	0.560	0.714	1.093	1.353	**0.540**
Peak flow (m^3s^{-1})		22.50	7.19	5.74	4.07	1.82	3.71	2.79	2.29	4.10	30.37	9.74	13.35	**30.37**
Runoff (mm)		113	97	77	44	27	18	12	12	15	35	64	103	**619**
Rainfall (mm)		142	104	97	59	57	63	57	74	83	113	128	137	**1114**

Factors affecting runoff: N
Station type: CC

1993 runoff is 132% of previous mean rainfall 120%

048011 Fowey at Restormel 1993

Measuring authority: NRA-SW
First year: 1961
Grid reference: 20 (SX) 098 624
Level stn. (m OD): 9.20
Catchment area (sq km): 169.1
Max alt. (m OD): 420

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	9.897	2.743	1.641	4.079	4.733	7.763	3.248	2.429	4.700	8.475	4.625	12.690	**5.612**
m^3s^{-1}):	Peak	32.60	5.13	2.57	10.71	30.98	37.79	10.22	4.57	17.07	27.02	20.20	30.70	**37.79**
Runoff (mm)		157	39	26	63	75	119	51	38	72	134	71	201	**1047**
Rainfall (mm)		208	28	39	132	198	144	164	40	248	130	139	299	**1769**

Monthly and yearly statistics for previous record (Apr 1961 to Dec 1992)

Mean	Avg.	8.991	8.214	6.093	4.038	2.881	2.063	1.793	1.953	2.465	4.361	6.745	8.854	**4.857**
flows	Low	2.267	2.704	2.595	1.684	1.034	0.693	0.562	0.343	0.673	0.617	0.921	2.947	**3.391**
m^3s^{-1})	High	17.330	21.780	12.130	7.641	6.447	5.479	4.859	6.044	10.490	11.720	15.450	20.890	**7.440**
Peak flow (m^3s^{-1})		104.80	111.90	45.62	24.52	22.62	39.44	31.10	48.51	70.02	35.07	223.70	126.60	**223.70**
Runoff (mm)		142	119	97	62	46	32	28	31	38	69	103	140	**906**
Rainfall (mm)		177	124	130	82	85	88	95	108	117	143	170	177	**1496**

Factors affecting runoff: SRP
Station type: CC

1993 runoff is 115% of previous mean rainfall 118%

049001 Camel at Denby 1993

Measuring authority: NRA-SW
First year: 1964
Grid reference: 20 (SX) 017 682
Level stn. (m OD): 4.60
Catchment area (sq km): 208.8
Max alt. (m OD): 420

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	12.810	4.196	2.216	5.837	6.298	15.760	6.214	3.801	5.427	10.550	5.761	16.220	**7.952**
m^3s^{-1}):	Peak	44.97	7.37	3.79	18.95	58.52	306.40	25.65	7.24	31.37	44.97	26.50	46.45	**306.40**
Runoff (mm)		164	49	28	72	81	196	80	49	67	135	72	208	**1201**
Rainfall (mm)		186	32	36	136	182	168	187	39	204	122	131	259	**1682**

Monthly and yearly statistics for previous record (Sep 1964 to Dec 1992)

Mean	Avg.	11.060	9.770	7.170	4.555	3.216	2.335	2.270	2.465	2.922	5.362	8.160	10.800	**5.826**
flows	Low	3.819	4.070	2.834	2.081	0.960	0.888	0.582	0.421	0.798	0.882	1.371	4.184	**4.081**
m^3s^{-1})	High	19.600	23.260	16.420	9.395	8.491	5.463	7.322	7.858	11.920	16.640	17.990	19.110	**8.165**
Peak flow (m^3s^{-1})		73.18	80.21	94.75	35.42	23.98	45.33	40.59	63.98	125.80	92.14	94.75	227.90	**227.90**
Runoff (mm)		142	114	92	57	41	29	29	32	36	69	101	138	**880**
Rainfall (mm)		164	112	117	75	77	86	94	102	113	139	154	160	**1393**

Factors affecting runoff: SRP E
Station type: VA

1993 runoff is 136% of previous mean rainfall 121%

050002 Torridge at Torrington 1993

Measuring authority: NRA-SW
First year: 1962
Grid reference: 21 (SS) 500 185
Level stn. (m OD): 13.90
Catchment area (sq km): 663.0
Max alt. (m OD): 621

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	39.660	5.781	3.264	7.348	7.486	20.540	12.710	5.047	8.809	24.740	15.230	62.930	**17.947**
m^3s^{-1}):	Peak	249.60	15.19	9.82	46.34	63.77	189.90	78.31	14.84	104.00	135.70	113.50	223.30	**249.60**
Runoff (mm)		160	21	13	29	30	80	51	20	34	100	60	254	**854**
Rainfall (mm)		181	24	31	72	108	119	156	35	129	120	99	285	**1359**

Monthly and yearly statistics for previous record (Aug 1960 to Dec 1992—incomplete or missing months total 1.2 years)

Mean	Avg.	29.980	24.910	18.270	11.100	7.491	4.304	4.146	5.270	7.299	16.720	27.270	30.550	**15.574**
flows	Low	5.018	4.695	5.792	3.082	1.399	1.092	0.443	0.252	0.954	0.668	3.798	10.270	**8.968**
m^3s^{-1})	High	57.510	64.230	51.280	28.120	31.290	14.960	21.540	19.690	45.910	50.100	55.730	64.530	**21.036**
Peak flow (m^3s^{-1})		391.10	294.40	535.60	164.40	205.70	181.30	310.60	228.50	415.00	276.40	370.40	730.00	**730.00**
Runoff (mm)		121	92	74	43	30	17	17	21	29	68	107	123	**741**
Rainfall (mm)*		129	94	98	68	69	73	75	87	96	117	135	130	**1171**

*(1962-1992)

Factors affecting runoff: SRP EI
Station type: VA

1993 runoff is 115% of previous mean rainfall 116%

052007 Parrett at Chiselborough 1993

Measuring authority: NRA-SW
First year: 1966
Grid reference: 31 (ST) 461 144
Level stn. (m OD): 20.70
Catchment area (sq km): 74.8
Max alt. (m OD): 219

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.563	0.544	0.343	1.646	0.435	0.754	0.266	0.181	1.141	3.760	1.285	4.134	**1.431**
m^3s^{-1}):	Peak	27.43	0.82	2.24	14.55	1.99	8.11	0.84	0.66	32.24	28.69	16.02	29.60	**32.24**
Runoff (mm)		92	18	12	57	16	26	10	7	40	135	45	148	**603**
Rainfall (mm)		99	9	41	95	74	77	61	35	169	133	72	160	**1025**

Monthly and yearly statistics for previous record (Aug 1966 to Dec 1992)

Mean	Avg.	2.391	2.014	1.540	0.867	0.686	0.468	0.337	0.335	0.424	0.910	1.299	2.079	**1.110**
flows	Low	0.258	0.593	0.463	0.285	0.206	0.130	0.106	0.090	0.145	0.186	0.219	0.409	**0.564**
m^3s^{-1})	High	4.914	6.120	3.055	1.867	2.048	1.053	0.921	0.988	2.225	4.819	3.789	4.219	**1.534**
Peak flow (m^3s^{-1})		36.38	30.70	27.46	21.21	57.21	12.81	16.14	23.88	15.29	27.22	29.53	44.94	**57.21**
Runoff (mm)		86	66	55	30	25	16	12	12	15	33	45	74	**468**
Rainfall (mm)		105	76	80	49	64	63	53	67	74	87	84	104	**906**

Factors affecting runoff: E
Station type: C

1993 runoff is 129% of previous mean
rainfall 113%

052010 Brue at Lovington 1993

Measuring authority: NRA-SW
First year: 1964
Grid reference: 31 (ST) 590 318
Level stn. (m OD): 19.80
Catchment area (sq km): 135.2
Max alt. (m OD): 260

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.144	1.212	0.589	1.923	0.516	0.535	0.408	0.282	0.394	3.258	1.270	5.454	**1.676**
m^3s^{-1}):	Peak	28.48	2.40	1.23	18.37	0.83	6.85	3.57	0.75	4.66	59.49	9.57	35.60	**59.49**
Runoff (mm)		82	22	12	37	10	10	8	6	8	65	24	108	**391**
Rainfall (mm)		108	14	38	72	44	64	89	41	101	116	54	154	**895**

Monthly and yearly statistics for previous record (Oct 1964 to Dec 1992)

Mean	Avg.	3.458	3.237	2.531	1.555	1.131	0.765	0.812	0.762	0.822	1.339	2.235	3.397	**1.832**
flows	Low	0.743	0.910	0.844	0.526	0.313	0.218	0.150	0.130	0.218	0.190	0.407	1.034	**1.153**
m^3s^{-1})	High	5.752	6.961	5.263	3.352	3.554	2.203	4.081	2.449	4.873	4.380	4.883	6.158	**2.427**
Peak flow (m^3s^{-1})		47.28	53.57	43.49	27.19	95.48	35.46	83.00	48.42	69.42	61.06	74.62	61.06	**95.48**
Runoff (mm)		69	58	50	30	22	15	16	15	16	27	43	67	**428**
Rainfall (mm)		86	67	74	54	62	68	69	74	75	76	85	92	**882**

Factors affecting runoff: N
Station type: C VA

1993 runoff is 91% of previous mean
rainfall 101%

053004 Chew at Compton Dando 1993

Measuring authority: NRA-SW
First year: 1958
Grid reference: 31 (ST) 648 647
Level stn. (m OD): 16.80
Catchment area (sq km): 129.5
Max alt. (m OD): 305

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	3.336	0.932	0.543	0.859	0.631	0.547	0.501	0.420	0.428	1.460	0.866	2.928	**1.127**
m^3s^{-1}):	Peak	18.39	1.65	1.33	3.81	0.78	0.94	0.73	0.49	1.54	41.98	6.95	28.05	**41.98**
Runoff (mm)		69	17	11	17	13	11	10	9	9	30	17	61	**275**
Rainfall (mm)		146	12	30	74	53	53	98	33	110	116	77	205	**1007**

Monthly and yearly statistics for previous record (Mar 1958 to Dec 1992—incomplete or missing months total 1.0 years)

Mean	Avg.	1.853	1.710	1.387	0.999	0.808	0.590	0.460	0.456	0.566	0.790	1.240	1.733	**1.046**
flows	Low	0.444	0.557	0.410	0.469	0.333	0.287	0.243	0.195	0.232	0.300	0.264	0.622	**0.540**
m^3s^{-1})	High	3.935	4.166	4.210	2.185	2.493	1.211	0.811	1.245	2.135	3.251	3.898	5.017	**1.766**
Peak flow (m^3s^{-1})		39.43	48.99	50.00	14.19	67.50	13.00	6.23	6.09	59.26	49.56	58.85	63.78	**67.50**
Runoff (mm)		38	32	29	20	17	12	10	9	11	16	25	36	**255**
Rainfall (mm)		101	71	80	62	67	70	70	84	89	92	103	111	**1000**

Factors affecting runoff: S P
Station type: FL

1993 runoff is 108% of previous mean
rainfall 101%

053006 Frome(Bristol) at Frenchay 1993

Measuring authority: NRA-SW
First year: 1961
Grid reference: 31 (ST) 637 772
Level stn. (m OD): 20.00
Catchment area (sq km): 148.9
Max alt. (m OD): 193

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	6.266	0.760	0.468	1.367	0.598	0.863	0.566	0.301	0.530	2.943	1.259	5.455	**1.798**
m^3s^{-1}):	Peak	26.08	1.38	2.06	10.94	4.15	5.93	5.53	2.06	7.59	25.67	9.06	19.62	**26.08**
Runoff (mm)		113	12	8	24	11	15	10	5	9	53	22	98	**381**
Rainfall (mm)		148	5	21	69	61	58	80	34	97	99	57	143	**872**

Monthly and yearly statistics for previous record (Sep 1961 to Dec 1992)

Mean	Avg.	3.308	2.833	2.318	1.375	1.102	0.755	0.590	0.534	0.693	1.173	2.243	3.028	**1.658**
flows	Low	0.670	0.613	0.637	0.476	0.228	0.220	0.122	0.139	0.208	0.162	0.211	0.808	**0.804**
m^3s^{-1})	High	6.152	6.040	5.762	3.434	5.028	2.973	3.516	2.398	5.113	4.691	5.558	9.807	**2.255**
Peak flow (m^3s^{-1})		35.06	41.09	33.84	29.63	49.00	29.01	70.79	12.75	29.73	42.93	39.90	66.55	**70.79**
Runoff (mm)		60	46	42	24	20	13	11	10	12	21	39	54	**351**
Rainfall (mm)		76	55	64	50	60	63	55	70	71	71	78	83	**796**

Factors affecting runoff: N
Station type: FL

1993 runoff is 108% of previous mean
rainfall 110%

054012 Tern at Walcot 1993

Measuring authority: NRA-ST
First year: 1960

Grid reference: 33 (SJ) 592 123
Level stn. (m OD): 44.60

Catchment area (sq km): 852.0
Max alt. (m OD): 366

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	10.790	5.312	4.070	5.506	4.958	6.006	3.183	3.076	3.656	7.322	7.838	20.250	**6.855**
m^3s^{-1}):	Peak	34.79	6.96	4.82	15.99	18.03	20.03	4.48	4.32	8.49	20.36	37.12	42.24	**42.24**
Runoff (mm)		34	15	13	17	16	18	10	10	11	23	24	64	**254**
Rainfall (mm)		65	8	14	52	99	67	70	46	75	65	59	126	**746**

Monthly and yearly statistics for previous record (Oct 1960 to Dec 1992)

Mean	Avg.	11.070	10.040	8.799	7.202	6.150	4.438	3.717	3.837	3.864	5.438	7.802	10.440	**6.888**
flows	Low	4.018	3.479	4.717	3.557	2.904	1.026	0.926	1.171	1.680	2.227	2.538	3.348	**3.757**
m^3s^{-1})	High	20.320	22.280	17.810	12.320	22.390	9.069	14.060	6.655	9.490	16.920	21.830	24.950	**10.266**
Peak flow (m^3s^{-1})		60.05	45.98	40.53	40.73	40.35	27.00	48.71	38.53	32.17	37.59	44.54	55.82	**60.05**
Runoff (mm)		35	29	28	22	19	14	12	12	12	17	24	33	**255**
Rainfall (mm)		61	45	55	50	60	57	54	64	60	60	70	66	**702**

Factors affecting runoff: GEI
Station type: FV

1993 runoff is 99% of previous mean
rainfall 106%

054019 Avon at Stareton 1993

Measuring authority: NRA-ST
First year: 1962

Grid reference: 42 (SP) 333 715
Level stn. (m OD): 54.70

Catchment area (sq km): 347.0
Max alt. (m OD): 214

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	6.442	1.916	1.250	2.270	1.335	2.335	1.150	0.685	1.435	4.822	4.482	8.346	**3.053**
m^3s^{-1}):	Peak	50.60	2.95	1.80	11.33	5.50	15.80	3.48	1.81	4.40	21.10	40.38	25.21	**50.60**
Runoff (mm)		50	13	10	17	10	17	9	5	11	37	33	64	**277**
Rainfall (mm)		67	9	17	63	62	69	83	30	95	82	70	89	**736**

Monthly and yearly statistics for previous record (Oct 1962 to Dec 1992)

Mean	Avg.	4.434	4.390	4.077	2.791	1.990	1.351	1.021	1.039	1.156	1.624	2.450	3.935	**2.514**
flows	Low	0.798	0.777	0.545	0.485	0.474	0.368	0.247	0.356	0.414	0.507	0.549	0.667	**1.094**
m^3s^{-1})	High	9.678	12.890	8.577	6.356	6.149	4.862	5.379	3.332	6.469	5.361	7.450	10.400	**3.588**
Peak flow (m^3s^{-1})		55.83	59.60	55.89	42.67	39.05	42.89	71.36	26.08	54.17	32.89	34.11	56.28	**71.36**
Runoff (mm)		34	31	31	21	15	10	8	8	9	13	18	30	**229**
Rainfall (mm)		55	44	54	49	54	60	58	67	55	54	58	61	**669**

Factors affecting runoff: S EI
Station type: C VA

1993 runoff is 121% of previous mean
rainfall 110%

054020 Perry at Yeaton 1993

Measuring authority: NRA-ST
First year: 1963

Grid reference: 33 (SJ) 434 192
Level stn. (m OD): 61.30

Catchment area (sq km): 180.8
Max alt. (m OD): 356

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.859	1.201	0.880	1.319	1.150	1.662	0.586	0.497	0.616	1.430	1.668	6.066	**1.669**
m^3s^{-1}):	Peak	7.73	1.67	1.01	6.18	4.07	8.32	0.94	0.61	1.39	4.61	7.68	13.73	**13.73**
Runoff (mm)		42	16	13	19	17	24	9	7	9	21	24	90	**291**
Rainfall (mm)		75	7	12	72	109	63	56	44	89	73	62	176	**838**

Monthly and yearly statistics for previous record (Oct 1963 to Dec 1992)

Mean	Avg.	2.838	2.678	2.325	1.707	1.333	0.925	0.699	0.684	0.692	1.077	1.719	2.543	**1.597**
flows	Low	0.901	0.669	0.796	0.728	0.520	0.379	0.271	0.208	0.350	0.412	0.427	0.725	**0.809**
m^3s^{-1})	High	4.870	6.507	4.265	3.041	4.232	2.046	2.735	1.416	1.785	3.308	3.103	6.244	**2.335**
Peak flow (m^3s^{-1})		14.26	17.66	12.94	10.83	10.41	8.49	7.87	5.49	7.32	7.52	10.02	12.57	**17.66**
Runoff (mm)		42	36	34	24	20	13	10	10	10	16	25	38	**279**
Rainfall (mm)		68	54	62	49	61	58	57	63	63	66	79	77	**757**

Factors affecting runoff: GEI
Station type: C

1993 runoff is 104% of previous mean
rainfall 111%

054022 Severn at Plynlimon flume 1993

Measuring authority: IH
First year: 1953

Grid reference: 22 (SN) 853 872
Level stn. (m OD): 331.00

Catchment area (sq km): 8.7
Max alt. (m OD): 740

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.124	0.184	0.207	0.456	0.364	0.327	0.514	0.472	0.411	0.390	0.523	1.695	**0.560**
m^3s^{-1}):	Peak	7.93	0.44	1.14	6.97	3.98	1.70	5.66	6.45	4.55	3.21	4.74	11.51	**11.51**
Runoff (mm)		346	51	64	136	112	97	158	145	122	120	156	522	**2030**
Rainfall (mm)		418	40	76	162	176	106	252	163	165	113	196	629	**2496**

Monthly and yearly statistics for previous record (Oct 1953 to Dec 1992—incomplete or missing months total 10.4 years)

Mean	Avg.	0.761	0.595	0.631	0.348	0.233	0.220	0.275	0.407	0.504	0.633	0.795	0.768	**0.514**
flows	Low	0.363	0.136	0.171	0.046	0.046	0.045	0.043	0.032	0.073	0.059	0.268	0.175	**0.317**
m^3s^{-1})	High	1.567	1.249	1.566	0.878	0.818	0.638	0.754	0.935	1.092	1.464	1.420	1.313	**0.646**
Peak flow (m^3s^{-1})		14.50	17.00	16.79	11.64	9.86	10.66	8.84	32.22	15.38	18.86	17.77	17.11	**32.22**
Runoff (mm)		234	167	194	104	72	65	85	125	150	195	237	236	**1864**
Rainfall (mm)		284	189	219	134	125	135	148	190	220	249	282	279	**2454**

Factors affecting runoff: N
Station type: FL

1993 runoff is 109% of previous mean
rainfall 102%

054024 Worfe at Burcote 1993

Measuring authority: NRA-ST
First year: 1969

Grid reference: 32 (SO) 747 953
Level stn. (m OD): 33.20

Catchment area (sq km): 258.0
Max alt. (m OD): 120

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.869	0.930	0.727	1.121	0.799	1.017	0.502	0.460	0.591	1.065	1.277	2.406	**1.065**
m^3s^{-1}):	Peak	5.97	1.30	0.97	3.64	2.23	4.02	1.16	0.91	1.54	2.77	5.24	5.13	**5.97**
Runoff (mm)		19	9	8	11	8	10	5	5	6	11	13	25	**130**
Rainfall (mm)		59	7	16	64	85	73	58	42	77	71	65	103	**720**

Monthly and yearly statistics for previous record (Apr 1969 to Dec 1992)

Mean	Avg.	1.860	1.810	1.630	1.420	1.152	0.839	0.591	0.648	0.645	0.814	1.116	1.532	**1.168**
flows	Low	0.617	0.593	0.712	0.548	0.426	0.256	0.101	0.094	0.322	0.422	0.499	0.508	**0.687**
m^3s^{-1})	High	3.144	3.802	3.171	2.491	4.490	1.527	1.293	1.111	0.887	1.535	2.235	2.551	**1.519**
Peak flow (m^3s^{-1})		10.84	10.56	6.86	7.73	16.09	5.65	4.06	4.32	5.10	3.87	5.88	16.00	**16.09**
Runoff (mm)		19	17	17	14	12	8	6	7	6	8	11	16	**143**
Rainfall (mm)		66	47	57	50	56	56	50	64	56	58	65	63	**688**

Factors affecting runoff: PGEI
Station type: C

1993 runoff is 91% of previous mean
rainfall 105%

054034 Dowles Brook at Oak Cottage, Dowles 1993

Measuring authority: NRA-ST
First year: 1971

Grid reference: 32 (SO) 768 764
Level stn. (m OD): 24.20

Catchment area (sq km): 40.8
Max alt. (m OD): 230

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.693	0.195	0.108	0.457	0.306	0.826	0.097	0.053	0.093	0.581	0.561	1.292	**0.440**
m^3s^{-1}):	Peak	6.01	0.31	0.17	3.08	2.95	21.64	0.31	0.11	7.16	5.04	8.61	6.46	**21.64**
Runoff (mm)		46	12	7	29	20	53	6	4	6	38	36	85	**340**
Rainfall (mm)		68	9	14	68	89	91	61	33	89	93	77	111	**803**

Monthly and yearly statistics for previous record (Oct 1971 to Dec 1992—incomplete or missing months total 3.2 years)

Mean	Avg.	0.787	0.748	0.674	0.436	0.287	0.188	0.086	0.080	0.124	0.205	0.303	0.653	**0.379**
flows	Low	0.097	0.160	0.169	0.116	0.073	0.033	0.017	0.019	0.020	0.036	0.046	0.072	**0.240**
m^3s^{-1})	High	1.617	1.738	1.637	1.090	1.016	0.692	0.255	0.347	0.880	1.047	0.786	1.414	**0.508**
Peak flow (m^3s^{-1})		16.57	9.67	14.96	12.90	12.14	16.28	4.73	6.39	19.35	5.09	7.72	18.90	**19.35**
Runoff (mm)		52	45	44	28	19	12	6	5	8	13	19	43	**294**
Rainfall (mm)		72	53	64	50	53	58	56	62	63	63	57	75	**726**

Factors affecting runoff: N
Station type: FVVA

1993 runoff is 116% of previous mean
rainfall 111%

054038 Tanat at Llanyblodwel 1993

Measuring authority: NRA-ST
First year: 1973

Grid reference: 33 (SJ) 252 225
Level stn. (m OD): 77.00

Catchment area (sq km): 229.0
Max alt. (m OD): 827

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	11.690	3.835	1.879	7.460	6.318	5.008	1.856	2.106	5.115	3.763	4.440	22.650	**6.373**
m^3s^{-1}):	Peak	31.44	6.20	2.95	37.97	25.50	19.63	3.94	17.51	26.72	14.96	23.38	66.05	**66.05**
Runoff (mm)		137	41	22	84	74	57	22	25	58	44	50	265	**878**
Rainfall (mm)		166	18	22	127	147	66	85	78	128	57	87	373	**1354**

Monthly and yearly statistics for previous record (Jun 1973 to Dec 1992—incomplete or missing months total 0.8 years)

Mean	Avg.	11.940	10.190	9.066	5.345	3.117	2.255	1.332	2.424	3.318	6.623	9.729	11.870	**6.419**
flows	Low	5.037	3.707	2.693	1.392	0.867	0.699	0.348	0.190	0.520	1.701	2.895	5.738	**4.185**
m^3s^{-1})	High	19.220	21.460	17.800	9.686	10.250	4.660	2.589	7.609	9.885	15.020	17.370	21.410	**7.510**
Peak flow (m^3s^{-1})		123.10	101.20	85.77	39.85	31.27	56.87	15.68	118.20	69.56	82.17	76.12	87.99	**123.10**
Runoff (mm)		140	109	106	61	36	26	16	28	38	77	110	139	**885**
Rainfall (mm)		133	100	113	68	71	72	63	91	103	121	134	147	**1216**

Factors affecting runoff: N EI
Station type: FV

1993 runoff is 99% of previous mean
rainfall 111%

055008 Wye at Cefn Brwyn 1993

Measuring authority: IH
First year: 1951

Grid reference: 22 (SN) 829 838
Level stn. (m OD): 341.00

Catchment area (sq km): 10.6
Max alt. (m OD): 740

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.387	0.178	0.258	0.622	0.414	0.398	0.807	0.616	0.471	0.441	0.619	2.072	**0.696**
m^3s^{-1}):	Peak	14.70	0.44	2.14	11.89	6.61	2.33	9.42	13.01	7.67	2.94	7.57	21.75	**21.75**
Runoff (mm)		352	41	66	153	105	98	205	156	116	112	152	526	**2081**
Rainfall (mm)		429	42	84	174	179	120	284	166	167	120	206	600	**2571**

Monthly and yearly statistics for previous record (Aug 1951 to Dec 1992—incomplete or missing months total 2.5 years)

Mean	Avg.	0.956	0.751	0.710	0.519	0.373	0.340	0.423	0.573	0.666	0.817	1.038	1.098	**0.689**
flows	Low	0.492	0.137	0.206	0.064	0.054	0.074	0.053	0.036	0.050	0.092	0.376	0.198	**0.447**
m^3s^{-1})	High	1.870	1.486	1.735	1.312	1.144	0.954	1.264	1.478	1.478	2.031	1.761	2.655	**0.994**
Peak flow (m^3s^{-1})		23.47	21.10	24.23	19.12	17.89	25.49	19.11	48.87	22.64	27.68	29.15	32.00	**48.87**
Runoff (mm)		243	174	180	127	95	84	107	145	164	207	255	279	**2060**
Rainfall (mm)		261	175	205	148	128	139	159	199	205	244	272	303	**2438**

Factors affecting runoff: N
Station type: CC

1993 runoff is 101% of previous mean
rainfall 105%

055013 Arrow at Titley Mill 1993

Measuring authority: NRA-WEL
First year: 1966
Grid reference: 32 (SO) 328 585
Level stn. (m OD): 129.00
Catchment area (sq km): 126.4
Max alt. (m OD): 542

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.861	1.488	0.666	2.622	1.104	1.978	0.739	0.355	1.155	2.831	2.439	8.294	**2.389**
m^3s^{-1}):	Peak	29.03	2.66	0.89	17.56	2.75	6.39	1.27	0.62	5.04	14.29	17.73	34.59	**34.59**
Runoff (mm)		103	28	14	54	23	41	16	8	24	60	50	176	**596**
Rainfall (mm)		129	8	17	115	86	85	84	53	111	84	90	203	**1065**

Monthly and yearly statistics for previous record (Oct 1966 to Dec 1992)

Mean	Avg.	4.751	4.048	3.498	2.217	1.647	1.048	0.689	0.660	0.874	1.910	3.095	4.264	**2.386**
flows	Low	1.528	1.369	1.629	0.632	0.355	0.257	0.211	0.154	0.135	0.255	0.662	1.366	**1.309**
m^3s^{-1})	High	9.004	8.763	8.933	5.028	5.001	2.559	3.842	2.219	2.644	6.916	6.625	8.464	**3.418**
Peak flow (m^3s^{-1})		101.10	42.40	57.85	37.95	32.49	13.09	30.68	24.80	18.85	36.45	34.78	63.34	**101.10**
Runoff (mm)		101	78	74	45	35	21	15	14	18	40	63	90	**596**
Rainfall (mm)		111	83	87	59	70	66	57	78	88	96	99	109	**1003**

Factors affecting runoff: N
Station type: VA

1993 runoff is 100% of previous mean
rainfall 106%

055014 Lugg at Byton 1993

Measuring authority: NRA-WEL
First year: 1966
Grid reference: 32 (SO) 364 647
Level stn. (m OD): 124.10
Catchment area (sq km): 203.3
Max alt. (m OD): 660

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	7.363	2.994	1.503	4.170	2.277	3.530	1.498	1.097	1.724	3.162	3.415	12.360	**3.770**
m^3s^{-1}):	Peak	22.72	5.04	1.94	12.59	4.34	7.85	2.04	1.62	4.14	8.03	12.42	25.38	**25.38**
Runoff (mm)		97	36	20	53	30	45	20	14	22	42	44	163	**585**
Rainfall (mm)		124	9	16	114	95	83	79	50	113	70	84	218	**1055**

Monthly and yearly statistics for previous record (Oct 1966 to Dec 1992)

Mean	Avg.	7.521	6.874	5.895	4.079	2.973	1.924	1.366	1.221	1.378	2.618	4.453	6.493	**3.888**
flows	Low	2.604	2.597	2.947	1.626	1.054	0.772	0.557	0.414	0.420	0.657	1.219	2.443	**2.321**
m^3s^{-1})	High	11.940	16.530	13.980	8.648	7.994	4.113	5.253	3.599	4.313	7.962	8.774	11.560	**4.954**
Peak flow (m^3s^{-1})		54.27	37.53	33.24	30.08	45.56	14.18	26.16	13.32	12.46	28.51	27.22	37.49	**54.27**
Runoff (mm)		99	83	78	52	39	25	18	16	18	34	57	86	**603**
Rainfall (mm)		116	84	90	64	73	65	58	78	86	95	100	112	**1021**

Factors affecting runoff: P
Station type: FVVA

1993 runoff is 97% of previous mean
rainfall 103%

055018 Frome at Yarkhill 1993

Measuring authority: NRA-WEL
First year: 1968
Grid reference: 32 (SO) 615 428
Level stn. (m OD): 55.40
Catchment area (sq km): 144.0
Max alt. (m OD): 244

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.487	0.782	0.509	1.152	0.754	0.635	0.378	0.261	0.292	1.290	1.321	2.898	**1.068**
m^3s^{-1}):	Peak	23.62	1.08	0.64	10.43	2.16	2.09	0.63	0.35	1.11	11.25	14.29	18.29	**23.62**
Runoff (mm)		48	13	9	21	14	11	7	5	5	24	24	54	**234**
Rainfall (mm)		76	9	16	65	78	58	58	26	90	90	66	104	**736**

Monthly and yearly statistics for previous record (Oct 1968 to Dec 1992)

Mean	Avg.	2.591	2.418	2.041	1.307	1.018	0.592	0.340	0.321	0.307	0.463	0.980	1.953	**1.189**
flows	Low	0.214	0.389	0.560	0.359	0.274	0.146	0.091	0.063	0.096	0.142	0.119	0.210	**0.672**
m^3s^{-1})	High	4.668	5.456	5.176	3.299	3.972	1.349	0.630	0.759	0.970	2.405	2.266	4.230	**1.628**
Peak flow (m^3s^{-1})		24.98	24.99	24.28	24.57	25.89	16.99	5.96	9.61	15.68	10.34	18.51	25.14	**25.89**
Runoff (mm)		48	41	38	24	19	11	6	6	6	9	18	36	**261**
Rainfall (mm)		75	52	61	46	56	57	49	66	59	60	64	71	**716**

Factors affecting runoff: E
Station type: VA

1993 runoff is 90% of previous mean
rainfall 103%

055023 Wye at Redbrook 1993

Measuring authority: NRA-WEL
First year: 1936
Grid reference: 32 (SO) 528 110
Level stn. (m OD): 9.20
Catchment area (sq km): 4010.0
Max alt. (m OD): 752

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	181.700	46.190	21.840	67.530	42.840	56.000	26.080	25.960	39.980	75.820	68.310	262.200	**76.651**
m^3s^{-1}):	Peak	.												
Runoff (mm)		121	28	15	44	29	36	17	17	26	51	44	175	**603**
Rainfall (mm)		147	10	22	101	97	74	83	48	109	86	80	210	**1067**

Monthly and yearly statistics for previous record (Oct 1936 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	133.100	122.500	94.110	64.800	43.450	33.730	24.140	28.640	39.770	59.380	101.700	124.600	**72.256**
flows	Low	25.050	30.760	22.110	17.930	12.340	10.970	7.426	5.180	7.271	9.582	31.730	46.890	**39.916**
m^3s^{-1})	High	241.900	333.900	325.400	143.600	125.000	131.600	95.830	83.680	174.000	174.700	252.400	246.000	**113.382**
Peak flow (m^3s^{-1})		748.00	700.40	905.40	493.30	387.90	467.20	368.30	347.80	531.70	472.90	600.30	812.70	**905.40**
Runoff (mm)		89	74	63	42	29	22	16	19	26	40	66	83	**569**
Rainfall (mm)		112	79	77	64	72	63	67	83	86	96	111	113	**1023**

Factors affecting runoff: S P E
Station type: VA

1993 runoff is 106% of previous mean
rainfall 104%

056013 Yscir at Pontaryscir 1993

Measuring authority: NRA-WEL
First year: 1972
Grid reference: 32 (SO) 003 304
Level stn. (m OD): 161.20
Catchment area (sq km): 62.8
Max alt. (m OD): 474

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.647	0.920	0.403	1.552	0.968	1.304	0.807	0.695	1.348	1.891	1.725	6.392	**1.900**
m^3s^{-1}):	Peak	20.99	2.19	0.79	7.76	4.35	5.15	3.27	2.35	8.82	7.11	17.87	31.00	**31.00**
Runoff (mm)		198	35	17	64	41	54	34	30	56	81	71	273	**954**
Rainfall (mm)		230	16	28	113	114	95	126	75	130	92	107	292	**1418**

Monthly and yearly statistics for previous record (May 1972 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	3.503	2.757	2.638	1.473	0.968	0.696	0.513	0.779	1.100	2.103	3.097	3.535	**1.928**
flows	Low	1.146	0.998	0.852	0.431	0.269	0.214	0.150	0.104	0.251	0.214	0.941	1.540	**1.286**
m^3s^{-1})	High	5.795	5.914	6.303	3.211	3.041	1.788	1.758	3.044	3.947	4.279	5.291	6.324	**2.465**
Peak flow (m^3s^{-1})		36.98	34.72	40.55	13.74	14.81	74.33	11.06	30.69	21.44	85.01	34.02	59.93	**85.01**
Runoff (mm)		149	107	113	61	41	29	22	33	45	90	128	151	**969**
Rainfall (mm)*		165	114	136	75	78	76	79	104	126	147	156	178	**1434**

*(1973-1992)

Factors affecting runoff: N
Station type: C

1993 runoff is 99% of previous mean rainfall 99%

057008 Rhymney at Llanedeyrn 1993

Measuring authority: NRA-WEL
First year: 1973
Grid reference: 31 (ST) 225 821
Level stn. (m OD): 11.80
Catchment area (sq km): 178.7
Max alt. (m OD): 617

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	14.270	2.732	1.342	5.525	2.203	2.229	1.907	1.267	2.361	4.804	2.941	17.370	**4.949**
m^3s^{-1}):	Peak	104.40	5.12	5.53	55.31	17.84	11.01	11.81	5.31	20.39	16.17	29.40	135.30	**135.30**
Runoff (mm)		214	37	20	80	33	32	29	19	34	72	43	260	**873**
Rainfall (mm)		261	15	34	137	97	72	127	45	143	106	102	333	**1472**

Monthly and yearly statistics for previous record (Jan 1973 to Dec 1992)

Mean	Avg.	9.565	8.377	7.210	4.238	2.830	1.973	1.562	2.495	3.456	5.772	8.071	9.158	**5.380**
flows	Low	3.313	2.759	2.889	1.204	0.611	0.873	0.602	0.453	0.570	0.748	2.355	3.218	**2.903**
m^3s^{-1})	High	17.500	22.510	20.960	9.695	8.340	4.604	4.235	10.450	11.500	13.700	16.560	15.730	**7.153**
Peak flow (m^3s^{-1})		108.30	156.70	110.50	41.55	31.31	54.31	27.39	87.41	101.60	118.50	128.30	147.30	**156.70**
Runoff (mm)		143	114	108	61	42	29	23	37	50	87	117	137	**950**
Rainfall (mm)		162	120	129	73	74	74	75	106	132	150	152	164	**1411**

Factors affecting runoff: S PGE
Station type: FVVA

1993 runoff is 92% of previous mean rainfall 104%

058009 Ewenny at Keepers Lodge 1993

Measuring authority: NRA-WEL
First year: 1971
Grid reference: 21 (SS) 920 782
Level stn. (m OD): 8.30
Catchment area (sq km): 62.5
Max alt. (m OD): 300

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	4.551	1.398	0.804	1.843	0.828	1.017	1.485	0.977	1.197	1.407	2.316	5.988	**1.993**
m^3s^{-1}):	Peak	69.10	6.13	1.80	11.93	3.07	4.93	19.59	6.52	8.28	9.63	37.16	55.14	**69.10**
Runoff (mm)		195	54	34	76	35	42	64	42	50	60	96	257	**1006**
Rainfall (mm)		221	18	35	112	77	73	145	62	142	76	120	291	**1372**

Monthly and yearly statistics for previous record (Nov 1971 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	2.850	2.546	2.354	1.514	1.102	0.914	0.832	1.032	1.268	2.066	2.751	2.839	**1.836**
flows	Low	1.268	1.224	1.011	0.654	0.500	0.431	0.302	0.220	0.458	0.409	1.082	1.323	**1.037**
m^3s^{-1})	High	5.921	4.745	6.004	2.683	2.515	1.756	2.196	3.879	3.604	4.391	5.680	4.744	**2.344**
Peak flow (m^3s^{-1})		56.47	30.15	51.23	27.50	20.44	17.24	28.97	57.64	42.60	59.45	65.14	43.85	**65.14**
Runoff (mm)		122	100	101	63	47	38	36	44	53	89	114	122	**927**
Rainfall (mm)		142	103	116	71	75	88	81	112	129	144	147	140	**1348**

Factors affecting runoff:
Station type: FVVA

1993 runoff is 108% of previous mean rainfall 102%

060003 Taf at Clog-y-Fran 1993

Measuring authority: NRA-WEL
First year: 1965
Grid reference: 22 (SN) 238 160
Level stn. (m OD): 7.00
Catchment area (sq km): 217.3
Max alt. (m OD): 395

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	14.050	4.611	2.883	6.816	5.383	9.413	2.786	2.335	2.656	5.824	9.215	21.170	**7.286**
m^3s^{-1}):	Peak	41.84	10.96	3.93	37.16	17.72	40.50	7.41	9.43	9.96	24.59	73.48	73.48	**73.48**
Runoff (mm)		173	51	36	81	66	112	34	29	32	72	110	261	**1057**
Rainfall (mm)		189	45	42	114	160	134	107	82	117	79	157	261	**1487**

Monthly and yearly statistics for previous record (Oct 1965 to Dec 1992—incomplete or missing months total 0.4 years)

Mean	Avg.	12.890	10.730	8.992	5.699	3.587	2.410	1.863	3.137	3.684	8.863	11.750	13.610	**7.257**
flows	Low	4.748	3.858	3.796	1.735	1.017	0.781	0.375	0.363	0.687	1.018	3.757	3.899	**4.672**
m^3s^{-1})	High	25.900	27.200	26.610	11.800	8.412	8.821	6.339	10.760	15.340	22.310	22.730	25.520	**9.662**
Peak flow (m^3s^{-1})		73.43	81.15	85.73	60.03	35.85	45.11	38.25	101.00	58.02	86.49	80.82	84.22	**101.00**
Runoff (mm)		159	120	111	68	44	29	23	39	44	109	140	168	**1054**
Rainfall (mm)		158	110	120	83	77	79	75	109	120	163	155	172	**1421**

Factors affecting runoff: N
Station type: VA

1993 runoff is 100% of previous mean rainfall 105%

060010 Tywi at Nantgaredig 1993

Measuring authority: NRA-WEL
First year: 1959
Grid reference: 22 (SN) 485 206
Level stn. (m OD): 7.80
Catchment area (sq km): 1090.4
Max alt. (m OD): 792

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	85.030	19.540	11.020	31.340	24.180	43.990	17.590	13.210	13.500	28.750	35.170	104.600	**35.844**
m^3s^{-1}):	Peak	206.30	48.82	18.77	114.10	100.90	151.20	44.82	46.53	53.59	96.64	203.00	244.70	**244.70**
Runoff (mm)		209	43	27	75	59	105	43	32	32	71	84	257	**1037**
Rainfall (mm)		265	33	41	119	145	124	128	78	127	89	149	330	**1628**

Monthly and yearly statistics for previous record (Oct 1958 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	65.120	49.760	43.470	31.930	22.190	14.320	12.470	20.820	25.590	46.240	62.310	66.970	**38.401**
flows	Low	9.473	12.210	9.657	6.201	4.507	3.736	2.752	2.699	1.523	8.708	23.910	19.470	**22.516**
m^3s^{-1})	High	120.600	109.300	137.800	64.470	51.420	39.400	42.120	78.470	76.490	128.700	122.600	134.400	**54.099**
Peak flow (m^3s^{-1})		507.40	578.80	702.30	215.30	180.10	256.80	295.90	312.50	322.80	1200.00	461.10	526.70	**1200.00**
Runoff (mm)		160	111	107	76	55	34	31	51	61	114	148	164	**1111**
Rainfall (mm)		176	118	115	110	94	95	104	126	120	166	173	181	**1578**

Factors affecting runoff: RP
Station type: FVVA

1993 runoff is 93% of previous mean
rainfall 103%

063001 Ystwyth at Pont Llolwyn 1993

Measuring authority: NRA-WEL
First year: 1963
Grid reference: 22 (SN) 591 774
Level stn. (m OD): 12.00
Catchment area (sq km): 169.6
Max alt. (m OD): 611

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	13.990	2.613	2.180	5.286	2.646	6.999	5.831	4.345	3.487	4.796	6.572	18.260	**6.457**
m^3s^{-1}):	Peak	91.13	6.74	8.21	42.22	13.74	42.33	55.29	27.01	29.11	16.82	56.39	68.51	**91.13**
Runoff (mm)		221	37	34	81	42	107	92	69	53	76	100	288	**1201**
Rainfall (mm)		242	33	46	112	106	151	164	106	104	76	130	293	**1563**

Monthly and yearly statistics for previous record (Oct 1963 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	9.272	7.012	6.421	4.394	3.098	2.413	2.552	3.424	4.324	7.262	9.525	10.780	**5.872**
flows	Low	2.268	2.283	2.761	0.961	0.577	0.625	0.422	0.181	0.882	0.558	3.757	2.219	**3.783**
m^3s^{-1})	High	15.330	15.200	18.470	10.080	10.100	7.571	5.461	8.556	10.670	19.800	18.320	22.600	**7.775**
Peak flow (m^3s^{-1})		105.60	88.63	126.70	90.32	105.10	129.70	68.24	174.30	76.84	147.40	128.10	210.40	**210.40**
Runoff (mm)		146	101	101	67	49	37	40	54	66	115	146	170	**1093**
Rainfall (mm)		153	104	122	87	86	91	98	114	129	155	170	178	**1487**

Factors affecting runoff:
Station type: VA

1993 runoff is 110% of previous mean
rainfall 105%

064001 Dyfi at Dyfi Bridge 1993

Measuring authority: NRA-WEL
First year: 1962
Grid reference: 23 (SH) 745 019
Level stn. (m OD): 5.90
Catchment area (sq km): 471.3
Max alt. (m OD): 907

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	44.540	6.578	5.341	20.060	13.650	13.760	12.170	18.430	13.000	9.698	15.230	78.870	**21.122**
m^3s^{-1}):	Peak	213.60	20.84	18.53	117.10	132.30	38.83	54.35	182.70	48.54	31.04	118.00	322.40	**322.40**
Runoff (mm)		253	34	30	110	78	76	69	105	71	55	84	448	**1413**
Rainfall (mm)		298	33	56	148	159	107	175	141	121	67	130	489	**1924**

Monthly and yearly statistics for previous record (Oct 1962 to Dec 1992—incomplete or missing months total 4.6 years)

Mean	Avg.	33.680	26.110	28.420	16.740	11.340	9.416	8.494	13.580	17.020	28.420	37.110	40.710	**22.588**
flows	Low	6.245	5.174	5.789	2.626	1.295	1.618	0.822	0.663	5.966	10.770	14.530	7.501	**14.412**
m^3s^{-1})	High	68.810	55.560	75.790	42.490	31.380	21.770	18.780	40.440	36.260	76.960	70.470	88.280	**26.520**
Peak flow (m^3s^{-1})		350.20	342.20	360.70	288.10	337.20	402.10	162.00	210.00	329.80	344.00	375.50	580.50	**580.50**
Runoff (mm)		191	135	162	92	64	52	48	77	94	162	204	231	**1512**
Rainfall (mm)		200	136	167	107	101	108	108	144	165	195	215	235	**1881**

Factors affecting runoff: N
Station type: VA

1993 runoff is 93% of previous mean
rainfall 102%

064002 Dysynni at Pont-y-Garth 1993

Measuring authority: NRA-WEL
First year: 1966
Grid reference: 23 (SH) 632 066
Level stn. (m OD): 2.30
Catchment area (sq km): 75.1
Max alt. (m OD): 892

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	6.891	1.828	1.390	4.179	2.540	5.113	3.928	6.078	4.119	2.231	3.336	10.100	**4.333**
m^3s^{-1}):	Peak	23.05	5.25	3.59	21.97	7.30	13.71	10.36	20.16	18.35	6.62	28.00	44.35	**44.35**
Runoff (mm)		246	59	50	144	91	176	140	217	142	80	115	360	**1819**
Rainfall (mm)		292	43	65	145	148	174	184	160	94	74	168	436	**1983**

Monthly and yearly statistics for previous record (Jan 1966 to Dec 1992—incomplete or missing months total 0.8 years)

Mean	Avg.	6.225	4.919	5.115	3.561	2.505	2.289	2.759	3.533	4.205	5.890	7.226	7.113	**4.613**
flows	Low	3.371	1.548	0.986	0.457	0.298	0.427	0.278	0.289	1.926	0.556	3.011	2.770	**3.523**
m^3s^{-1})	High	11.830	10.330	14.780	7.209	7.602	5.921	5.407	8.900	8.282	12.350	15.460	13.070	**7.137**
Peak flow (m^3s^{-1})		61.40	41.34	98.71	48.57	76.32	48.42	53.35	56.75	70.14	107.70	121.30	84.70	**121.30**
Runoff (mm)		222	160	182	123	89	79	98	126	145	210	249	254	**1938**
Rainfall (mm)		217	151	190	125	120	138	141	172	191	242	245	247	**2179**

Factors affecting runoff: N
Station type: VA

1993 runoff is 94% of previous mean
rainfall 91%

065005 Erch at Pencaenewydd 1993

Measuring authority: NRA-WEL
First year: 1973
Grid reference: 23 (SH) 400 404
Level stn. (m OD): 56.10
Catchment area (sq km): 18.1
Max alt. (m OD): 564

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.951	0.482	0.314	0.614	0.593	0.647	0.306	0.286	0.339	0.421	0.542	1.240	**0.562**
m^3s^{-1}):	Peak	3.41	3.98	0.95	4.24	4.24	4.76	2.37	2.17	6.82	3.18	6.05	8.03	**8.03**
Runoff (mm)		141	64	46	88	88	93	45	42	48	62	78	184	**979**
Rainfall (mm)		164	52	58	122	198	88	88	96	97	71	128	226	**1388**

Monthly and yearly statistics for previous record (Jan 1973 to Dec 1992)

Mean	Avg.	0.967	0.794	0.777	0.480	0.318	0.216	0.182	0.304	0.396	0.739	1.004	1.057	**0.602**
flows	Low	0.372	0.366	0.311	0.177	0.120	0.089	0.081	0.062	0.103	0.236	0.264	0.366	**0.430**
m^3s^{-1})	High	1.673	1.869	1.804	0.892	0.728	0.539	0.427	1.113	0.919	1.736	1.816	1.764	**0.739**
Peak flow (m^3s^{-1})		10.41	15.45	19.78	11.00	4.68	6.99	5.53	9.22	7.76	25.01	16.91	15.49	**25.01**
Runoff (mm)		143	107	115	69	47	31	27	45	57	109	144	156	**1050**
Rainfall (mm)		144	102	131	76	72	74	81	120	123	160	164	162	**1409**

Factors affecting runoff: N
Station type: C

1993 runoff is 93% of previous mean
rainfall 99%

066006 Elwy at Pont-y-Gwyddel 1993

Measuring authority: NRA-WEL
First year: 1973
Grid reference: 23 (SH) 952 718
Level stn. (m OD): 87.90
Catchment area (sq km): 194.0
Max alt. (m OD): 518

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	9.804	2.180	0.816	2.133	3.083	3.527	0.823	1.043	2.021	2.281	2.756	15.560	**3.863**
m^3s^{-1}):	Peak	42.85	5.78	1.83	6.08	16.85	25.38	1.54	13.38	17.76	17.18	24.76	62.04	**62.04**
Runoff (mm)		135	27	11	29	43	47	11	14	27	32	37	215	**628**
Rainfall (mm)		176	19	25	80	139	86	77	78	90	66	72	272	**1180**

Monthly and yearly statistics for previous record (Dec 1973 to Dec 1992)

Mean	Avg.	7.902	6.212	5.396	3.067	1.673	1.242	0.661	1.175	2.344	4.987	7.302	7.857	**4.143**
flows	Low	3.115	2.650	1.539	0.823	0.479	0.359	0.278	0.242	0.249	1.360	2.263	4.085	**2.908**
m^3s^{-1})	High	13.060	15.070	11.950	6.939	5.918	3.300	1.402	4.351	7.450	11.530	11.850	14.560	**5.094**
Peak flow (m^3s^{-1})		100.40	58.00	76.59	50.76	21.66	18.00	27.05	38.13	58.57	143.00	101.60	75.42	**143.00**
Runoff (mm)		109	78	75	41	23	17	9	16	31	69	98	108	**674**
Rainfall (mm)		129	91	104	63	70	74	64	90	114	134	141	140	**1214**

Factors affecting runoff: SRP
Station type: VA

1993 runoff is 93% of previous mean
rainfall 97%

067008 Alyn at Pont-y-Capel 1993

Measuring authority: NRA-WEL
First year: 1965
Grid reference: 33 (SJ) 336 541
Level stn. (m OD): 37.30
Catchment area (sq km): 227.1
Max alt. (m OD): 562

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.827	1.324	0.766	1.129	1.880	2.210	0.952	1.041	2.557	2.719	2.354	7.699	**2.299**
m^3s^{-1}):	Peak	6.35	2.51	0.90	5.75	10.29	17.39	4.66	6.32	9.34	19.93	15.03	22.07	**22.07**
Runoff (mm)		33	14	9	13	22	25	11	12	29	32	27	91	**319**
Rainfall (mm)		85	14	16	72	123	74	88	86	108	78	65	177	**986**

Monthly and yearly statistics for previous record (Jun 1965 to Dec 1992)

Mean	Avg.	4.220	3.746	3.193	2.494	1.673	1.147	0.838	0.854	0.924	1.875	3.023	4.179	**2.341**
flows	Low	1.328	1.234	1.448	1.023	0.677	0.438	0.331	0.287	0.391	0.452	0.614	1.246	**1.266**
m^3s^{-1})	High	7.219	9.085	8.027	6.474	5.657	2.873	2.098	2.456	3.906	6.896	6.168	9.481	**3.027**
Peak flow (m^3s^{-1})		27.53	28.52	26.11	25.28	26.86	18.34	23.23	20.81	59.11	26.46	28.21	35.92	**59.11**
Runoff (mm)		50	40	38	28	20	13	10	10	11	22	35	49	**325**
Rainfall (mm)		84	65	75	61	68	65	59	71	79	88	104	95	**914**

Factors affecting runoff: S EI
Station type: CC

1993 runoff is 98% of previous mean
rainfall 108%

067018 Dee at New Inn 1993

Measuring authority: NRA-WEL
First year: 1969
Grid reference: 23 (SH) 874 308
Level stn. (m OD): 163.50
Catchment area (sq km): 53.9
Max alt. (m OD): 750

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.541	0.664	0.715	2.874	2.802	1.826	1.451	2.112	1.719	1.103	1.432	10.330	**2.739**
m^3s^{-1}):	Peak	45.35	2.54	4.76	30.45	74.71	24.01	13.82	36.92	14.90	7.44	20.55	80.23	**80.23**
Runoff (mm)		275	30	36	138	139	88	72	105	83	55	69	514	**1603**
Rainfall (mm)		296	29	48	185	202	115	128	130	122	61	117	523	**1956**

Monthly and yearly statistics for previous record (Jul 1969 to Dec 1992)

Mean	Avg.	4.716	3.686	3.662	2.216	1.323	1.199	1.320	1.867	2.723	3.946	5.111	4.925	**3.056**
flows	Low	2.098	0.707	0.858	0.378	0.160	0.297	0.136	0.152	0.407	0.583	1.722	1.826	**2.134**
m^3s^{-1})	High	9.552	7.707	8.472	5.638	4.062	3.569	4.147	6.044	7.558	7.107	8.037	8.768	**4.206**
Peak flow (m^3s^{-1})		76.49	77.34	69.24	67.16	53.39	52.84	44.93	61.42	85.10	96.25	95.85	93.11	**96.25**
Runoff (mm)		234	167	182	107	66	58	66	93	131	196	246	245	**1789**
Rainfall (mm)		218	153	177	115	98	109	107	141	156	213	226	227	**1940**

Factors affecting runoff: N
Station type: VA

1993 runoff is 90% of previous mean
rainfall 101%

068004 Wistaston Brook at Marshfield Bridge 1993

Measuring authority: NRA-NW
First year: 1957
Grid reference: 33 (SJ) 674 552
Level stn. (m OD): 30.10
Catchment area (sq km): 92.7
Max alt. (m OD): 221

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.104	0.581	0.400	0.488	0.514	0.431	0.327	0.324	0.333	0.564	0.593	1.989	**0.640**
m^3s^{-1}):	Peak	4.11	0.89	0.58	2.46	5.00	4.45	1.76	3.17	1.91	4.72	4.58	8.64	**8.64**
Runoff (mm)		32	15	12	14	15	12	9	9	9	16	17	57	**218**
Rainfall (mm)		63	9	12	56	102	54	73	49	57	53	46	121	**695**

Monthly and yearly statistics for previous record (Oct 1957 to Dec 1992—incomplete or missing months total 4.2 years)

Mean	Avg.	1.633	1.425	1.105	1.051	0.830	0.706	0.623	0.640	0.698	0.931	1.282	1.535	**1.037**
flows	Low	0.538	0.510	0.638	0.462	0.317	0.331	0.235	0.194	0.221	0.277	0.487	0.650	**0.518**
m^3s^{-1})	High	3.143	3.679	2.131	1.901	3.381	1.410	2.419	1.578	1.973	1.902	2.555	4.701	**1.681**
Peak flow (m^3s^{-1})		16.21	13.14	13.31	12.48	15.06	11.63	13.02	21.45	10.73	12.95	13.25	14.47	**21.45**
Runoff (mm)		47	38	32	29	24	20	18	18	20	27	36	44	**353**
Rainfall (mm)		65	45	51	54	59	62	60	68	67	70	73	67	**741**

Factors affecting runoff: PGEI
Station type: VA

1993 runoff is 62% of previous mean
rainfall 94%

069006 Bollin at Dunham Massey 1993

Measuring authority: NRA-NW
First year: 1955
Grid reference: 33 (SJ) 727 875
Level stn. (m OD): 12.80
Catchment area (sq km): 256.0
Max alt. (m OD): 483

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	6.392	2.999	1.893	3.162	2.447	2.827	3.747	4.061	3.097	3.927	3.117	12.410	**4.195**
m^3s^{-1}):	Peak	15.91	5.27	2.76	9.92	14.54	12.59	14.72	14.10	9.43	22.00	23.45	32.19	**32.19**
Runoff (mm)		67	28	20	32	26	29	39	42	31	41	32	130	**517**
Rainfall (mm)		83	17	12	71	72	64	103	74	67	55	43	165	**826**

Monthly and yearly statistics for previous record (Oct 1955 to Dec 1992—incomplete or missing months total 1.1 years)

Mean	Avg.	6.414	5.301	4.597	3.658	2.852	2.535	2.378	2.899	3.052	4.100	5.462	6.462	**4.139**
flows	Low	1.639	1.686	1.694	1.742	1.286	0.707	0.875	0.464	0.651	1.300	1.804	2.296	**2.728**
m^3s^{-1})	High	10.960	12.880	11.470	8.732	5.781	9.203	5.626	11.410	8.983	11.340	9.425	14.510	**6.307**
Peak flow (m^3s^{-1})		43.95	39.29	36.91	60.43	63.02	42.37	41.50	44.04	35.05	41.18	44.35	46.33	**63.02**
Runoff (mm)		67	51	48	37	30	26	25	30	31	43	55	68	**510**
Rainfall (mm)		79	54	64	56	62	71	74	87	80	84	84	87	**882**

Factors affecting runoff: S PGEI
Station type: VA

1993 runoff is 101% of previous mean
rainfall 94%

069007 Mersey at Ashton Weir 1993

Measuring authority: NRA-NW
First year: 1958
Grid reference: 33 (SJ) 772 936
Level stn. (m OD): 14.90
Catchment area (sq km): 660.0
Max alt. (m OD): 636

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	13.130	6.049	3.886	6.759	5.047	5.988	9.210	9.072	12.550	8.131	5.757	30.760	**9.746**
m^3s^{-1}):	Peak	26.46	12.37	5.36	42.89	19.99	22.03	34.89	30.48	108.10	35.63	47.50	144.70	**144.70**
Runoff (mm)		53	22	16	27	20	24	37	37	49	33	23	125	**466**
Rainfall (mm)		111	18	16	92	85	69	149	85	121	54	57	239	**1096**

Monthly and yearly statistics for previous record (Jan 1981 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	19.200	12.010	15.330	10.250	5.972	6.520	4.680	6.203	6.857	11.150	14.880	19.430	**11.047**
flows	Low	8.297	7.270	5.544	4.698	3.479	3.847	2.447	2.760	2.574	4.403	7.300	8.686	**8.438**
m^3s^{-1})	High	29.220	23.100	36.210	17.190	11.420	18.090	7.866	12.560	11.110	25.500	25.190	36.810	**15.876**
Peak flow (m^3s^{-1})		341.80	125.00	176.70	113.00	56.25	157.50	49.21	216.70	87.70	202.50	303.70	563.40	**563.40**
Runoff (mm)		78	45	62	40	24	26	19	25	27	45	58	79	**528**
Rainfall (mm)		115	65	110	74	59	85	66	100	88	125	119	120	**1126**

Factors affecting runoff: S PGEI
Station type: CB

1993 runoff is 88% of previous mean
rainfall 97%

070004 Yarrow at Croston Mill 1993

Measuring authority: NRA-NW
First year: 1976
Grid reference: 34 (SD) 498 180
Level stn. (m OD): 6.90
Catchment area (sq km): 74.4
Max alt. (m OD): 456

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.670	1.005	0.643	1.532	1.117	1.194	1.026	1.237	0.881	1.112	1.181	5.354	**1.588**
m^3s^{-1}):	Peak	7.81	2.05	1.16	14.82	5.22	21.20	11.62	14.21	7.25	9.23	8.24	19.16	**21.20**
Runoff (mm)		96	33	23	53	40	42	37	45	31	40	41	193	**673**
Rainfall (mm)		105	15	20	93	104	66	91	77	68	51	53	218	**961**

Monthly and yearly statistics for previous record (Jan 1976 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	3.201	2.188	2.501	1.350	1.026	0.914	0.802	1.146	1.180	2.441	2.756	3.238	**1.897**
flows	Low	1.491	0.846	1.037	0.586	0.508	0.405	0.494	0.379	0.536	0.854	1.349	1.756	**1.251**
m^3s^{-1})	High	5.037	4.917	7.574	2.504	2.577	1.417	1.804	4.003	2.062	6.360	4.699	6.531	**2.830**
Peak flow (m^3s^{-1})		35.89	20.17	93.13	31.18	27.79	30.15	27.89	192.00	35.77	89.38	34.23	107.60	**192.00**
Runoff (mm)		115	72	90	47	37	32	29	41	41	88	96	117	**805**
Rainfall (mm)		100	62	96	57	60	81	62	94	92	123	107	110	**1044**

Factors affecting runoff: S PGEI
Station type: MIS

1993 runoff is 84% of previous mean
rainfall 92%

071001 Ribble at Samlesbury 1993

Measuring authority: NRA-NW
First year: 1960
Grid reference: 34 (SD) 589 304
Level stn. (m OD): 6.00
Catchment area (sq km): 1145.0
Max alt. (m OD): 680

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	66.260	13.610	8.693	35.040	28.110	14.960	21.190	27.880	23.010	14.680	14.970	105.900	**31.437**
m^3s^{-1}):	Peak	296.20	31.35	19.19	332.80	196.80	68.88	178.00	232.70	276.60	52.14	125.30	580.00	**580.00**
Runoff (mm)		155	29	20	79	66	34	50	65	52	34	34	248	**866**
Rainfall (mm)		193	18	29	131	137	57	125	99	98	46	56	297	**1286**

Monthly and yearly statistics for previous record (May 1960 to Dec 1992)

Mean	Avg.	51.150	38.100	35.510	25.770	17.420	13.950	15.960	23.320	28.650	41.250	52.470	55.790	**33.276**
flows	Low	10.610	9.565	11.790	5.601	4.048	5.031	2.638	2.958	4.263	5.716	20.770	15.190	**22.045**
m^3s^{-1})	High	82.510	80.890	104.700	54.820	46.460	33.520	40.500	68.920	65.820	118.400	88.610	120.200	**45.022**
Peak flow (m^3s^{-1})		787.30	513.10	643.30	466.60	319.10	494.80	399.80	520.80	619.30	810.00	613.20	891.30	**891.30**
Runoff (mm)		120	81	83	58	41	32	37	55	65	96	119	131	**917**
Rainfall (mm)*		134	90	110	80	78	89	90	118	127	141	143	149	**1349**

*(1961-1992)

Factors affecting runoff: S E
Station type: MIS

1993 runoff is 94% of previous mean
rainfall 95%

Comment: 1993 flows derive from a nearby temporary gauging station (NGR: 587314)

071004 Calder at Whalley Weir 1993

Measuring authority: NRA-NW
First year: 1963
Grid reference: 34 (SD) 729 360
Level stn. (m OD): 39.90
Catchment area (sq km): 316.0
Max alt. (m OD): 558

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	14.590	4.066	2.772	8.035	5.925	3.846	5.683	7.044	7.259	4.588	4.488	26.920	**7.989**
m^3s^{-1}):	Peak	72.36	7.88	4.80	91.93	26.55	12.08	43.05	82.60	131.10	20.14	38.22	237.50	**237.50**
Runoff (mm)		124	31	24	66	50	32	48	60	60	39	37	228	**797**
Rainfall (mm)		157	16	22	116	113	51	119	96	104	46	51	277	**1168**

Monthly and yearly statistics for previous record (Oct 1963 to Dec 1992—incomplete or missing months total 2.6 years)

Mean	Avg.	13.150	9.691	9.327	6.598	4.919	4.262	3.827	5.711	6.969	10.700	12.930	13.610	**8.474**
flows	Low	5.766	3.320	3.989	2.272	2.053	1.888	1.773	1.564	1.921	2.397	5.625	4.886	**6.225**
m^3s^{-1})	High	20.590	17.170	25.320	13.010	9.916	7.609	9.059	16.280	18.620	23.910	21.990	25.610	**11.485**
Peak flow (m^3s^{-1})		211.80	146.10	185.20	108.40	91.66	135.50	230.60	171.60	206.00	229.50	148.60	199.50	**230.60**
Runoff (mm)		111	75	79	54	42	35	32	48	57	91	106	115	**846**
Rainfall (mm)		124	81	104	72	73	86	80	108	113	131	131	130	**1233**

Factors affecting runoff: EI
Station type: FV

1993 runoff is 94% of previous mean
rainfall 95%

073005 Kent at Sedgwick 1993

Measuring authority: NRA-NW
First year: 1968
Grid reference: 34 (SD) 509 874
Level stn. (m OD): 18.90
Catchment area (sq km): 209.0
Max alt. (m OD): 817

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	18.270	3.646	3.594	11.810	6.728	4.110	4.605	5.139	4.481	4.186	3.750	24.560	**7.962**
m^3s^{-1}):	Peak	130.90	8.69	24.14	68.20	45.12	13.68	16.47	23.00	19.69	12.65	16.73	163.30	**163.30**
Runoff (mm)		234	42	46	146	86	51	59	66	56	54	47	315	**1201**
Rainfall (mm)		274	22	68	190	164	62	130	77	117	61	84	371	**1620**

Monthly and yearly statistics for previous record (Nov 1968 to Dec 1992)

Mean	Avg.	12.930	10.630	10.290	6.533	4.132	3.588	3.849	5.570	7.763	10.670	13.820	13.350	**8.587**
flows	Low	5.998	3.094	3.348	2.038	1.222	0.872	0.658	0.740	1.753	1.396	5.484	5.466	**5.995**
m^3s^{-1})	High	20.950	27.410	23.030	12.620	11.580	13.010	10.570	18.810	15.680	18.110	21.490	23.210	**10.316**
Peak flow (m^3s^{-1})		230.90	167.80	194.60	111.10	91.42	72.86	95.90	94.26	120.70	131.70	177.80	276.40	**276.40**
Runoff (mm)		166	124	132	81	53	44	49	71	96	137	171	171	**1297**
Rainfall (mm)		191	128	160	92	84	100	111	134	165	187	205	195	**1752**

Factors affecting runoff: N I
Station type: CBVA

1993 runoff is 93% of previous mean
rainfall 92%

074005 Ehen at Braystones 1993

Measuring authority: NRA-NW
First year: 1974
Grid reference: 35 (NY) 009 061
Level stn. (m OD): 10.10
Catchment area (sq km): 125.5
Max alt. (m OD): 899

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	8.092	2.613	3.201	7.751	5.291	3.112	2.608	4.963	2.250	1.799	3.304	11.590	**4.738**
m^3s^{-1}):	Peak	39.76	16.09	21.08	36.55	55.46	16.90	5.29	31.13	5.11	5.36	31.23	71.35	**71.35**
Runoff (mm)		173	50	68	160	113	64	56	106	46	38	68	247	**1191**
Rainfall (mm)		231	43	104	173	175	81	114	99	109	49	129	283	**1590**

Monthly and yearly statistics for previous record (Jan 1974 to Dec 1992)

Mean	Avg.	7.557	5.994	6.035	3.504	2.088	1.892	2.278	3.937	5.124	7.821	7.943	7.736	**5.159**
flows	Low	2.220	1.856	2.225	0.993	0.771	0.779	0.789	0.661	1.644	3.640	3.121	2.448	**3.963**
m^3s^{-1})	High	16.030	15.890	10.300	7.046	6.877	4.371	5.602	12.260	12.840	14.080	12.470	13.380	**6.328**
Peak flow (m^3s^{-1})		97.85	79.36	69.47	81.07	46.97	38.25	56.92	74.32	76.40	115.90	64.49	91.47	**115.90**
Runoff (mm)		161	117	129	72	45	39	49	84	106	167	164	165	**1297**
Rainfall (mm)		193	127	180	91	77	96	124	155	178	223	196	199	**1839**

Factors affecting runoff: S P
Station type: VA

1993 runoff is 92% of previous mean
rainfall 86%

075002 Derwent at Camerton 1993

Measuring authority: NRA-NW
First year: 1960
Grid reference: 35 (NY) 038 305
Level stn. (m OD): 16.70
Catchment area (sq km): 663.0
Max alt. (m OD): 950

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	53.640	12.190	11.620	33.400	22.810	14.440	10.530	16.790	11.050	10.810	14.210	70.130	**23.618**
m^3s^{-1}):	Peak	131.70	34.02	25.24	77.38	97.35	57.75	19.47	52.55	20.58	23.65	58.62	186.80	**186.80**
Runoff (mm)		217	44	47	131	92	56	43	68	43	44	56	283	**1123**
Rainfall (mm)		274	40	89	179	193	62	135	90	132	57	115	364	**1730**

Monthly and yearly statistics for previous record (Sep 1960 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	38.490	30.010	27.480	20.170	12.430	9.714	11.150	17.820	24.760	35.020	41.180	40.920	**25.751**
flows	Low	9.587	4.837	7.466	4.359	2.753	2.041	2.503	2.384	2.885	2.755	14.570	14.740	**14.824**
m^3s^{-1})	High	84.550	84.850	66.470	38.940	36.280	34.800	23.140	55.940	62.980	107.800	76.340	75.840	**34.235**
Peak flow (m^3s^{-1})		219.20	165.70	215.50	145.50	102.90	135.80	114.50	216.20	189.20	264.70	226.40	234.80	**264.70**
Runoff (mm)		155	110	111	79	50	38	45	72	97	141	161	165	**1226**
Rainfall (mm)*		183	119	152	98	96	106	115	149	175	204	194	191	**1782**

*(1961-1992)

Factors affecting runoff: S P
Station type: VA

1993 runoff is 92% of previous mean
rainfall 97%

076005 Eden at Temple Sowerby 1993

Measuring authority: NRA-NW
First year: 1964
Grid reference: 35 (NY) 605 283
Level stn. (m OD): 92.40
Catchment area (sq km): 616.4
Max alt. (m OD): 950

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	42.580	5.429	4.469	17.830	17.050	3.993	3.411	5.718	7.532	5.896	4.240	40.250	**13.316**
m^3s^{-1}):	Peak	254.20	11.44	12.97	123.00	169.40	15.00	15.08	68.39	131.10	49.39	24.58	228.40	**254.20**
Runoff (mm)		185	21	19	75	74	17	15	25	32	26	18	175	**681**
Rainfall (mm)		221	14	35	131	137	33	77	69	90	51	48	221	**1127**

Monthly and yearly statistics for previous record (Nov 1964 to Dec 1992)

Mean	Avg.	23.830	19.840	17.050	10.630	7.013	5.132	5.246	7.571	10.800	16.120	21.730	25.390	**14.177**
flows	Low	9.871	5.577	6.338	2.923	2.196	1.553	1.176	1.613	1.593	1.975	7.764	9.403	**8.669**
m^3s^{-1})	High	42.280	62.620	43.570	19.500	17.000	13.780	16.690	22.070	30.440	55.960	38.740	49.530	**18.912**
Peak flow (m^3s^{-1})		283.30	314.90	346.30	165.80	150.40	139.40	230.50	204.00	280.20	271.00	279.30	323.20	**346.30**
Runoff (mm)		104	79	74	45	30	22	23	33	45	70	91	110	**726**
Rainfall (mm)		124	89	100	62	68	69	77	94	104	117	126	131	**1161**

Factors affecting runoff:
Station type: VA

1993 runoff is 94% of previous mean
rainfall 97%

076010 Petteril at Harraby Green 1993

Measuring authority: NRA-NW
First year: 1969
Grid reference: 35 (NY) 412 545
Level stn. (m OD): 20.10
Catchment area (sq km): 160.0
Max alt. (m OD): 366

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	5.916	1.193	0.688	2.939	1.935	0.915	0.447	0.849	0.459	0.971	0.896	6.251	**1.968**
m^3s^{-1}):	Peak	22.77	2.45	0.88	14.39	11.10	2.79	0.88	4.86	0.96	5.95	5.90	22.27	**22.77**
Runoff (mm)		99	18	12	48	32	15	7	14	7	16	15	105	**388**
Rainfall (mm)		176	11	32	114	103	35	83	56	61	48	45	186	**950**

Monthly and yearly statistics for previous record (Jan 1970 to Dec 1992—incomplete or missing months total 5.8 years)

Mean	Avg.	4.426	3.408	2.580	1.570	0.907	0.618	0.610	0.783	1.089	2.039	3.472	3.753	**2.099**
flows	Low	1.585	1.148	1.040	0.667	0.413	0.286	0.279	0.251	0.293	0.277	1.162	1.260	**1.065**
m^3s^{-1})	High	7.125	9.440	4.355	3.007	3.898	1.469	1.944	2.699	4.975	5.669	7.146	6.439	**2.672**
Peak flow (m^3s^{-1})		38.27	38.88	47.18	15.71	18.64	9.80	22.39	24.04	42.15	29.77	47.03	44.86	**47.18**
Runoff (mm)		74	52	43	25	15	10	10	13	18	34	56	63	**414**
Rainfall (mm)		102	64	74	49	55	60	76	79	83	95	102	91	**930**

Factors affecting runoff: N
Station type: MIS

1993 runoff is 94% of previous mean
rainfall 102%

077003 Liddel Water at Rowanburnfoot 1993

Measuring authority: SRPB
First year: 1973
Grid reference: 35 (NY) 415 759
Level stn. (m OD): 27.10
Catchment area (sq km): 319.0
Max alt. (m OD): 608

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	27.370	4.126	5.391	15.690	9.939	3.401	2.425	4.483	4.106	6.283	5.289	30.000	**9.953**
m^3s^{-1}):	Peak	245.20	32.16	30.60	88.34	204.60	17.87	16.95	142.10	44.40	62.43	62.29	292.50	**292.50**
Runoff (mm)		230	31	45	128	83	28	20	38	33	53	43	252	**984**
Rainfall (mm)		239	25	65	162	149	64	93	74	97	81	81	279	**1409**

Monthly and yearly statistics for previous record (Oct 1973 to Dec 1992)

Mean	Avg.	16.550	13.060	13.490	6.837	4.843	4.105	4.959	6.212	8.788	12.060	14.880	16.250	**10.165**
flows	Low	8.344	5.633	5.710	1.538	1.118	1.083	0.879	0.869	1.757	4.057	3.421	4.819	**7.515**
m^3s^{-1})	High	30.750	32.020	23.150	14.760	16.730	12.940	22.800	23.360	24.390	19.120	26.200	26.460	**13.058**
Peak flow (m^3s^{-1})		404.40	349.10	345.30	171.00	248.40	131.00	309.40	178.80	354.90	334.30	281.00	393.20	**404.40**
Runoff (mm)		139	100	113	56	41	33	42	52	71	101	121	136	**1006**
Rainfall (mm)		148	102	134	73	80	86	104	121	125	144	142	157	**1416**

Factors affecting runoff: N
Station type: VA

1993 runoff is 98% of previous mean
rainfall 100%

078003 Annan at Brydekirk 1993

Measuring authority: SRPB
First year: 1967
Grid reference: 35 (NY) 191 704
Level stn. (m OD): 10.00
Catchment area (sq km): 925.0
Max alt. (m OD): 821

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	66.920	13.980	20.140	52.350	29.950	11.790	10.630	14.580	10.870	13.080	11.760	85.810	**28.682**
m^3s^{-1}):	Peak	213.80	32.17	225.00	200.20	229.30	45.89	86.05	47.68	52.04	53.28	66.63	315.10	**315.10**
Runoff (mm)		194	37	58	147	87	33	31	42	30	38	33	248	**978**
Rainfall (mm)		225	18	101	156	142	58	96	63	88	50	77	257	**1331**

Monthly and yearly statistics for previous record (Oct 1967 to Dec 1992)

Mean	Avg.	46.840	37.310	34.320	21.360	14.870	11.210	10.970	18.020	24.870	36.810	42.680	44.370	**28.610**
flows	Low	17.820	12.820	8.402	6.124	3.519	2.937	1.944	2.007	3.362	3.592	11.490	19.530	**16.402**
m^3s^{-1})	High	83.440	105.700	63.910	40.600	53.160	32.150	34.940	76.390	76.320	86.820	77.930	87.020	**36.424**
Peak flow (m^3s^{-1})		405.40	305.00	293.30	213.30	180.20	171.30	253.10	378.90	446.60	499.10	325.00	355.40	**499.10**
Runoff (mm)		136	99	99	60	43	31	32	52	70	107	120	128	**976**
Rainfall (mm)		145	101	122	72	82	82	94	114	130	148	136	142	**1368**

Factors affecting runoff: N
Station type: VA

1993 runoff is 100% of previous mean rainfall 97%

078004 Kinnel Water at Redhall 1993

Measuring authority: SRPB
First year: 1963
Grid reference: 35 (NY) 077 868
Level stn. (m OD): 53.70
Catchment area (sq km): 76.1
Max alt. (m OD): 697

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	6.681	0.768	2.253	4.672	2.222	0.731	1.022	1.164	0.768	0.865	1.166	8.694	**2.607**
m^3s^{-1}):	Peak	59.04	3.27	55.76	28.36	35.88	6.90	30.21	8.86	12.37	11.56	16.67	73.89	**73.89**
Runoff (mm)		235	24	79	159	78	25	36	41	26	30	40	306	**1080**
Rainfall (mm)		234	19	114	157	149	58	102	69	87	46	86	274	**1395**

Monthly and yearly statistics for previous record (Oct 1963 to Dec 1992—incomplete or missing months total 1.0 years)

Mean	Avg.	4.300	3.250	3.035	1.742	1.464	1.036	1.014	1.735	2.675	3.638	4.032	4.154	**2.672**
flows	Low	1.296	0.590	0.552	0.251	0.122	0.112	0.048	0.049	0.099	0.207	0.740	1.081	**1.507**
m^3s^{-1})	High	9.214	9.298	6.263	4.161	5.496	3.282	3.435	7.513	6.689	7.288	7.535	8.490	**3.517**
Peak flow (m^3s^{-1})		95.89	90.99	101.20	66.70	51.79	36.09	60.14	65.25	91.37	110.90	86.69	103.60	**110.90**
Runoff (mm)		151	104	107	59	52	35	36	61	91	128	137	146	**1108**
Rainfall (mm)		153	107	129	79	93	89	96	122	145	158	149	156	**1476**

Factors affecting runoff: N
Station type: VA

1993 runoff is 97% of previous mean rainfall 95%

080001 Urr at Dalbeattie 1993

Measuring authority: SRPB
First year: 1963
Grid reference: 25 (NX) 822 610
Level stn. (m OD): 4.00
Catchment area (sq km): 199.0
Max alt. (m OD): 432

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	12.500	2.239	4.571	11.550	5.861	2.415	0.807	1.408	1.214	2.551	3.297	19.200	**5.673**
m^3s^{-1}):	Peak	59.98	6.55	75.33	63.38	69.92	12.40	7.23	10.09	13.67	14.47	19.49	65.16	**75.33**
Runoff (mm)		168	27	62	150	79	31	11	19	16	34	43	258	**899**
Rainfall (mm)		207	25	98	162	133	68	73	54	85	46	86	272	**1309**

Monthly and yearly statistics for previous record (Nov 1963 to Dec 1992)

Mean	Avg.	9.756	7.976	6.780	3.939	2.884	1.923	1.428	2.958	5.139	8.074	9.428	9.857	**5.837**
flows	Low	3.534	1.419	2.094	0.753	0.308	0.246	0.137	0.149	0.319	0.522	1.711	3.369	**3.109**
m^3s^{-1})	High	19.080	19.340	12.570	8.509	10.880	6.833	5.081	13.310	17.160	19.400	19.420	18.590	**8.358**
Peak flow (m^3s^{-1})		133.70	100.10	95.03	69.39	65.95	59.18	68.42	104.60	114.10	162.20	129.70	164.30	**164.30**
Runoff (mm)		131	98	91	51	39	25	19	40	67	109	123	133	**926**
Rainfall (mm)		138	100	118	72	79	78	80	106	130	148	141	141	**1331**

Factors affecting runoff: N
Station type: VA

1993 runoff is 97% of previous mean rainfall 98%

081002 Cree at Newton Stewart 1993

Measuring authority: SRPB
First year: 1963
Grid reference: 25 (NX) 412 653
Level stn. (m OD): 4.80
Catchment area (sq km): 368.0
Max alt. (m OD): 843

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	27.780	8.725	17.400	25.030	16.970	6.746	8.909	10.220	7.912	6.902	10.650	39.170	**15.623**
m^3s^{-1}):	Peak	117.50	22.37	347.20	118.10	345.10	92.58	25.90	53.48	157.10	46.26	99.88	139.40	**347.20**
Runoff (mm)		202	57	127	176	123	48	65	74	56	50	75	285	**1339**
Rainfall (mm)		248	56	167	210	190	91	149	101	132	59	130	303	**1836**

Monthly and yearly statistics for previous record (Oct 1963 to Dec 1992)

Mean	Avg.	23.780	17.840	17.030	10.640	7.669	6.525	7.551	10.990	16.190	21.660	23.660	23.640	**15.597**
flows	Low	9.633	2.569	4.039	1.319	0.426	0.466	0.969	0.684	1.063	6.495	7.292	5.775	**9.965**
m^3s^{-1})	High	45.820	42.490	33.060	23.880	22.960	15.620	19.710	36.030	43.310	36.720	43.910	48.050	**18.979**
Peak flow (m^3s^{-1})		272.50	253.10	217.20	207.10	119.40	195.10	223.10	230.90	312.70	318.00	199.10	322.30	**322.30**
Runoff (mm)		173	119	124	75	56	46	55	80	114	158	167	172	**1338**
Rainfall (mm)		195	130	161	100	95	100	111	141	168	199	202	192	**1794**

Factors affecting runoff: N
Station type: VA

1993 runoff is 100% of previous mean rainfall 102%

081003 Luce at Airyhemming 1993

Measuring authority: SRPB
First year: 1967
Grid reference: 25 (NX) 180 599
Level stn. (m OD): 19.00
Catchment area (sq km): 171.0
Max alt. (m OD): 438

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	8.102	3.385	5.080	11.400	6.680	4.462	2.523	3.802	3.161	4.024	5.998	13.910	**6.063**
m^3s^{-1}):	Peak	56.10	13.15	99.93	67.96	159.30	65.44	13.75	30.35	105.30	45.62	119.10	66.17	**159.30**
Runoff (mm)		127	48	80	173	105	68	40	60	48	63	91	218	**1118**
Rainfall (mm)		148	50	113	168	148	102	124	73	137	62	125	224	**1474**

Monthly and yearly statistics for previous record (Jan 1967 to Dec 1992)

Mean	Avg.	9.968	7.296	6.751	3.999	2.353	1.972	2.177	3.681	5.980	8.982	9.950	9.073	**6.011**
flows	Low	4.540	0.789	1.359	0.454	0.261	0.225	0.191	0.277	0.366	1.689	3.857	2.445	**3.691**
m^3s^{-1})	High	15.600	14.810	12.860	9.522	7.597	5.360	6.445	14.290	17.670	16.750	15.940	17.090	**7.787**
Peak flow (m^3s^{-1})		177.10	146.10	216.70	197.60	87.38	190.30	156.80	283.60	192.40	231.80	191.00	204.00	**283.60**
Runoff (mm)		156	104	106	61	37	30	34	58	91	141	151	142	**1110**
Rainfall (mm)		163	105	127	84	74	85	96	121	144	168	165	151	**1483**

Factors affecting runoff: NS P
Station type: VA

1993 runoff is 101% of previous mean rainfall 99%

082002 Doon at Auchendrane 1993

Measuring authority: CRPB
First year: 1974
Grid reference: 26 (NS) 338 160
Level stn. (m OD): 22.20
Catchment area (sq km): 323.8
Max alt. (m OD): 844

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	11.630	4.829	6.185	8.002	7.212	3.837	5.015	5.650	3.613	4.756	6.588	16.730	**7.038**
m^3s^{-1}):	Peak	38.57	7.52	25.92	36.50	48.63	6.68	21.83	27.34	8.56	31.90	33.66	52.27	**52.27**
Runoff (mm)		96	36	51	64	60	31	41	47	29	39	53	138	**685**
Rainfall (mm)		255	43	135	152	151	71	137	88	88	60	118	307	**1605**

Monthly and yearly statistics for previous record (Jul 1974 to Dec 1992)

Mean	Avg.	10.840	8.337	8.768	5.327	4.059	3.688	4.014	5.278	7.569	9.920	10.700	10.710	**7.434**
flows	Low	5.203	3.685	4.270	3.157	2.390	2.265	2.397	2.557	3.825	4.732	4.785	6.247	**5.559**
m^3s^{-1})	High	15.120	18.360	13.570	10.520	8.006	4.981	6.945	10.930	17.680	14.610	17.290	20.680	**8.698**
Peak flow (m^3s^{-1})		85.15	63.08	69.51	61.06	42.45	19.63	61.38	46.34	103.20	121.50	83.78	84.49	**121.50**
Runoff (mm)		90	63	73	43	34	30	33	44	61	82	86	89	**725**
Rainfall (mm)		196	120	157	77	75	78	99	131	170	194	188	189	**1674**

Factors affecting runoff: P
Station type: VA

1993 runoff is 95% of previous mean rainfall 96%

083005 Irvine at Shewalton 1993

Measuring authority: CRPB
First year: 1972
Grid reference: 26 (NS) 345 369
Level stn. (m OD): 4.80
Catchment area (sq km): 380.7
Max alt. (m OD): 484

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	19.650	4.463		12.220	8.004	2.534	4.398	6.823	3.178	5.795	9.744	30.470	
m^3s^{-1}):	Peak	120.40	8.80	86.99	81.96	100.90	8.00	46.35	47.13	42.49	55.73	91.81	148.10	**148.10**
Runoff (mm)		138	28		83	56	17	31	48	22	41	66	214	
Rainfall (mm)		181	28	101	113	111	71	105	75	74	64	103	235	**1261**

Monthly and yearly statistics for previous record (Feb 1972 to Dec 1992—incomplete or missing months total 0.2 years)

Mean	Avg.	17.270	10.870	11.640	5.926	3.512	2.926	3.291	6.131	11.550	12.950	16.220	14.450	**9.726**
flows	Low	4.527	1.874	3.182	1.138	0.789	0.536	0.367	0.328	1.608	4.298	3.754	3.829	**6.694**
m^3s^{-1})	High	28.890	26.480	23.440	16.980	11.530	10.870	12.060	20.070	33.750	23.910	27.770	27.660	**12.408**
Peak flow (m^3s^{-1})		341.20	190.90	207.50	108.50	131.80	139.30	278.70	228.20	303.60	272.30	194.30	228.10	**341.20**
Runoff (mm)		122	70	82	40	25	20	23	43	79	91	110	102	**806**
Rainfall (mm)		132	80	113	64	63	75	85	107	139	133	139	130	**1260**

Factors affecting runoff: E
Station type: VA

1993 runoff is % of previous mean rainfall 100%

084016 Luggie Water at Condorrat 1993

Measuring authority: CRPB
First year: 1966
Grid reference: 26 (NS) 739 725
Level stn. (m OD): 68.00
Catchment area (sq km): 33.9
Max alt. (m OD): 107

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	2.308	0.430	0.768	0.943	1.002	0.376	0.311	0.401	0.362	0.738	0.469	2.127	**0.860**
m^3s^{-1}):	Peak	24.57	0.95	17.77	4.39	14.22	3.50	3.44	2.22	1.95	7.89	1.86	22.02	**24.57**
Runoff (mm)		182	31	61	72	79	29	25	32	28	58	36	168	**800**
Rainfall (mm)		212	16	86	93	110	73	77	56	66	79	67	192	**1127**

Monthly and yearly statistics for previous record (Oct 1966 to Dec 1992—incomplete or missing months total 0.5 years)

Mean	Avg.	1.512	1.090	1.067	0.606	0.454	0.305	0.310	0.504	0.808	1.074	1.337	1.359	**0.868**
flows	Low	0.680	0.415	0.370	0.287	0.166	0.138	0.147	0.123	0.125	0.129	0.367	0.592	**0.539**
m^3s^{-1})	High	3.104	2.378	1.846	1.030	1.199	0.692	1.751	1.606	3.386	2.121	2.362	2.669	**1.121**
Peak flow (m^3s^{-1})		30.25	19.34	28.11	14.61	14.54	7.01	27.14	22.06	44.46	34.20	30.68	36.04	**44.46**
Runoff (mm)		119	78	84	46	36	23	25	40	62	85	102	107	**808**
Rainfall (mm)		111	77	97	54	66	67	74	94	113	118	115	108	**1094**

Factors affecting runoff: N
Station type: VA

1993 runoff is 99% of previous mean rainfall 103%

085001 Leven at Linnbrane — 1993

Measuring authority: CRPB
First year: 1963

Grid reference: 26 (NS) 394 803
Level stn. (m OD): 4.30

Catchment area (sq km): 784.3
Max alt. (m OD): 1130

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	110.100	57.680	39.270	77.130	36.410	15.650	21.380	29.590	11.420	20.820	13.250	81.270	**42.856**
m^3s^{-1}):	Peak	169.50	112.30	90.58	96.80	63.49	33.82	48.19	50.48	18.62	43.83	22.40	105.10	**169.50**
Runoff (mm)		376	178	134	255	124	52	73	101	38	71	44	278	**1723**
Rainfall (mm)		529	63	243	183	145	76	150	90	86	74	137	363	**2139**

Monthly and yearly statistics for previous record (Jul 1963 to Dec 1992)

Mean	Avg.	66.300	56.190	51.390	35.720	24.830	19.220	18.660	24.530	37.390	54.540	60.860	61.330	**42.523**
flows	Low	27.910	18.610	16.630	10.540	10.620	8.518	7.303	4.556	8.736	10.830	24.540	17.580	**30.712**
m^3s^{-1})	High	119.100	134.600	138.200	73.990	73.120	51.860	44.640	85.740	91.360	90.150	115.000	125.500	**54.061**
Peak flow (m^3s^{-1})		150.50	163.60	196.80	112.40	92.02	78.48	116.60	115.30	121.60	138.50	145.70	148.50	**196.80**
Runoff (mm)		226	175	175	118	85	64	64	84	124	186	201	209	**1711**
Rainfall (mm)		241	160	196	107	116	112	123	155	213	230	229	224	**2106**

Factors affecting runoff: S
Station type: VA

1993 runoff is 101% of previous mean
rainfall 102%

090003 Nevis at Claggan — 1993

Measuring authority: HRPB
First year: 1982

Grid reference: 27 (NN) 116 742
Level stn. (m OD): 3.60

Catchment area (sq km): 76.8
Max alt. (m OD): 1344

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	15.510	7.370	8.482	4.656	3.076	1.805	5.872	4.376	1.146	3.001	1.831	9.776	**5.596**
m^3s^{-1}):	Peak	159.50	42.67	80.97	20.94	40.47	12.52	33.54	34.06	8.56	43.68	21.88	115.90	**159.50**
Runoff (mm)		541	232	296	157	107	61	205	153	39	105	62	341	**2298**
Rainfall (mm)		767	161	294	137	118	74	177	126	83	86	126	478	**2627**

Monthly and yearly statistics for previous record (Sep 1982 to Dec 1992)

Mean	Avg.	9.790	7.470	9.819	5.630	3.993	2.111	3.733	5.813	7.875	8.926	7.909	10.230	**6.949**
flows	Low	2.517	0.691	2.188	3.017	1.123	0.838	0.907	1.116	2.909	3.554	3.755	2.831	**5.186**
m^3s^{-1})	High	17.790	17.990	25.920	10.030	12.600	3.211	8.608	10.720	11.010	16.380	15.360	15.480	**9.050**
Peak flow (m^3s^{-1})		197.70	172.00	143.10	101.70	67.50	69.35	105.00	130.50	219.00	146.50	110.30	189.00	**219.00**
Runoff (mm)		341	238	342	190	139	71	130	203	266	311	267	357	**2856**
Rainfall (mm)*		414	348	454	164	134	95	190	275	288	345	325	388	**3420**

*(1986-1992)

Factors affecting runoff:
Station type: VA

1993 runoff is 80% of previous mean
rainfall 77%

094001 Ewe at Poolewe — 1993

Measuring authority: HRPB
First year: 1970

Grid reference: 18 (NG) 859 803
Level stn. (m OD): 4.60

Catchment area (sq km): 441.1
Max alt. (m OD): 1014

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	71.890	46.020	35.870	20.180	11.670	12.030	34.730	27.060	7.017	14.270	12.000	43.500	**28.039**
m^3s^{-1}):	Peak	141.50	68.78	65.72	39.37	21.51	19.95	72.78	42.21	12.08	25.82	19.30	89.70	**141.50**
Runoff (mm)		437	252	218	119	71	71	211	164	41	87	71	264	**2005**
Rainfall (mm)		530	188	212	97	94	102	216	108	46	107	90	380	**2170**

Monthly and yearly statistics for previous record (Nov 1970 to Dec 1992)

Mean	Avg.	43.290	33.310	32.860	23.720	16.350	12.460	13.980	18.630	33.410	36.370	46.270	45.920	**29.696**
flows	Low	13.820	10.660	8.842	4.537	3.862	3.725	7.884	6.240	8.046	13.160	21.020	15.740	**19.389**
m^3s^{-1})	High	81.130	83.670	97.870	38.270	38.250	27.180	26.180	37.000	60.300	66.220	78.300	81.840	**41.409**
Peak flow (m^3s^{-1})		177.10	247.70	156.20	73.59	77.66	64.43	45.08	87.93	109.20	125.50	136.10	179.80	**247.70**
Runoff (mm)		263	184	200	139	99	73	85	113	196	221	272	279	**2125**
Rainfall (mm)		278	194	242	132	113	116	137	169	254	285	320	309	**2549**

Factors affecting runoff: N
Station type: VA

1993 runoff is 94% of previous mean
rainfall 85%

095001 Inver at Little Assynt — 1993

Measuring authority: HRPB
First year: 1977

Grid reference: 29 (NC) 147 250
Level stn. (m OD): 60.30

Catchment area (sq km): 137.5
Max alt. (m OD): 988

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	14.970	13.230	8.022	5.189	3.086	4.697	13.940	7.949	4.048	7.171	3.181	9.987	**7.953**
m^3s^{-1}):	Peak	33.75	24.60	15.80	7.91	5.52	9.64	32.27	13.97	9.13	13.42	6.92	26.49	**33.75**
Runoff (mm)		292	233	156	98	60	89	271	155	76	140	60	195	**1824**
Rainfall (mm)		391	154	171	87	92	130	241	113	62	149	64	282	**1936**

Monthly and yearly statistics for previous record (Aug 1977 to Dec 1992)

Mean	Avg.	10.920	8.710	10.370	6.010	4.289	3.422	4.909	6.503	10.440	12.740	13.050	11.190	**8.550**
flows	Low	4.082	2.397	4.179	3.453	1.660	1.812	2.432	3.394	5.263	6.227	6.572	4.631	**6.956**
m^3s^{-1})	High	19.950	21.150	23.090	8.129	8.158	6.689	10.340	10.050	16.390	21.180	23.960	17.580	**10.896**
Peak flow (m^3s^{-1})		55.24	63.64	62.82	15.36	20.92	19.72	15.19	26.47	56.50	57.51	50.06	58.90	**63.64**
Runoff (mm)		213	155	202	113	84	65	96	127	197	248	246	218	**1962**
Rainfall (mm)*		236	155	231	102	86	107	133	173	247	253	276	251	**2250**

*(1978-1992)

Factors affecting runoff: N
Station type: VA

1993 runoff is 93% of previous mean
rainfall 86%

096001 Halladale at Halladale 1993

Measuring authority: HRPB
First year: 1976
Grid reference: 29 (NC) 891 561
Level stn. (m OD): 23.20
Catchment area (sq km): 204.6
Max alt. (m OD): 580

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	12.300	2.756	4.054	3.208	2.275	1.876	4.324	2.668	2.404	12.450	1.807	8.328	**4.916**
m^3s^{-1}):	Peak	74.42	11.78	46.00	32.90	40.69	21.25	47.03	16.20	18.30	167.50	7.02	43.77	**167.50**
Runoff (mm)		161	33	53	41	30	24	57	35	30	163	23	109	**758**
Rainfall (mm)		173	49	64	63	78	59	87	64	40	167	30	135	**1009**

Monthly and yearly statistics for previous record (Jan 1976 to Dec 1992)

Mean	Avg.	8.111	6.548	6.189	2.756	2.005	1.816	1.883	2.910	4.763	7.058	8.866	7.394	**5.019**
flows	Low	4.478	1.555	2.907	0.624	0.279	0.271	0.215	0.186	0.447	1.351	2.510	3.004	**3.326**
m^3s^{-1})	High	11.900	10.940	9.753	6.442	5.434	4.128	5.064	9.193	7.886	16.560	14.730	12.390	**6.418**
Peak flow (m^3s^{-1})		98.96	86.24	122.60	69.28	108.00	140.80	129.10	172.00	189.10	169.10	163.20	162.00	**189.10**
Runoff (mm)		106	78	81	35	26	23	25	38	60	92	112	97	**774**
Rainfall (mm)		125	79	108	63	59	65	66	86	115	127	138	116	**1147**

Factors affecting runoff: N
Station type: VA

1993 runoff is 98% of previous mean
rainfall 88%

101002 Medina at Upper Shide 1993

Measuring authority: NRA-S
First year: 1965
Grid reference: 40 (SZ) 503 874
Level stn. (m OD): 10.40
Catchment area (sq km): 29.8
Max alt. (m OD): 167

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	0.497	0.197	0.146	0.305	0.157	0.149	0.119	0.112	0.232	0.594	0.274	0.822	**0.302**
m^3s^{-1}):	Peak					0.84	1.89	0.33	0.22	2.90	6.39	2.26	6.50	
Runoff (mm)		45	16	13	26	14	13	11	10	20	53	24	74	**319**
Rainfall (mm)		112	12	44	97	70	67	80	46	140	143	73	203	**1087**

Monthly and yearly statistics for previous record (Oct 1965 to Dec 1992—incomplete or missing months total 6.8 years)

Mean	Avg.	0.427	0.400	0.324	0.252	0.192	0.137	0.124	0.116	0.148	0.219	0.320	0.366	**0.251**
flows	Low	0.132	0.159	0.121	0.104	0.094	0.068	0.073	0.044	0.077	0.093	0.088	0.116	**0.122**
m^3s^{-1})	High	0.928	0.795	0.903	0.522	0.356	0.213	0.199	0.181	0.365	0.555	0.769	0.663	**0.335**
Peak flow (m^3s^{-1})		6.47	6.35	7.28	73.33	7.00	1.79	3.72	1.74	3.74	4.73	8.64	6.30	**73.33**
Runoff (mm)		38	33	29	22	17	12	11	10	13	20	28	33	**266**
Rainfall (mm)*		90	68	85	51	51	51	51	56	60	105	83	99	**850**

*(1966-1992)

Factors affecting runoff: G I
Station type: FL

1993 runoff is 120% of previous mean
rainfall 128%

201007 Burn Dennet at Burndennet Bridge 1993

Measuring authority: DOEN
First year: 1975
Grid reference: *24* (IC) 372 047
Level stn. (m OD): 2.00
Catchment area (sq km): 145.3
Max alt. (m OD): 539

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	9.839	3.474	3.133	6.536	3.410	2.739	3.046	3.226	2.980	2.033	1.689	11.740	**4.506**
m^3s^{-1}):	Peak	86.01	8.15	27.98	66.25	25.40	16.33	26.55	41.20	66.14	12.25	10.22	78.29	**86.01**
Runoff (mm)		181	58	58	117	63	49	56	59	53	37	30	216	**978**
Rainfall (mm)		194	42	76	131	107	80	112	67	115	39	54	257	**1274**

Monthly and yearly statistics for previous record (Jun 1975 to Dec 1992—incomplete or missing months total 0.1 years)

Mean	Avg.	6.045	5.955	5.332	3.387	2.490	2.028	2.038	2.692	3.297	5.262	5.166	5.668	**4.107**
flows	Low	0.418	2.244	2.441	1.687	0.925	0.843	0.832	0.579	0.664	2.596	2.130	3.203	**2.634**
m^3s^{-1})	High	9.542	14.320	8.067	6.115	5.024	4.635	3.990	7.213	8.151	9.979	7.351	8.156	**6.211**
Peak flow (m^3s^{-1})		99.98	53.00	47.48	36.86	25.51	29.50	50.79	105.20	67.37	110.80	64.52	59.53	**110.80**
Runoff (mm)		111	100	98	60	46	36	38	50	59	97	92	104	**892**
Rainfall (mm)		131	85	115	68	65	74	86	97	102	132	112	114	**1181**

Factors affecting runoff: E
Station type: VA

1993 runoff is 110% of previous mean
rainfall 108%

203012 Ballinderry at Ballinderry Bridge 1993

Measuring authority: DOEN
First year: 1970
Grid reference: *23* (IH) 926 799
Level stn. (m OD): 16.00
Catchment area (sq km): 419.5
Max alt. (m OD): 476

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	17.760	5.416	6.177	14.090	9.417	8.710	6.190	7.859	9.658	7.280	6.169	28.840	**10.684**
m^3s^{-1}):	Peak	93.56	11.24	65.59	112.50	61.55	41.09	45.40	53.38	96.29	34.08	48.12	88.86	**112.50**
Runoff (mm)		113	31	39	87	60	54	40	50	60	46	38	184	**803**
Rainfall (mm)		143	28	60	120	123	75	97	64	116	27	50	204	**1107**

Monthly and yearly statistics for previous record (Jul 1970 to Dec 1992)

Mean	Avg.	15.940	12.450	11.130	7.002	5.092	3.622	2.848	4.806	5.687	9.047	12.150	13.980	**8.635**
flows	Low	9.339	4.805	5.502	3.515	2.454	1.627	1.518	1.060	1.236	2.331	5.122	4.946	**5.251**
m^3s^{-1})	High	24.690	25.040	17.260	13.140	12.740	7.524	7.496	17.640	21.020	17.200	21.860	21.490	**11.532**
Peak flow (m^3s^{-1})		183.20	139.90	98.37	106.70	109.20	61.60	127.20	140.10	141.00	194.80	122.90	138.00	**194.80**
Runoff (mm)		102	73	71	43	33	22	18	31	35	58	75	89	**650**
Rainfall (mm)*		122	84	111	75	54	72	70	110	82	121	94	107	**1102**

*(1983-1992)

Factors affecting runoff: N
Station type: VA

1993 runoff is 124% of previous mean
rainfall 100%

203020 Moyola at Moyola New Bridge 1993

Measuring authority: DOEN
First year: 1971

Grid reference: *23* (IH) 955 905
Level stn. (m OD): 13.00

Catchment area (sq km): 306.5
Max alt. (m OD): 554

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	18.320	5.642	6.657	14.520	9.823	6.501	5.045	5.292	5.852	5.135	4.997	24.410	**9.395**
m^3s^{-1}):	Peak	98.41	15.32	80.68	120.40	68.69	29.06	29.19	37.56	78.63	32.40	61.01	98.30	**120.40**
Runoff (mm)		160	45	58	123	86	55	44	46	49	45	42	213	**967**
Rainfall (mm)		166	34	75	129	156	64	101	64	117	39	60	223	**1228**

Monthly and yearly statistics for previous record (Feb 1971 to Dec 1992).

Mean	Avg.	14.930	11.650	10.730	6.461	4.559	3.523	2.882	4.494	5.696	9.281	11.520	12.990	**8.215**
flows	Low	7.707	3.696	3.776	2.238	1.335	1.015	0.952	0.748	1.366	2.000	4.562	5.088	**4.961**
m^3s^{-1})	High	23.280	25.940	17.150	13.280	12.360	7.159	6.512	15.310	19.100	16.790	20.770	22.170	**10.653**
Peak flow (m^3s^{-1})		152.20	121.90	88.87	102.80	114.10	67.84	83.33	111.00	112.70	134.80	117.20	154.60	**154.60**
Runoff (mm)		130	93	94	55	40	30	25	39	48	81	97	114	**846**
Rainfall (mm)*		143	99	131	85	62	78	80	116	95	142	113	121	**1265**

*(1983-1992)

Factors affecting runoff: S PG I
Station type: VA

1993 runoff is 114% of previous mean
rainfall 97%

205004 Lagan at Newforge 1993

Measuring authority: DOEN
First year: 1972

Grid reference: *33* (IJ) 329 693
Level stn. (m OD): 2.00

Catchment area (sq km): 490.4
Max alt. (m OD): 532

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	12.270	4.569	3.219	12.480	12.230	6.749	3.635	4.122	6.249	10.120	5.053	21.790	**8.583**
m^3s^{-1}):	Peak	26.46	10.27	11.60	64.52	45.35	26.87	9.54	19.63	34.36	46.10	16.39	61.92	**64.52**
Runoff (mm)		67	23	18	66	67	36	20	23	33	55	27	119	**552**
Rainfall (mm)		91	21	48	99	140	56	90	59	120	44	57	136	**961**

Monthly and yearly statistics for previous record (Aug 1972 to Dec 1992)

Mean	Avg.	16.690	12.230	11.240	7.341	4.415	3.240	2.591	4.218	5.591	10.620	12.160	15.950	**8.852**
flows	Low	8.508	5.311	2.820	2.064	1.208	0.944	0.789	0.615	0.850	1.075	3.059	3.843	**4.810**
m^3s^{-1})	High	26.460	25.410	18.740	19.170	16.600	11.230	8.018	19.470	18.090	27.600	27.690	43.090	**12.235**
Peak flow (m^3s^{-1})		84.30	66.22	69.57	112.20	55.15	62.72	24.30	76.10	70.53	121.00	91.08	128.40	**128.40**
Runoff (mm)		91	61	61	39	24	17	14	23	30	58	64	87	**570**
Rainfall (mm)*		87	64	86	71	47	62	57	99	69	99	74	85	**900**

*(1983-1992)

Factors affecting runoff: GEI
Station type: VA

1993 runoff is 97% of previous mean
rainfall 107%

205005 Ravernet at Ravernet 1993

Measuring authority: DOEN
First year: 1972

Grid reference: *33* (IJ) 267 613
Level stn. (m OD): 31.00

Catchment area (sq km): 69.5
Max alt. (m OD): 163

Hydrometric statistics for 1993

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
Flows	Avg.	1.354	0.582	0.323	1.685	1.780	1.028	0.322	0.561	1.009	1.458	0.667	2.957	**1.149**
m^3s^{-1}):	Peak	4.26	1.34	1.61	9.07	7.21	2.97	0.79	3.13	6.58	8.61	4.86	11.50	**11.50**
Runoff (mm)		52	20	12	63	69	38	12	22	38	56	25	114	**521**
Rainfall (mm)		87	18	49	103	153	58	88	56	124	45	61	138	**980**

Monthly and yearly statistics for previous record (Aug 1972 to Dec 1992—incomplete or missing months total 2.0 years)

Mean	Avg.	2.106	1.525	1.214	0.874	0.459	0.275	0.128	0.357	0.585	1.243	1.281	1.856	**0.991**
flows	Low	0.689	0.502	0.313	0.195	0.054	0.040	0.006	0.008	0.013	0.066	0.260	0.573	**0.667**
m^3s^{-1})	High	4.045	3.653	2.089	2.422	1.761	1.260	0.356	2.103	2.232	4.361	2.994	5.916	**1.278**
Peak flow (m^3s^{-1})		15.45	18.89	14.98	19.75	13.82	11.91	2.60	17.52	11.32	24.15	17.04	22.79	**24.15**
Runoff (mm)		81	54	47	33	18	10	5	14	22	48	48	72	**450**
Rainfall (mm)		95	59	79	53	61	61	58	83	86	93	80	93	**901**

Factors affecting runoff: N
Station type: FV

1993 runoff is 116% of previous mean
rainfall 109%

THE NATIONAL RIVER FLOW ARCHIVE DATA RETRIEVAL SERVICE

The National River Flow Archive comprises over 30,000 station-years of daily river flows and incorporates data from over 1400 gauging stations throughout the United Kingdom. In addition to gauged flow data, naturalised data (see page 37) have been derived from the records of a small number of gauging stations. Catchment areal rainfall and the highest instantaneous flow, when available, are also archived on a monthly basis.

In order that the contents of the archive may be readily accessible, a suite of programs has been developed to provide a selection of retrieval options. Descriptions of these options are listed on pages 135 and 136 and can also be found, together with examples of the computer output in the National River Flow Archive Data Retrieval Service Handbook which is intended for regular users of the Archive and is available free from the address opposite. The format of certain of the retrievals is currently under review. All data retrieval programs have been designed to allow flexibility in the presentation of the options, particularly those producing graphical output. Before finalising a data request it is recommended that the Concise Register of Gauging Stations on pages 137 to 143, be consulted, and that, where continuity of record is important, the availability of suitable data sets are checked by referring to the Summary of Archived Data in the Handbook. As an aid to data selection and to the interpretation of hydrological analyses the 1986–90 Hydrometric Register and Statistics (see page 172) is recommended as a source of indispensable reference material.

In response to user requirements the data retrieval facilities are being continually updated and extended. A wide range of specialist analyses and presentations is now available. Individuals having data requirements not catered for in the standard retrieval suite are invited to discuss their particular needs – address opposite.

Retrievals are normally available as A4 paper listings, on IBM PC compatible disk, or as hydrograph plots.

Cost of Service

To cover the computing and handling costs, a moderate charge will be made depending on the output options selected. Estimates of these charges may be obtained on request; the right to amend or waive charges is reserved.

Requests for Retrieval Options

Requests for retrieval options should include: the name and address to which output should be directed, the gauging stations for which data are required together with the period of record of interest and the title of the required options. Where possible, a daytime telephone number should be given.

Requests should be addressed to:

The National Water Archive Office
Institute of Hydrology
WALLINGFORD
OXFORDSHIRE OX10 8BB

Telephone: Wallingford (01491) 838800
Facsimile: (01491) 832256

Email: sgr@ioh.ac.uk

The National Water Archive

As of April 1992, the River Flow Archive was incorporated into the National Water Archive (NWA) – one of NERC's seven Designated Data Centres. These Centres, located at NERC Institute sites, exist to hold data and provide information and advisory services to a wide range of users.

The National River Flow and National Groundwater Level Archives form the kernel of the National Water Archive but a very broad range of hydrological – and related – data sets are being assimilated into the co-ordinated management that the NWA provides. Data holdings range from the catchment scale (e.g. detailed climatological and hydrological data for a network of experimental catchments) to national (flood event data) and international coverage (European data held as part of the 'FRIEND' Project[1] of the International Hydrological Programme, World Floods Archive). Further details of the UK databases – and the associated facilities – are given overleaf. The utility of the archived time series data is enhanced by the availability of complementary spatial information (for example the digitised river network and UK soils hydrology map) and by the manipulative potential provided by modern data handling systems and analytical packages.

Staff at the NWA maintain close contacts with measuring authorities and keep under review developments in the field of network design, instrumentation and information technology. A continuing dialogue with both data suppliers and an active community of users ensures that the databases and retrieval facilities are reviewed continuously to provide an effective and responsive service across a broad range of applications.

The UK Flood Event Archive

Data describing flood events and associated rainfall have been formally gathered by the IH since 1969, the beginning of the Flood Studies Project (FSP[2]). Also associated with the Flood Event Archive are data collected from a network of Representative Basins. The present Archive holds over 4000 events, the majority of which are fairly simple short duration rainfall-runoff events of the type used for the FSP. The data most commonly collected are river flow, storm and antecedent rainfall and soil moisture deficit. These components are stored on a relational database allowing flexible access and data association. A variety of analyses have been developed to collate and manipulate the data. Examples include:

- Derivation of a catchment average rainfall profile for an event;
- A plot of a catchment map and rainfall hyetographs for an event;
- A plot of event rainfall and flow hydrographs;
- Event analysis using the FSP unit hydrograph and losses model;
- Plots of variation in unit hydrograph parameters and percentage runoff between events on a catchment.

Data are available as lists on hard copy or on floppy disk.

Peaks-Over-Threshold (POT) Floods Database[3]

This database comprises instantaneous peak flow data from river gauging stations throughout the UK. These peaks have been manually extracted from river records, generally from stage hydrographs, where the threshold was chosen to yield, on average, five peaks a year above the selected flow. There have been three main cycles of data collection and abstraction, first, for the FSP, second, at the Department of the Environment's Water Data Unit, beginning in 1978, and third, at the IH for a Ministry of Agriculture, Fisheries and Food Commission in 1985–91. Currently the database holds over 77,000 peaks for 857 gauging stations, with an average length of record of 20 years. Annual maxima have been derived automatically from these data and are held independently on the relational database. Annual maxima are also held for a further 116 stations where records proved unsuitable for POT extraction.

Data are available as lists on hard copy or on floppy disk.

Experimental Catchments Archive[4]

The data gathered from the nine major groups of the IH's experimental catchments are held in an independent archive within the NWA. The catchments have been highly instrumented and an intensive recording regime has been employed. Derived catchment data are stored for the main hydrological components of precipitation, evaporation and runoff as either hourly or daily values. Additionally, the component site-specific data used to generate the areal values are also stored, generally at finer time resolutions. Other, complementary datasets (such as soil moisture measurements) are available for some of the sites.

It is recommended that potential users of any of these additional datasets contact the NWA office to discuss their requirements.

The European Water Archive

The European Water Archive has been assembled as an integral part of the FRIEND – Flow Regimes from International Experimental and Network Data – research programme. This is an international collaborative study into regional hydrology in Europe and is a recognised contribution to Unesco's Fourth International Hydrological Programme.

The European Water Archive was developed by four regional coordination centres in Germany, the Netherlands, Norway and the United Kingdom collecting data from 17 European countries. The central archive is held at the Institute of Hydrology, UK and includes summary information for some 3500 gauging stations, time series of annual maxima flood data and daily mean flows, and key flow statistics[5]. In addition, thematic, soil, climate, land use and catchment boundary information is held on a Geographical Information System.

For further details of the European Water Archive, contact the Flow Regimes and Environmental Management Section of the Institute of Hydrology.

References

1. Gustard, A.G., Roald, L.A., Pemuth, S., Lumadjeng, H.S. and Gross, R. 1989. Flow Regimes from Experimental and Network Data. Institute of Hydrology, Wallingford, 2 Vols.
2. Flood Studies Report 1975. Natural Environment Research Council (5 Vols., reprinted 1993).
3. Bayliss, A.C. and Jones, R.C. 1993. Peaks-Over-Threshold Floods Database: Summary Statistics and Seasonality. Institute of Hydrology, Report No. 121.
4. Roberts, A.M. 1989. The Catchment Research Database at the Institute of Hydrology. Institute of Hydrology, Report No. 106.
5. Gustard, A. (Ed.) 1993 Flow Regimes from International Experimental and Network Data (FRIEND). Institute of Hydrology, Wallingford, 3 Vols.

LIST OF SURFACE WATER RETRIEVAL OPTIONS

OPTION NUMBER	TITLE	NOTES
1	Table of daily mean gauged discharges	Includes monthly and annual summary statistics. Flows in cubic metres per second.
	Table of daily mean naturalised discharges	Includes monthly and annual summary statistics. Flows in cubic metres per second.
	Yearbook data tabulation (daily)	River flow and catchment rainfall data for a specified year with basic gauging station and catchment details and flow statistics derived from the historical record.
	Table of monthly mean gauged discharges	Includes monthly and annual summary statistics. Flows in cubic metres per second.
	Table of monthly mean naturalised discharges	Includes monthly and annual summary statistics. Flows in cubic metres per second.
	Yearbook data tabulation (monthly)	Monthly river flow and catchment rainfall data for a specified year together with comparative statistics derived from the historical record. Naturalised flows (where available) – and the corresponding runoff – may also be tabulated.
	Table of monthly extreme flows	The lowest and highest daily mean flows, together with the highest instantaneous flow and date of occurrence (where available). Flows in cubic metres per second. Includes summary statistics.
	Table of catchment monthly rainfall	Rainfall totals in millimetres and as a percentage of the 1941–70 catchment average. Includes summary statistics.
	Table of catchment monthly areal rainfall and runoff	Runoff is normally derived from the monthly mean gauged flow. An additional listing is provided for catchments with naturalised flow records. Includes summary statistics. Rainfall and runoff totals are in millimetres.
10	Hydrographs of daily mean flows	Choices of scale, units, truncation level and overlay grid pattern are available. The period of record maximum and minimum flows, or the mean flow, may be included. The plots may be based on single or n-day means, or on n-day running mean flows.
	Hydrographs of monthly mean flows	Choices of scale, units and overlay grid pattern are available. The period of record maximum, minimum and mean flows may be included.

	Flow duration statistics	Tabulation of the 1–99 percentile flows with optional plot of the flow duration curve. The percentiles may be derived from daily flows or n-day averages and the analysis may be restricted to nominated periods within the year, e.g. April-September only. Choices of scales, grid marking and units are available and the percentiles may be expressed as a percentage of the average flow or of a nominated flow.
	Table of gauging station reference information	Tabulation of selected gauging station details and catchment characteristics for nominated gauging stations.
	Table of hydrometric statistics	Provides a comparison between summary statistics for a selected year, or a group of years, and the corresponding statistics for a nominated period of record (as featured in the Hydrometric Register and Statistics 1986–90).
15	Gauging station and catchment description	A brief summary of the gauging station, its history and major influences on the flow regime, together with catchment details.
16	River flow pattern plots*	Three plots on an A4 sheet: a) daily mean flow hydrograph for a selected year b) monthly mean flow hydrograph for the selected year. The maximum and minimum monthly flows, together with the 30-day running mean for the preceding period of record may be included c) flow duration curve for the specified year. A flow duration curve for the period of record may be included.
	Gauging station summary sheet	Includes a daily flow hydrograph (with period of record extreme values) and flow duration curve together with summary statistics relating to river flow, catchment runoff and catchment rainfall. A description of the gauging station and catchment is also provided together with selected catchment characteristics and a concise summary of the archived data.

* The format of this retrieval is currently under review. It is expected that each of the component plots will, in 1995, be available to users in a variety of styles – for details contact the National Water Archive Office.

Concise Register of Gauging Stations

Station number	River and station name	Grid reference	Auth-ority	Area (sq km)
002001	Helmsdale at Kilphedir	2997 9181	HRPB	551.4
003001 *	Shin at Lairg	2581 9062	SE	494.6
003002	Carron at Sgodachail	2490 8921	HRPB	241.1
003003	Oykel at Easter Turnaig	2403 9001	HRPB	330.7
003004	Cassley at Rosehall	2472 9022	HRPB	187.5
003005	Shin at Inveran	2574 8974	HRPB	575.0
004001	Conon at Moy Bridge	2482 8547	HRPB	961.8
004003	Alness at Alness	2654 8695	HRPB	201.0
004004	Blackwater at Contin	2455 8563	HRPB	336.7
004005	Meig at Glenmeannie	2286 8528	HRPB	120.5
004006	Bran at Dosmucheran	2205 8602	HRPB	118.1
005001 *	Beauly at Erchless	2426 8405	SE	849.5
005002	Farrar at Struy	2390 8405	HRPB	311.3
005003	Glass at Kerrow Wood	2354 8321	HRPB	481.8
005004	Glass at Fasnakyle	2315 8288	HRPB	277.5
006001 *	Ness at Ness Castle Farm	2639 8410	SE	1792.3
006003 *	Moriston at Invermoriston	2416 8169	SE	391.0
006006 *	Allt Bhlaraidh at Invermoriston	2377 8168	SE	27.5
006007	Ness at Ness Side	2645 8427	HRPB	1839.1
006008	Enrick at Mill of Tore	2450 8300	HRPB	105.9
007001	Findhorn at Shenachie	2826 8337	HRPB	415.6
007002	Findhorn at Forres	3018 8583	HRPB	781.9
007003	Lossie at Sheriffmills	3184 8626	NERPB	216.0
007004	Nairn at Firhall	2882 8551	HRPB	313.0
007005	Dvie at Dunphail	3005 8480	HRPB	165.0
007006	Lossie at Torwinny	3135 8489	NERPB	20.0
007007	Black Burn at Monaughty	3155 8584	NERPB	44.0
008001 *	Spey at Aberlour	3278 8439	NERPB	2654.7
008002	Spey at Kinrara	2881 8082	NERPB	1011.7
008003 *	Spey at Ruthven Bridge	2759 7996	NERPB	533.8
008004	Avon at Delnashaugh	3186 8352	NERPB	542.8
008005	Spey at Boat of Garten	2946 8191	NERPB	1267.8
008006	Spey at Boat o Brig	3318 8518	NERPB	2861.2
008007	Spey at Invertruim	2687 7962	NERPB	400.4
008008	Tromie at Tromie Bridge	2789 7995	NERPB	130.3
008009	Dulnain at Balnaan Bridge	2977 8247	NERPB	272.2
008010	Spey at Grantown	3033 8268	NERPB	1748.8
008011	Livet at Minmore	3201 8291	NERPB	104.0
008015	Fiddich at Auchindoun	3355 8399	NERPB	44.5
008016	Conglass Water at Auchriachan	3175 8191	NERPB	40.8
008017	Burn of Carron at Dailuaine	3237 8415	NERPB	15.2
009001	Deveron at Avochie	3532 8464	NERPB	441.6
009002	Deveron at Muiresk	3705 8498	NERPB	954.9
009003	Isla at Grange	3494 8506	NERPB	176.1
009004	Bogie at Redcraig	3519 8373	NERPB	179.0
009005	Allt Deveron at Cabrach	3378 8291	GRWD	67.0
009006	Deskford Burn at Cullen	3504 8667	NERPB	46.5
009007	Forgue Burn at Inverkeithny	3627 8469	NERPB	88.3
010002	Ugie at Inverugie	4101 8485	NERPB	325.0
010003	Ythan at Ellon	3947 8303	NERPB	523.0
011001	Don at Parkhill	3887 8141	NERPB	1273.0
011002	Don at Haughton	3756 8201	NERPB	787.0
011003	Don at Bridge of Alford	3566 8170	NERPB	499.0
011004	Urie at Pitcaple	3721 8260	NERPB	198.0
011005	Don at Mill of Newe	3371 8121	NERPB	187.0
012001	Dee at Woodend	3635 7956	NERPB	1370.0
012002	Dee at Park	3798 7983	NERPB	1844.0
012003	Dee at Polhollick	3344 7965	NERPB	690.0
012004	Gimock Burn at Littlemill	3324 7956		30.3
012005	Muick at Invermuick	3364 7947	NERPB	110.0
012006	Gairn at Invergairn	3353 7971	NERPB	150.0
012007	Dee at Mar Lodge	3098 7895	NERPB	289.0
012008	Feugh at Heugh Head	3687 7928	NERPB	229.0
012009	Water of Dye at Charr	3624 7834	NERPB	41.7
013001	Bervie at Inverbervie	3826 7733	NERPB	123.0
013002	Luther Water at Luther Bridge	3660 7868	TRPB	138.0
013003 *	South Esk at Stannochy Bridge	3583 7593	TRPB	487.0
013004	Prosen Water at Prosen Bridge	3396 7586	TRPB	104.0
013005	Lunan Water at Kirkton Mill	3655 7494	TRPB	124.0
013007	North Esk at Logie Mill	3699 7640	TRPB	730.0
013008	South Esk at Brechin	3600 7596	TRPB	490.0
013009	West Water at Dalhousie Bridge	3592 7680	TRPB	127.2
013010	Brothock Water at Arbroath	3640 7419	TRPB	50.0
013012	South Esk at Gella Bridge	3372 7653	TRPB	130.0
014001	Eden at Kemback	3415 7158	TRPB	307.4
014002	Dighty Water at Balmossie Mill	3477 7324	TRPB	126.9
014005	Motray Water at St Michaels	3441 7224	TRPB	52.0
014006	Monikie Burn at Panbride	3574 7381	TRPB	16.0
014007	Craigmill Burn at Craigmill	3575 7360	TRPB	29.0
014009	Eden at Strathmiglo	3226 7102	TRPB	26.0
014010	Motray Water at Kilmany	3387 7217	TRPB	33.0
015001 *	Isla at Forter	3187 7647	TRWS	70.7
015002 *	Newton Burn at Newton	3230 7605	TRWS	15.4
015003	Tay at Caputh	3082 7395	TRPB	3211.0
015004 *	Inzion at Loch of Lintrathen	3280 7559	TRWS	24.7
015005 *	Melgan at Loch of Lintrathen	3275 7558	TRWS	40.9
015006	Tay at Ballathie	3147 7367	TRPB	4587.1
015007	Tay at Pitnacree	2924 7534	TRPB	1149.4
015008	Dean Water at Cookston	3340 7479	TRPB	177.1
015010	Isla at Wester Cardean	3295 7466	TRPB	366.5
015011	Lyon at Comrie Bridge	2786 7486	TRPB	391.1
015012	Tummel at Port-na-craig	2940 7577	TRPB	1649.0
015013	Almond at Almondbank	3067 7258	TRPB	174.8
015014	Ardle at Kindrogan	3056 7631	TRPB	103.0
015015	Almond at Newton Bridge	2888 7316	TRPB	84.0
015016	Tay at Kenmore	2782 7467	TRPB	600.9
015017 *	Braan at Ballinloan	2979 7406	TRPB	197.0
015018 *	Lyon at Moar	2534 7448	SE	161.4
015021	Lunan Burn at Mill Bank	3182 7400	TRPB	94.0
015023	Braan at Hermitage	3014 7422	TRPB	210.0
015024	Dochart at Killin	2567 7320	TRPB	239.0
015025	Ericht at Craighall	3174 7472	TRPB	432.0
015027	Garry Burn at Loakmill	3075 7339	TRPB	20.0
015028	Ordie Burn at Luncarty	3093 7306	TRPB	54.0
015029	Alyth Burn at Pitcrocknie	3257 7485	TRPB	32.0
015030	Dean Water at Dean Bridge	3293 7458	TRPB	230.0
015032	Ordie Burn at Jackstone	3073 7337	TRPB	20.0
015034	Garry at Killiecrankie	2901 7837	TRPB	745.0
015035	Tummel at Kinloch Rannoch	2663 7588	TRPB	647.0
015038	Tummel at Bridge of Gaur	2497 7570	TRPB	247.0
015039	Tilt at Marble Lodge	2892 7717	TRPB	
015041	Lyon at Camusvrachan	2620 7477	TRPB	237.0
016001	Earn at Kinkell Bridge	2933 7167	TRPB	590.5
016002 *	Earn at Aberuchill	2754 7216	TRPB	176.9
016003	Ruchill Water at Cultybraggan	2764 7204	TRPB	99.5
016004	Earn at Forteviot Bridge	3043 7184	TRPB	782.2
016006 *	Dunning Burn at Granco	3019 7147	TRPB	12.1
016007	Ruthven Water at Aberuthven	2975 7154	TRPB	49.0
016011	Allt Strath a'Ghlinne at Auchinner	2695 7158	TRPB	
017001	Carron at Headswood	2832 6820	FRPB	122.3
017002	Leven at Leven	3369 7006	FRPB	424.0
017003	Bonny Water at Bonnybridge	2824 6804	FRPB	50.5
017004	Ore at Balfour Mains	3330 6997	FRPB	162.0
017005	Avon at Polmonthill	2952 6797	FRPB	195.3
017008	South Queich at Kinross	3122 7015	FRPB	33.7
017012	Red Burn at Castlecary	2788 6780	FRPB	22.0
017016	Lochty Burn at Whinnyhall	3220 6985	FRPB	14.0
017017 *	Greens Burn at Killyford Bridge	3150 7053	FRPB	7.9
018001	Allan Water at Kinbuck	2792 7053	FRPB	161.0
018002	Devon at Glenochil	2858 6960	FRPB	181.0
018003	Teith at Bridge of Teith	2725 7011	FRPB	518.0
018005	Allan Water at Bridge of Allan	2786 6980	FRPB	210.0
018007	Devon at Fossoway Bridge	3011 7018	FRPB	69.5
018008	Leny at Anie	2585 7096	FRPB	190.0
018010	Forth at Gargunnock	2714 6953	FRPB	397.0
018011	Forth at Craigforth	2775 6955	FRPB	1036.0
018012 *	Ardoch Burn at Doune Castle	2729 7008	FRPB	48.0
018013	Black Devon at Fauld Mill	2914 6924	FRPB	67.0
018014	Bannock Burn at Bannockburn	2812 6908	FRPB	23.7
018016	Kelty Water at Clashmore	2468 6968	FRPB	2.8
018017 *	Monachyle Burn at Balquhidder	2475 7230	IH	7.7
018018	Kirkton Burn at Balquhidder	2532 7219	IH	6.8
018019 *	Corner Burn at Corner	2387 7042	FRPB	0.9
018020	Loch Ard Burn at Duchray	2468 6987	FRPB	0.9
018021	Loch Ard Burn at Elrig	2469 6987	FRPB	1.5
018022 *	Forth at Milton	2503 7135	FRPB	44.5
019001	Almond at Craigiehall	3165 6752	FRPB	369.0
019002	Almond at Almond Weir	3004 6652	FRPB	43.8
019003 *	Breich Water at Breich Weir	3014 6639	FRPB	51.8
019004	North Esk at Dalmore Weir	3252 6616	FRPB	81.6
019005	Almond at Almondell	3086 6686	FRPB	229.0
019006	Water of Leith at Murrayfield	3228 6732	FRPB	107.0
019007	Esk at Musselburgh	3339 6723	FRPB	330.0
019008 *	South Esk at Prestonholm	3325 6623	FRPB	112.0
019010	Braid Burn at Liberton	3273 6707	FRPB	16.2
019011	North Esk at Dalkeith Palace	3333 6678	FRPB	137.0
019012	Water of Leith at Colinton	3212 6688	FRPB	72.0
019014 *	Brox Burn at Newliston	3114 6732	FRPB	34.1
019017	Gogar Burn at Turnhouse	3181 6733	FRPB	38.8
020001	Tyne at East Linton	3591 6768	FRPB	307.0
020002	West Peffer Burn at Luffness	3489 6811	FRPB	26.2
020003	Tyne at Spilmersford	3456 6689	FRPB	161.0
020004	East Peffer Burn at Lochhouses	3610 6824	FRPB	31.1
020005	Birns Water at Saltoun Hall	3457 6688	FRPB	93.0
020006	Biel Water at Belton House	3645 6768	FRPB	51.8
020007	Gifford Water at Lennoxlove	3511 6717	FRPB	64.0
020008	Brox Burn at Broxmouth	3697 6776	FRPB	19.7
021001 *	Fruid Water at Fruid	3088 6205	LRWD	23.7
021002 *	Whiteadder Water at Hungry Snout	3663 6633	LRWD	45.6
021003	Tweed at Peebles	3257 6400	TWRP	694.0
021004 *	Watch Water at Watch Water Reservoir	3664 6566	BRWD	10.7
021006	Tweed at Lyne Ford	3206 6397	TWRPB	373.0
021006	Tweed at Boleside	3498 6334	TWRPB	1500.0
021007	Ettrick Water at Lindean	3488 6315	TWRPB	499.0
021008	Teviot at Ormiston Mill	3702 6280	TWRPB	1110.0
021009	Tweed at Norham	3898 6477	TWRPB	4390.0
021010 *	Tweed at Dryburgh	3588 6320	TWRPB	2080.0
021011	Yarrow Water at Philiphaugh	3439 6277	TWRPB	231.0
021012	Teviot at Hawick	3522 6159	TWRPB	323.0
021013	Gala Water at Galashiels	3479 6374	TWRPB	207.0
021014	Tweed at Kingledores	3109 6285	TWRPB	139.0
021015	Leader Water at Earlston	3565 6388	TWRPB	239.0
021016	Eye Water at Eyemouth Mill	3942 6635	TWRPB	119.0
021017	Ettrick Water at Brockhoperig	3234 6132	TWRPB	37.5
021018	Lyne Water at Lyne Station	3209 6401	TWRPB	175.0
021019	Manor Water at Cademuir	3217 6369	TWRPB	61.6
021020	Yarrow Water at Gordon Arms	3309 6247	TWRPB	155.0
021021	Tweed at Sprouston	3752 6354	TWRPB	3330.0
021022	Whiteadder Water at Hutton Castle	3881 6550	TWRPB	503.0
021023	Leet Water at Coldstream	3839 6396	TWRPB	113.0
021024	Jed Water at Jedburgh	3655 6214	TWRPB	139.0
021025	Ale Water at Ancrum	3634 6244	TWRPB	174.0
021026	Tima Water at Deephope	3278 6138	TWRPB	31.0
021027	Blackadder Water at Mouth Bridge	3826 6530	TWRPB	159.0
021030	Megget Water at Henderland	3231 6232	TWRPB	58.2
021031 *	Till at Etal	3927 6396	NRA-NY	648.0
021032	Glen at Kirknewton	3919 6310	NRA-NY	198.9
021034	Yarrow Water at Craig Douglas	3288 6244	TWRPB	116.0
022001	Coquet at Morwick	4234 6044	NRA-NY	569.8
022002 *	Coquet at Bygate	3870 6083	NRA-NY	59.5
022003 *	Usway Burn at Shillmoor	3886 6077	NRA-NY	21.4
022004 *	Aln at Hawkhill	4211 6129	NRA-NY	205.0
022006	Blyth at Hartford Bridge	4243 5800	NRA-NY	269.4
022007	Wansbeck at Mitford	4175 5858	NRA-NY	287.3
022008 *	Alwin at Clennell	3925 6063	NRA-NY	27.7
022009	Coquet at Rothbury	4067 6016	NRA-NY	346.0
023001	Tyne at Bywell	4038 5617	NRA-NY	2175.6
023002	Derwent at Eddys Bridge	4041 5508	NRA-NY	118.0
023003	North Tyne at Reaverhill	3906 5732	NRA-NY	1007.5
023004	South Tyne at Haydon Bridge	3858 5647	NRA-NY	751.1
023005 *	North Tyne at Tarset	3776 5861	NRA-NY	284.9
023006	South Tyne at Featherstone	3672 5611	NRA-NY	321.9
023007	Derwent at Rowlands Gill	4168 5581	NRA-NY	242.1
023008	Rede at Rede Bridge	3868 5832	NRA-NY	343.8
023009 *	South Tyne at Alston	3716 5465	NRA-NY	118.5
023010 *	Tarset Burn at Greenhaugh	3789 5879	NRA-NY	96.0
023011	Kielder Burn at Kielder	3644 5946	NRA-NY	58.8

Station number	River and station name	Grid reference	Auth-ority	Area (sq km)
023012 *	East Allen at Wide Eals	3802 5583	NRA-NY	88.0
023013 *	West Allen at Hindley Wrae	3791 5583	NRA-NY	75.1
023014 *	North Tyne at Kielder temporary	3631 5931	NRA-NY	27.0
023015 *	North Tyne at Barrasford	3924 5721	NGWC	1043.8
023016	Ouse Burn at Creg Hall	4254 5674	NRA-NY	55.0
023017	Team at Team Valley	4249 5585	NRA-NY	
023018	Ouseburn at Wootsington	4196 5700	NRA-NY	9.0
023022	North Tyne at Ughdub	3712 5875	NRA-NY	241.5
023023	Tyne at Riding Mill	4032 5617	NRA-NY	2174.5
024001	Wear at Sunderland Bridge	4284 5376	NRA-NY	657.8
024002 *	Gaunless at Bishop Auckland	4215 5306	NRA-NY	93.0
024003	Wear at Stanhope	3984 5391	NRA-NY	171.9
024004	Bedburn Beck at Bedburn	4118 5322	NRA-NY	74.9
024005	Browney at Burn Hall	4259 5387	NRA-NY	178.5
024006 *	Rookhope Burn at Eastgate	3952 5390	NRA-NY	36.5
024007 *	Browney at Lanchester	4165 5462	NRA-NY	44.6
024008	Wear at Witton Park	4174 5309	NRA-NY	455.0
024009	Wear at Chester le Street	4283 5512	NRA-NY	1008.3
024011	Wear at Burnhope Reservoir	3858 5395	NRA-NY	
025001	Tees at Broken Scar	4259 5137	NRA-NY	818.4
025002 *	Tees at Dent Bank	3932 5260	NRA-NY	217.3
025003 *	Trout Beck at Moor House	3759 5336	NRA-NY	11.4
025004	Skerne at South Park	4284 5129	NRA-NY	250.1
025005	Leven at Leven Bridge	4445 5122	NRA-NY	196.3
025006	Greta at Rutherford Bridge	4034 5122	NRA-NY	86.1
025007 *	Clow Beck at Croft	4282 5101	NRA-NY	78.2
025008	Tees at Barnard Castle	4047 5166	NRA-NY	509.2
025009	Tees at Low Moor	4364 5105	NRA-NY	1264.0
025010 *	Baydale Beck at Mowden Bridge	4260 5156	NRA-NY	31.1
025011 *	Langdon Beck at Langdon	3852 5309	NRA-NY	13.0
025012	Harwood Beck at Harwood	3849 5309	NRA-NY	25.1
025013 *	Billingham Beck at Thorpe Thewles	4408 5237	NRA-NY	61.4
025014 *	Mordon Stell at Mordon School	4323 5274	NRA-NY	2.5
025015 *	Woodham Burn at South Farm	4285 5263	NRA-NY	29.1
025018	Tees at Middleton in Teesdale	3950 5250	NRA-NY	242.1
025019	Leven at Easby	4585 5087	NRA-NY	14.8
025020	Skerne at Preston le Skerne	4292 5238	NRA-NY	147.0
025021	Skerne at Bradbury	4318 5285	NRA-NY	70.1
025022 *	Balder at Balderhead Reservoir	3931 5182	NRA-NY	20.4
025024 *	Chapel Beck at Guisborough	4599 5163	NRA-NY	13.4
026001 *	West Beck at Wansford Bridge	5064 4560	YW	192.0
026002	Hull at Hempholme Lock	5080 4498	NRA-NY	378.1
026003	Foston Beck at Foston Mill	5093 4548	NRA-NY	57.2
026004 *	Gypsey Race at Bridlington	5165 4675	NRA-NY	253.8
026005	Gypsey Race at Boynton	5137 4677	NRA-NY	240.0
026006	Elmswell Beck at Little Driffield	5009 4575	NRA-NY	136.0
026007 *	Catchwater at Withernwick	5171 4403	NRA-NY	15.5
026008	Mires Beck at North Cave	4890 4318	NRA-NY	
026009	West Beck at Snakeholme Lock	5066 4555	NRA-NY	
026010	Driffield Canal at Snakeholme Lock	5066 4555	NRA-NY	
027001	Nidd at Hunsingore Weir	4428 4530	NRA-NY	484.3
027002	Wharfe at Flint Mill Weir	4422 4473	NRA-NY	758.9
027003	Aire at Beal Weir	4534 4255	NRA-NY	1932.1
027004 *	Calder at Newlands	4365 4220	NRA-NY	899.0
027006	Don at Hadfields Weir	4390 3910	NRA-NY	373.0
027007	Ure at Westwick Lock	4356 4671	NRA-NY	914.6
027008 *	Swale at Leckby Grange	4415 4748	NRA-NY	1345.6
027009	Ouse at Skelton	4568 4554	NRA-NY	3315.0
027010 *	Hodge Beck at Bransdale Weir	4627 4944	NRA-NY	18.9
027012 *	Hebden Water at High Greenwood	3973 4309	NRA-NY	36.0
027013 *	Ewden Beck at More Hall Reservoir	4289 3957	NRA-NY	26.4
027014 *	Rye at Little Habton	4743 4771	NRA-NY	679.0
027015 *	Derwent at Stamford Bridge	4714 4557	NRA-NY	1634.3
027018 *	Ryburn at Ryburn Reservoir	4025 4187	NRA-NY	10.7
027019 *	Booth Dean Clough at Booth Wood Mill	4033 4166	NRA-NY	15.9
027021 *	Don at Doncaster	4569 4040	NRA-NY	1256.2
027022 *	Don at Rotherham Weir	4427 3928	NRA-NY	826.0
027023	Dearne at Barnsley Weir	4350 4073	NRA-NY	118.9
027024 *	Swale at Richmond	4146 5006	NRA-NY	381.0
027025	Rother at Woodhouse Mill	4432 3857	NRA-NY	352.2
027026	Rother at Whittington	4394 3744	NRA-NY	165.0
027027 *	Wharfe at Ilkley	4112 4481	NRA-NY	443.0
027028	Aire at Armley	4281 4340	NRA-NY	691.5
027029	Calder at Elland	4124 4219	NRA-NY	341.9
027030	Dearne at Adwick	4477 4020	NRA-NY	310.8
027031	Colne at Colne Bridge	4174 4199	NRA-NY	245.0
027032	Hebden Beck at Hebden	4025 4643	NRA-NY	22.2
027033	Sea Cut at Scarborough	5028 4908	NRA-NY	33.2
027034	Ure at Kilgram Bridge	4190 4860	NRA-NY	510.2
027035	Aire at Kildwick Bridge	4013 4457	NRA-NY	282.3
027036 *	Derwent at Malton	4789 4715	NRA-NY	1421.0
027038	Costa Beck at Gatehouses	4774 4836	NRA-NY	7.8
027040	Doe Lea at Staveley	4443 3746	NRA-NY	67.9
027041	Derwent at Buttercrambe	4731 4587	NRA-NY	1586.0
027042	Dove at Kirkby Mills	4705 4855	NRA-NY	59.2
027043	Wharfe at Addingham	4092 4494	NRA-NY	427.0
027044	Blackfoss Beck at Sandhills Bridge	4725 4475	NRA-NY	47.0
027047	Snaizeholme Beck at Low Houses	3833 4883	NRA-NY	10.2
027048	Derwent at West Ayton	4989 4850	NRA-NY	127.0
027049	Rye at Ness	4696 4791	NRA-NY	238.7
027050	Esk at Sleights	4865 5081	NRA-NY	308.0
027051	Crimple at Burn Bridge	4284 4519	NRA-NY	8.1
027052	Whitting at Sheepbridge	4376 3747	NRA-NY	50.2
027053	Nidd at Birstwith	4230 4603	NRA-NY	217.6
027054	Hodge Beck at Cherry Farm	4652 4902	NRA-NY	37.1
027055	Rye at Broadway Foot	4560 4883	NRA-NY	131.7
027056	Pickering Beck at Ings Bridge	4791 4819	NRA-NY	88.8
027057	Seven at Normanby	4736 4821	NRA-NY	121.6
027058	Riccal at Crook House Farm	4661 4810	NRA-NY	57.6
027059	Laver at Ripon	4301 4710	NRA-NY	87.5
027060	Kyle at Newton On Ouse	4509 4602	NRA-NY	167.6
027061	Colne at Longroyd Bridge	4136 4161	NRA-NY	72.3
027062	Nidd at Skip Bridge	4482 4561	NRA-NY	516.0
027064	Went at Walden Stubbs	4551 4163	NRA-NY	83.7
027065	Holme at Queens Mill	4142 4157	NRA-NY	97.4
027066	Blackburn Brook at Ashlowes	4393 3914	NRA-NY	42.8
027067	Sheaf at Highfield Road	4357 3863	NRA-NY	49.1
027068	Ryburn at Ripponden	4035 4188	NRA-NY	33.0
027069	Wiske at Kirby Wiske	4375 4844	NRA-NY	215.5
027070	Eller Beck at Skipton	3984 4502	NRA-NY	35.3
027071	Swale at Crakehill	4425 4734	NRA-NY	1363.0
027072	Worth at Keighley	4064 4408	NRA-NY	71.7
027073	Brompton Beck at Snainton Ings	4936 4794	NRA-NY	12.9
027074	Spen Beck at Northorpe	4225 4210	NRA-NY	46.3
027075	Bedale Beck at Leeming	4306 4902	NRA-NY	160.3
027076	Bielby Beck at Thornton Lock	4760 4444	NRA-NY	103.1
027077	Bradford Beck at Shipley	4151 4375	NRA-NY	58.0
027080	Aire at Fleet Weir	4381 4285	NRA-NY	865.0
027081	Oulton Beck at Farrer Lane	4365 4281	NRA-NY	
027082	Cundall Beck at Bat Bridge	4419 4724	NRA-NY	
027083	Foss at Huntington	4612 4543	NRA-NY	
027084	Eastburn Beck at Crosshills	4021 4452	NRA-NY	43.3
027085	Cod Beck at Dalton Bridge	4422 4766	NRA-NY	209.3
027086	Skell at Alma Weir	4316 4709	NRA-NY	
028001	Derwent at Yorkshire Bridge	4198 3851	NRA-ST	126.0
028002 *	Blithe at Hamstall Ridware	4109 3192	NRA-ST	163.0
028003 *	Tame at Water Orton	4169 2915	NRA-ST	408.0
028004 *	Tame at Lea Marston	4206 2935	NRA-ST	795.0
028005 *	Tame at Elford	4173 3105	NRA-ST	1475.0
028006 *	Trent at Great Haywood	3994 3231	NRA-ST	325.0
028007	Trent at Shardlow	4448 3299	NRA-ST	4400.0
028008	Dove at Rocester Weir	4112 3397	NRA-ST	399.0
028009	Trent at Colwick	4620 3399	NRA-ST	7486.0
028010 *	Derwent at Longbridge Weir/St.Mary's Bridge	4356 3363	NRA-ST	1054.0
028011	Derwent at Matlock Bath	4296 3586	NRA-ST	890.0
028012	Trent at Yoxall	4131 3177	NRA-ST	1229.0
028013 *	Soar at Zouch	4498 3240	NRA-ST	1289.8
028014 *	Sow at Milford	3975 3215	NRA-ST	591.0
028015	Idle at Mattersey	4690 3895	NRA-ST	529.0
028016 *	Ryton at Serlby Park	4641 3897	NRA-ST	231.0
028017 *	Devon at Cotham	4787 3476	NRA-ST	284.0
028018	Dove at Marston on Dove	4235 3288	NRA-ST	883.2
028019	Trent at Drakelow Park	4239 3204	NRA-ST	3072.0
028020 *	Churnet at Rocester	4103 3389	NRA-ST	236.0
028021 *	Derwent at Draycott	4443 3327	NRA-ST	1175.0
028022 *	Trent at North Muskham	4801 3601	NRA-ST	8231.0
028023 *	Wye at Ashford	4182 3696	NRA-ST	154.0
028024	Wreake at Syston Mill	4615 3124	NRA-ST	413.8
028025 *	Sence at Ratcliffe Culey	4321 2996	NRA-ST	169.4
028026	Anker at Polesworth	4263 3034	NRA-ST	368.0
028027 *	Erewash at Sandiacre	4482 3364	NRA-ST	182.2
028029 *	Kingston Brook at Kingston Hall	4503 3277	NRA-ST	57.0
028030 *	Black Brook at Onebarrow	4466 3171	NRA-ST	8.4
028031	Manifold at Ilam	4140 3507	NRA-ST	148.5
028032 *	Meden at Church Warsop	4558 3680	NRA-ST	62.8
028033 *	Dove at Hollinsclough	4063 3668	NRA-ST	8.0
028035 *	Leen at Triumph Road Nottingham	4549 3392	NRA-ST	111.0
028036 *	Poulter at Twyford Bridge	4700 3752	NRA-ST	128.2
028038 *	Manifold at Hulme End	4106 3595	NRA-ST	46.0
028039	Rea at Calthorpe Park	4071 2847	NRA-ST	74.0
028040	Trent at Stoke on Trent	3892 3467	NRA-ST	53.2
028041 *	Hamps at Waterhouses	4082 3502	NRA-ST	35.1
028043	Derwent at Chatsworth	4261 3683	NRA-ST	335.0
028044 *	Poulter at Cuckney	4570 3713	NRA-ST	32.2
028045 *	Meden/Maun at Bothamsall/Haughton	4681 3732	NRA-ST	262.6
028046	Dove at Izaak Walton	4146 3509	NRA-ST	83.0
028047 *	Oldcotes Dyke at Blyth	4615 3876	NRA-ST	85.2
028048	Amber at Wingfield Park	4376 3520	NRA-ST	139.0
028049 *	Ryton at Worksop	4575 3794	NRA-ST	77.0
028050 *	Torne at Auckley	4646 4012	NRA-ST	135.5
028052	Sow at Great Bridgford	3883 3270	NRA-ST	163.0
028053 *	Penk at Penkridge	3923 3144	NRA-ST	272.0
028054 *	Sence at Blaby	4586 2985	NRA-ST	133.0
028055 *	Ecclesbourne at Duffield	4320 3447	NRA-ST	50.4
028056	Rothley Brook at Rothley	4580 3121	NRA-ST	94.0
028058 *	Henmore Brook at Ashbourne	4176 3463	NRA-ST	42.0
028059 *	Maun at Mansfield	4548 3623	NRA-ST	28.8
028060 *	Dover Beck at Lowdham	4653 3479	NRA-ST	69.0
028061	Churnet at Basford Bridge	3983 3520	NRA-ST	139.0
028062 *	Trent at Fledborough	4815 3715	NRA-ST	8433.0
028065 *	Trent at Torksey	4827 3780	NRA-ST	8547.0
028066	Cole at Coleshill	4183 2874	NRA-ST	130.0
028067	Derwent at Church Wilne	4438 3316	NRA-ST	1177.5
028070 *	Burbage Brook at Burbage	4259 3804	NRA-ST	9.1
028072 *	Greet at Southwell	4711 3541	NRA-ST	46.2
028073 *	Ashop at Ashop diversion	4171 3896	NRA-ST	42.0
028074	Soar at Kegworth	4492 3263	NRA-ST	1292.0
028075 *	Derwent at Slippery Stones	4169 3951	NRA-ST	17.0
028079	Meece Brook at Shallowford	3874 3291	NRA-ST	86.3
028080	Tame at Lea Marston Lakes	4207 2937	NRA-ST	799.0
028081	Tame at Bescot	4012 2958	NRA-ST	169.0
028082	Soar at Littlethorpe	4542 2973	NRA-ST	183.9
028083	Trent at Darlaston	3885 3355	NRA-ST	195.2
028085	Derwent at St. Marys Bridge	4355 3368	NRA-ST	1054.0
028086	Sence at South Wigston	4588 2977	NRA-ST	113.0
028091	Ryton at Blyth	4631 3871	NRA-ST	231.0
028093	Soar at Pillings Lock	4565 3182	NRA-ST	1108.4
028094	Blythe at Castle Farm	4213 2888	NRA-ST	183.8
028095	Tame at Hopwas Bridge	4182 3052	NRA-ST	1421.7
028101	Tame at Sheepwash	3974 2918	NRA-ST	27.9
028102	Blythe at Whitacre	4212 2911	NRA-ST	194.3
029001	Waithe Beck at Brigsley	5253 4016	NRA-A	108.3
029002	Great Eau at Claythorpe Mill	5418 3793	NRA-A	77.4
029003	Lud at Louth	5337 3879	NRA-A	55.2
029004	Ancholme at Bishopbridge	5032 3911	NRA-A	54.7
029005	Rase at Bishopbridge	5032 3912	NRA-A	66.6
029009	Ancholme at Toft Newton	5033 3877	NRA-A	27.2
030001	Witham at Claypole Mill	4842 3480	NRA-A	297.9
030002 *	Barlings Eau at Langworth Bridge	5066 3766	NRA-A	210.1
030003	Bain at Fulsby Lock	5241 3611	NRA-A	197.1
030004	Partney Lymn at Partney Mill	5402 3676	NRA-A	61.6
030005 *	Witham at Saltersford total	4927 3335	NRA-A	126.1
030006	Slea at Leasingham Mill	5088 3485	NRA-A	48.4
030011	Bain at Goulceby Bridge	5246 3795	NRA-A	62.5
030012	Stainfield Beck at Stainfield	5127 3739	NRA-A	37.4
030013	Heighington Beck at Heighington	5042 3696	NRA-A	21.2
030014	Pointon Lode at Pointon	5128 3313	NRA-A	11.9
030015	Cringle Brook at Stoke Rochford	4925 3297	NRA-A	50.5
030017	Witham at Colsterworth	4929 3246	NRA-A	51.3
031001	Eye Brook at Eye Brook Reservoir	4853 2941	CDWC	60.1
031002	Glen at Kates Brdg and King St Brdg	5108 3149	NRA-A	341.9
031005	Welland at Tixover	4970 2997	NRA-A	417.0
031006	Gwash at Belmesthorpe	5038 3097	NRA-A	150.0
031007	Welland at Barrowden	4948 2999	NRA-A	411.6
031010	Chater at Fosters Bridge	4961 3030	NRA-A	68.8
031012 *	Tham at Little Bytham	5016 3179	NRA-A	24.9
031016	North Brook at Empingham	4957 3089	NRA-A	36.5
031021	Welland at Ashley	4819 2915	NRA-A	250.7
031023	West Glen at Easton Wood	4965 3258	NRA-A	4.4
031025	Gwash South Arm at Manton	4875 3051	NRA-A	24.5

Station number	River and station name	Grid reference	Auth-ority	Area (sq km)
031026	Egleton Brook at Egleton	4878 3073	NRA-A	2.5
031028	Gwash at Church Bridge	4951 3082	NRA-A	76.5
032001 *	Nene at Orton	5166 2972	NRA-A	1634.3
032002	Willow Brook at Fotheringhay	5067 2933	NRA-A	89.6
032003	Harpers Brook at Old Mill Bridge	4983 2799	NRA-A	74.3
032004	Ise Brook at Harrowden Old Mill	4898 2715	NRA-A	194.0
032006	Nene/Kislingbury at Upton	4721 2592	NRA-A	223.0
032007	Nene Brampton at St Andrews	4747 2617	NRA-A	232.8
032008	Nene/Kislingbury at Dodford	4627 2607	NRA-A	107.0
032029 *	Flore at Experimental Catchment	4655 2604	NRA-A	7.0
032031	Wootton Brook at Wootton Park	4726 2577	NRA-A	73.8
033001 *	Bedford Ouse at Brownshill Staunch	5369 2727	NRA-A	3030.0
033002	Bedford Ouse at Bedford	5055 2495	NRA-A	1460.0
033003 *	Cam at Bottisham	5508 2657	NRA-A	803.0
033004 *	Lark at Isleham	5648 2760	NRA-A	466.2
033005	Bedford Ouse at Thornborough Mill	4736 2353	NRA-A	388.5
033006	Wissey at Northwold	5771 2965	NRA-A	274.5
033007	Nar at Marham	5723 3119	NRA-A	153.3
033008 *	Little Ouse at Thetford No1 Staunch	5860 2832	NRA-A	699.0
033009	Bedford Ouse at Harrold Mill	4951 2565	NRA-A	1320.0
033011	Little Ouse at County Bridge Euston	5892 2801	NRA-A	128.7
033012	Kym at Meagre Farm	5155 2631	NRA-A	137.5
033013	Sapiston at Rectory Bridge	5898 2791	NRA-A	205.9
033014	Lark at Temple	5758 2730	NRA-A	272.0
033015	Ouzel at Wilten	4882 2408	NRA-A	277.1
033016 *	Cam at Jesus Lock	5450 2593	NRA-A	761.5
033018	Tove at Cappenham Bridge	4714 2488	NRA-A	138.1
033019	Thet at Melford Bridge	5880 2830	NRA-A	316.0
033020	Alconbury Brook at Brampton	5208 2717	NRA-A	201.5
033021	Rhee at Burnt Mill	5415 2523	NRA-A	303.0
033022	Ivel at Blunham	5153 2509	NRA-A	541.3
033023	Lea Brook at Back Bridge	5662 2733	NRA-A	101.8
033024	Cam at Dernford	5466 2506	NRA-A	198.0
033025 *	Babingly at West Newton Mill	5696 3256	NRA-A	39.6
033026	Bedford Ouse at Offord	5216 2669	NRA-A	2570.0
033027	Rhee at Wimpole	5333 2485	NRA-A	119.1
033028	Flit at Shefford	5143 2393	NRA-A	119.6
033029	Stringside at White Bridge	5716 3006	NRA-A	98.8
033030 *	Clipstone Brook at Clipstone	4933 2255	NRA-A	40.2
033031	Broughton Brook at Broughton	4889 2408	NRA-A	66.6
033032	Heacham at Heacham	5685 3375	NRA-A	59.0
033033	Hiz at Arlesey	5190 2379	NRA-A	108.0
033034	Little Ouse at Abbey Heath	5851 2844	NRA-A	699.3
033035	Ely Ouse at Denver Complex	5588 3010	NRA-A	3430.0
033037	Bedford Ouse at Newp't Pagnell Wr	4877 2443	NRA-A	800.0
033039	Bedford Ouse at Roxton	5160 2535	NRA-A	1660.0
033040	Rhee at Ashwell	5267 2401	NRA-A	
033044	Thet at Bridgham	5957 2855	NRA-A	277.8
033045	Wittle at Quidenham	6027 2878	NRA-A	28.3
033046	Thet at Red Bridge	5996 2923	NRA-A	145.3
033048	Larling Brook at Stonebridge	5928 2907	NRA-A	21.4
033049 *	Stanford Water at Buckenham Tofts	5834 2953	NRA-A	43.5
033050	Snail at Fordham	5631 2703	NRA-A	60.6
033051	Cam at Chesterford	5505 2426	NRA-A	141.0
033052	Swaffham Lode at Swaffham Bulbeck	5553 2628	NRA-A	36.4
033053 *	Granta at Stapleford	5471 2515	NRA-A	114.0
033054	Babingley at Castle Rising	5680 3252	NRA-A	47.7
033055	Granta at Babraham	5510 2504	NRA-A	98.7
033056	Quy Water at Lode	5531 2627	NRA-A	76.4
033057	Ouzel at Leighton Buzzard	4917 2241	NRA-A	119.0
033058	Ouzel at Bletchley	4883 2322	NRA-A	215.0
033059 *	Cut-off Channel at Tolgate	5729 2757	NRA-A	
033060	Kings Dike at Stanground	5208 2973	NRA-A	
033062	Guilden Brook at Fowlmere two	5403 2457	NRA-A	
033063	Little Ouse at Knettishall	5955 2807	NRA-A	101.0
033064	Whaddon Brook at Whaddon	5359 2466	NRA-A	16.0
033065	Hiz at Hitchin	5185 2290	NRA-A	6.8
033066	Granta at Linton	5570 2464	NRA-A	59.8
033067	New River at Burwell	5608 2696	NRA-A	19.6
033068	Cheney Water at Gatley End	5296 2411	NRA-A	5.0
034001	Yare at Colney	6182 3082	NRA-A	231.8
034002	Tas at Shotesham	6226 2994	NRA-A	146.5
034003	Bure at Ingworth	6192 3296	NRA-A	164.7
034004	Wensum at Costessey Mill	6177 3128	NRA-A	570.9
034005	Tud at Costessey Park	6170 3113	NRA-A	73.2
034006	Waveney at Needham Mill	6229 2811	NRA-A	370.0
034007	Dove at Oakley Park	6174 2772	NRA-A	133.9
034008	Ant at Honing Lock	6331 3270	NRA-A	49.3
034010	Waveney at Billingford Bridge	6168 2782	NRA-A	149.4
034011	Wensum at Fakenham	5919 3294	NRA-A	161.9
034012	Burn at Burnham Overy	5842 3428	NRA-A	80.0
034013	Waveney at Ellingham Mill	6364 2917	NRA-A	670.0
034014	Wensum at Swanton Morley Total	6020 3184	NRA-A	397.8
034018	Stiffkey at Warham All Saints	5944 3414	NRA-A	87.8
034019	Bure at Horstead Mill	6267 3194	NRA-A	313.0
035001 *	Gipping at Constantine Weir	6154 2441	NRA-A	310.8
035002	Deben at Naunton Hall	6322 2534	NRA-A	163.1
035003	Alde at Farnham	6360 2601	NRA-A	63.9
035004	Ore at Beversham Bridge	6359 2583	NRA-A	54.9
035008	Gipping at Stowmarket	6058 2578	NRA-A	128.9
035010	Gipping at Bramford	6127 2465	NRA-A	298.0
035013	Blyth at Holton	6406 2769	NRA-A	92.9
036001	Stour at Stratford St Mary	6042 2340	EWC	844.3
036002	Glem at Glemsford	5846 2472	NRA-A	87.3
036003	Box at Polstead	5985 2378	NRA-A	53.9
036004	Chad Brook at Long Melford	5868 2459	NRA-A	47.4
036005	Brett at Hadleigh	6025 2429	NRA-A	156.0
036006	Stour at Langham	6020 2344	NRA-A	578.0
036007	Belchamp Brook at Bardfield Bridge	5848 2421	NRA-A	58.6
036008	Stour at Westmill	5827 2463	NRA-A	224.5
036009	Brett at Cockfield	5914 2525	NRA-A	25.7
036010	Bumpstead Brook at Broad Green	5689 2418	NRA-A	28.3
036011	Stour Brook at Sturmer	5696 2441	NRA-A	34.5
036012	Stour at Kedington	5708 2450	NRA-A	76.2
036013	Brett at Higham	6032 2354	NRA-A	195.0
036015	Stour at Lamarsh	5897 2358	NRA-A	480.7
036016 *	Ramsey at Great Oakley	6206 2288	NRA-A	13.9
036017	Ely Ouse Outfall at Kirtling Green	5681 2559	NRA-A	
037001	Roding at Redbridge	5415 1884	NRA-T	303.3
037002	Chelmer at Rushes Lock	5794 2090	NRA-A	533.9
037003	Ter at Crabbs Bridge	5786 2107	NRA-A	77.8
037004 *	Blackwater at Langford	5836 2092	NRA-A	337.0
037005	Colne at Lexden	5962 2261	NRA-A	238.2
037006	Can at Beach's Mill	5690 2072	NRA-A	228.4
037007	Wid at Writtle	5686 2060	NRA-A	136.3
037008	Chelmer at Springfield	5713 2071	NRA-A	190.3
037009	Brain at Guithavon Valley	5818 2147	NRA-A	60.7
037010	Blackwater at Appleford Bridge	5845 2158	NRA-A	247.3
037011	Chelmer at Churchend	5629 2233	NRA-A	72.6
037012	Colne at Poolstreet	5771 2364	NRA-A	65.1
037013	Sandon Brook at Sandon Bridge	5755 2055	NRA-A	60.6
037014	Roding at High Ongar	5561 2040	NRA-T	95.1
037015	Cripsey Brook at Chipping Ongar	5548 2035	NRA-T	62.2
037016	Pant at Copford Hall	5668 2313	NRA-A	62.5
037017	Blackwater at Stisted	5793 2243	NRA-A	139.2
037018	Ingrebourne at Gaynes Park	5553 1862	NRA-T	47.9
037019	Beam at Bretons Farm	5515 1853	NRA-T	49.7
037020	Chelmer at Felsted	5670 2193	NRA-A	132.1
037021	Roman at Bounstead Bridge	5985 2205	NRA-A	52.6
037022	Holland Brook at Thorpe le Soken	6179 2212	NRA-A	54.9
037024	Colne at Earls Colne	5855 2298	NRA-A	154.2
037025 *	Bourne Brook at Perces Bridge	5822 2276	NRA-A	32.1
037026 *	Tenpenny Brook at Tenpenny Bridge	6079 2207	NRA-A	29.0
037027 *	Sixpenny Brook at Ship House Bridge	6054 2214	NRA-A	5.1
037028 *	Bentley Brook at Saltwater Bridge	6109 2193	NRA-A	12.1
037029 *	St Osyth Brook at Main Road Bridge	6134 2159	NRA-A	8.0
037030 *	Holland Brook at Cradle Bridge	6171 2217	NRA-A	48.6
037031 *	Crouch at Wickford	5748 1934	NRA-A	71.8
037033	Eastwood Brook at Eastwood	5859 1888	NRA-A	10.4
037034	Mardyke at Stifford	5596 1804	NRA-A	90.7
037036	Ely Ouse Outfall at Great Sampford	5646 2351	NRA-A	
037037	Toppesfield Brook at Cornish Hall End	5675 2377	NRA-A	1.3
037038 *	Wid at Margaretting	5672 2000	NRA-A	98.6
037039	Blackwater at Langford (low flows)	5835 2090	NRA-A	337.0
038001	Lee at Feildes Weir	5390 2092	NRA-T	1036.0
038002	Ash at Mardock	5393 2148	NRA-T	78.7
038003	Mimram at Panshanger Park	5282 2133	NRA-T	133.9
038004	Rib at Wadesmill	5360 2174	NRA-T	136.5
038005 *	Ash at Easneye	5380 2138	NRA-T	85.2
038006 *	Rib at Herts Training School	5335 2158	NRA-T	* 148.1
038007	Canons Brook at Elizabeth Way	5431 2104	NRA-T	21.4
038011 *	Mimram at Fulling Mill	5225 2169	NRA-T	98.7
038012	Stevenage Brook at Bragbury Park	5274 2211	NRA-T	36.0
038013	Upper Lee at Luton Hoo	5118 2185	NRA-T	70.7
038014	Salmon Brook at Edmonton	5343 1937	NRA-T	20.5
038015 *	Intercepting Drain at Enfield	5355 1932	NRA-T	7.4
038016	Stanstead Springs at Mountfitchet	5500 2246	NRA-T	20.5
038017	Mimram at Whitwell	5184 2212	NRA-T	39.1
038018	Upper Lee at Water Hall	5299 2099	NRA-T	150.0
038020	Cobbins Brook at Sewardstone Road	5387 1999	NRA-T	38.4
038021	Turkey Brook at Albany Park	5359 1985	NRA-T	42.2
038022	Pymmes Brook at Edmonton Silver Street	5340 1925	NRA-T	42.6
038024	Small River Lee at Ordnance Road	5370 1988	NRA-T	41.5
038026	Pincey Brook at Shearing Hall	5495 2126	NRA-T	54.6
038027	Stort at Glen Faba	5393 2093	NRA-T	280.2
038028	Stansted Brook at Gypsy Lane	5506 2241	NRA-T	25.9
038029	Quin at Griggs Bridge	5392 2248	NRA-T	50.4
038030	Beane at Hartham	5325 2131	NRA-T	175.1
039001	Thames at Kingston	5177 1898	NRA-T	9948.0
039002	Thames at Days Weir	4568 1935	NRA-T	3444.7
039003	Wandle at Connollys Mill	5265 1705	NRA-T	176.1
039004	Wandle at Beddington Park	5296 1655	NRA-T	122.0
039005	Beverley Brook at Wimbledon Common	5216 1717	NRA-T	43.6
039006	Windrush at Newbridge	4402 2019	NRA-T	362.6
039007	Blackwater at Swallowfield	4731 1648	NRA-T	354.8
039008	Thames at Eynsham	4445 2087	NRA-T	1616.2
039010	Colne at Denham	5052 1884	NRA-T	743.0
039011	Wey at Tilford	4874 1433	NRA-T	396.3
039012	Hogsmill at Kingston upon Thames	5182 1688	NRA-T	69.1
039013	Colne at Berrygrove	5123 1982	NRA-T	352.2
039014	Ver at Hansteads	5151 2016	NRA-T	132.0
039015	Whitewater at Lodge Farm	4731 1523	NRA-T	44.5
039016	Kennet at Theale	4649 1708	NRA-T	1033.4
039017	Ray at Grendon Underwood	4680 2211	NRA-T	18.6
039019	Lambourn at Shaw	4470 1682	NRA-T	234.1
039020	Coln at Bibury	4122 2062	NRA-T	106.7
039021	Cherwell at Enslow Mill	4482 2183	NRA-T	551.7
039022	Loddon at Sheepbridge	4720 1652	NRA-T	164.5
039023	Wye at Hedsor	4896 1867	NRA-T	137.3
039025	Enborne at Brimpton	4568 1648	NRA-T	147.6
039026	Cherwell at Banbury	4458 2411	NRA-T	199.4
039027	Pang at Pangbourne	4634 1766	NRA-T	170.9
039028	Dun at Hungerford	4321 1685	NRA-T	101.3
039029	Tillingbourne at Shalford	5000 1478	NRA-T	59.0
039030	Gade at Croxley Green	5082 1952	NRA-T	184.0
039031 *	Lambourn at Welford	4411 1731	NRA-T	176.0
039032 *	Lambourn at East Shefford	4390 1745	NRA-T	154.0
039033	Winterbourne St at Bagnor	4453 1694	NRA-T	49.2
039034	Evenlode at Cassington Mill	4448 2099	NRA-T	430.0
039035	Churn at Cerney Wick	4076 1963	NRA-T	124.3
039036	Law Brook at Albury	5045 1468	NRA-T	16.0
039037	Kennet at Marlborough	4187 1686	NRA-T	142.0
039038	Thame at Shabbington	4670 2055	NRA-T	443.0
039040	Thames at West Mill Cricklade	4094 1942	NRA-T	185.0
039042	Leach at Priory Mill Lechlade	4227 1994	NRA-T	76.9
039043	Kennet at Knighton	4295 1710	NRA-T	295.0
039044	Hart at Bramshill House	4755 1593	NRA-T	84.0
039046	Thames at Sutton Courtenay	4516 1946	NRA-T	3414.0
039049	Silk Stream at Colindeep Lane	5217 1895	NRA-T	29.0
039051 *	Sor Brook at Adderbury	4475 2346	NRA-T	106.4
039052	The Cut at Binfield	4853 1713	NRA-T	50.2
039053	Mole at Horley	5271 1434	NRA-T	89.9
039054	Mole at Gatwick Airport	5260 1399	NRA-T	31.8
039055	Yeading Bk West at Yeading West	5083 1846	NRA-T	17.6
039056	Ravensbourne at Catford Hill	5372 1732	NRA-T	67.6
039057	Crane at Cranford Park	5103 1778	NRA-T	81.7
039058	Pool at Winsford Road	5371 1725	NRA-T	38.3
039061	Letcombe Brook at Letcombe Bassett	4375 1853	NRA-T	2.7
039065	Ewelme Brook at Ewelme	4642 1916	NRA-T	13.4
039068	Mole at Castle Mill	5179 1502	NRA-T	316.0
039069	Mole at Kinnersley Manor	5262 1462	NRA-T	142.0
039071	Thames at Ewen	4007 1973	NRA-T	63.7
039072	Thames at Royal Windsor Park	4982 1773	NRA-T	7046.0
039073	Churn at Cirencester	4020 2028	NRA-T	84.0
039074	Ampney Brook at Sheepen Bridge	4105 1950	NRA-T	74.4
039075	Marston Meysey Bk at Whetstone Bridge	4128 1964	NRA-T	25.0
039076	Windrush at Worsham	4299 2107	NRA-T	296.0
039077	Og at Marlborough Poulton Fm	4194 1697	NRA-T	59.2
039078	Way(north) at Farnham	4838 1462	NRA-T	191.1
039079	Wey at Weybridge	5068 1648	NRA-T	1008.0

Station number	River and station name	Grid reference	Auth-ority	Area (sq km)
039081	Ock at Abingdon	4481 1966	NRA-T	234.0
039085 *	Wandle at Wandle Park	5266 1703	NRA-T	176.1
039086	Gatwick Stream at Gatwick Link	5285 1417	NRA-T	33.6
039087	Ray at Water Eaton	4121 1935	NRA-T	84.1
039088	Chess at Rickmansworth	5066 1947	NRA-T	105.0
039089	Gade at Bury Mill	5053 2077	NRA-T	48.2
039090	Cole at Inglesham	4208 1970	NRA-T	140.0
039091 *	Misbourne at Quarrendon Mill	4975 1963	NRA-T	66.3
039092	Dollis Brook at Hendon Lane Bridge	5240 1895	NRA-T	25.1
039093	Brent at Monks Park	5202 1850	NRA-T	117.6
039094	Crane at Marsh Farm	5154 1734	NRA-T	81.0
039095	Quaggy at Manor House Gardens	5394 1748	NRA-T	33.9
039096	Wealdstone Brook at Wembley	5192 1862	NRA-T	21.7
039097	Thames at Buscot	4230 1981	NRA-T	997.0
039098	Pinn at Uxbridge	5082 1826	NRA-T	33.3
039099	Ampney Brook at Ampney St. Peter	4076 2013	NRA-T	45.3
039100	Swill Brook at Oaksey	3997 1927	NRA-T	53.3
039101	Aldbourne at Ramsbury	4288 1717	NRA-T	53.1
039102	Misbourne at Denham Lodge	5046 1866	NRA-T	136.0
039103	Kennet at Newbury	4472 1672	NRA-T	548.1
039104	Mole at Esher	5130 1653	NRA-T	469.6
039105	Thame at Wheatley	4612 2050	NRA-T	533.8
039106	Mole at Leatherhead	5161 1564	NRA-T	371.4
039107	Hogsmill at Ewell	5216 1633	NRA-T	33.7
039108	Churn at Perrott's Brook	4022 2057	NRA-T	59.0
039109	Coln at Fossebridge	4080 2112	NRA-T	82.0
039110	Coln at Fairford	4151 2012	NRA-T	130.0
039111	Thames at Staines	5034 1713	NRA-T	8120.0
039112	Letcombe Brook at Arabellas Lake	4374 1852	NRA-T	
039113	Manor Farm Brook at Letcombe Regis	4383 1861	NRA-T	
039114	Pang at Frilsham	4537 1730	NRA-T	90.1
039115	Pang at Bucklebury	4556 1710	NRA-T	109.0
039116	Sulham Brook at Sulham	4642 1741	NRA-T	
039117	Colnbrook at Hythe End	5019 1723	NRA-T	
039118	Wey at Alton	4717 1395	NRA-T	
039119	Wey at Kings Pond (Alton)	4724 1395	NRA-T	
039120	Caker Stream at Alton	4729 1388	NRA-T	88.1
039121	Thames at Walton	4725 1385	NRA-T	
039122	Cranleigh Waters at Bramley	4999 1462	NRA-T	
039125	Ver at Redbourn	5109 2118	NRA-T	
039126	Red at Redbourn	5107 2119	NRA-T	
039127	Misbourne at Little Missenden	4934 1984	NRA-T	
039129	Thames at Farmoor	4438 2068	NRA-T	
039130	Thames at Reading	4718 1741	NRA-T	
040001 *	Medway at Weir Wood Reservoir	5407 1353	SW	26.9
040002 *	Darwell at Darwell Reservoir	5722 1213	SW	9.6
040003	Medway at Teston	5708 1530	NRA-S	1256.1
040004	Rother at Udiam	5773 1245	NRA-S	206.0
040005	Beult at Stile Bridge	5758 1478	NRA-S	277.1
040006	Bourne at Hadlow	5632 1497	NRA-S	50.3
040007	Medway at Chafford Weir	5517 1405	NRA-S	255.1
040008	Great Stour at Wye	6049 1470	NRA-S	230.0
040009	Teise at Stone Bridge	5718 1399	NRA-S	136.2
040010	Eden at Penshurst	5520 1437	NRA-S	224.3
040011	Great Stour at Horton	6116 1554	NRA-S	345.0
040012	Darent at Hawley	5551 1718	NRA-S	191.4
040013	Darent at Otford	5525 1584	NRA-S	100.5
040014	Wingham at Durlock.	6276 1576	NRA-S	37.7
040015	White Drain at Fairbrook Farm	6055 1606	NRA-S	31.8
040016	Cray at Crayford	5511 1746	NRA-S	119.7
040017	Dudwell at Burwash	5679 1240	NRA-S	27.5
040018	Darent at Lullingstone	5530 1643	NRA-S	118.4
040020	Eridge Stream at Hendal Bridge	5522 1367	NRA-S	53.7
040021	Hexden Channel at Hopemill Br Sandhurst	5813 1290	NRA-S	32.4
040023	East Stour at South Willesborough	6015 1407	NRA-S	58.8
040024 *	Bartley Mill St at Bartley Mill	5633 1357	NRA-S	25.1
040027	Sarre Penn at Calcott	6174 1625	NRA-S	19.4
040029	Len at Lenside		NRA-S	
040032 *	Rother at Crowhurst Bridge	5683 1263	NRA-S	
040033	Dour at Crabble Mill	6300 1430	NRA-S	49.5
041001	Nunningham Stream at Tilley Bridge	5662 1129	NRA-S	16.9
041002	Ash Bourne at Hammer Wood Bridge	5684 1141	NRA-S	18.4
041003	Cuckmere at Sherman Bridge	5533 1051	NRA-S	134.7
041004	Ouse at Barcombe Mills	5433 1148	NRA-S	395.7
041005	Ouse at Gold Bridge	5429 1214	NRA-S	180.9
041006	Uck at Isfield	5459 1190	NRA-S	87.8
041009 *	Rother at Hardham	5034 1178	NRA-S	345.8
041010	Adur W Branch at Hatterell Bridge	5178 1197	NRA-S	109.1
041011	Rother at Iping Mill	4852 1229	NRA-S	154.0
041012	Adur E Branch at Sakeham	5219 1190	NRA-S	93.3
041013	Huggletts Stream at Henley Bridge	5671 1138	NRA-S	14.2
041014	Arun at Pallingham Quay	5047 1229	NRA-S	379.0
041015	Ems at Westbourne	4755 1074	NRA-S	58.3
041016	Cuckmere at Cowbeech	5611 1150	NRA-S	18.7
041017	Combehaven at Crowhurst	5765 1102	NRA-S	30.5
041018	Kird at Tanyards	5044 1256	NRA-S	66.8
041019	Arun at Alfoldean	5117 1331	NRA-S	139.0
041020	Bevern Stream at Clappers Bridge	5423 1161	NRA-S	34.6
041021	Clayhill Stream at Old Ship	5448 1153	NRA-S	7.1
041022	Lod at Halfway Bridge	4931 1223	NRA-S	52.0
041023	Lavant at Graylingwell	4871 1064	NRA-S	87.2
041024	Shell Brook at Shell Brook P S	5335 1286	NRA-S	22.6
041025	Loxwood Stream at Drungewick	5060 1309	NRA-S	91.6
041026	Cockhaise Brook at Holywell	5376 1262	NRA-S	36.1
041027	Rother at Princes Marsh	4772 1270	NRA-S	37.2
041028	Chess Stream at Chess Bridge	5217 1173	NRA-S	24.0
041029	Bull at Lealands	5575 1131	NRA-S	40.8
041031	Fulking Stream at Fulking	5247 1113	NRA-S	
041033	Costers Brook at Cocking	4880 1174	NRA-S	
041034 *	Ems at Walderton	4786 1104	NRA-S	
041035	North River at Brookhurst	5130 1325	NRA-S	55.1
041037	Winterbourne Stream at Lewes	5403 1096	NRA-S	17.3
042001	Wallington at North Fareham	4587 1075	NRA-S	111.0
042003	Lymington at Brockenhurst Park	4318 1019	NRA-S	98.9
042004	Test at Broadlands	4354 1188	NRA-S	1040.0
042005	Wallop Brook at Broughton	4311 1330	NRA-S	53.6
042006	Meon at Mislingford	4589 1141	NRA-S	72.8
042007	Alre at Drove Lane Alresford	4574 1326	NRA-S	57.0
042008	Cheriton Stream at Sewards Bridge	4574 1323	NRA-S	75.1
042009	Candover Stream at Borough Bridge	4568 1323	NRA-S	71.2
042010	Itchen at Highbridge+Allbrook	4467 1213	NRA-S	360.0
042011	Hamble at Frog Mill	4523 1149	NRA-S	56.6
042012	Anton at Fullerton	4379 1393	NRA-S	185.0
042014	Blackwater at Ower	4328 1174	NRA-S	104.7
042015	Dever at Weston Colley	4496 1394	NRA-S	52.7
042016	Itchen at Easton	4512 1325	NRA-S	236.8
042017	Hermitage at Havant	4711 1067	NRA-S	17.0
042018	Monks Brook at Eastleigh	4443 1179	NRA-S	43.3
042020	Tadburn Lake at Romsey	4362 1212	NRA-S	19.0
042021 *	Branch of Test at Nursling	4355 1159	NRA-S	1050.0
042023	Itchen at Riverside Park	4445 1154	NRA-S	415.0
042024	Test at Chilbolton (Total)	4386 1394	NRA-S	453.0
042025	Lavant Stream at Leigh Park	4721 1072	NRA-S	54.5
043001 *	Avon at Ringwood	4142 1054	NRA-SW	1649.8
043003	Avon at East Mills	4158 1144	NRA-SW	1477.8
043004	Bourne at Laverstock Mill	4157 1304	NRA-SW	163.6
043005	Avon at Amesbury	4151 1413	NRA-SW	323.7
043006	Nadder at Wilton Park	4098 1308	NRA-SW	220.6
043007	Stour at Throop Mill	4113 0958	NRA-SW	1073.0
043008	Wylye at South Newton	4086 1343	NRA-SW	445.4
043009	Stour at Hammoon	3820 1147	NRA-SW	523.1
043010	Allen at Loverley Mill	4006 1085	NRA-SW	94.0
043011 *	Ebble at Bodenham	4162 1263	NRA-SW	109.0
043012	Wylye at Norton Bavant	3909 1428	NRA-SW	112.4
043013 *	Mude at Somerford	4184 0936	NRA-SW	12.4
043014	East Avon at Upavon	4133 1559	NRA-SW	86.2
043015 *	Wylye at Longbridge Deverill	3868 1413	NRA-SW	69.0
043017	West Avon at Upavon	4133 1559	NRA-SW	78.0
043018	Allen at Watford Mill	4008 1007	NRA-SW	176.5
043019	Shreen Water at Colesbrook	3807 1278	NRA-SW	29.1
043021	Avon at Knapp Mill	4155 0943	NRA-SW	1706.0
044001	Frome at East Stoke total	3866 0867	NRA-SW	414.4
044002	Piddle at Baggs Mill	3913 0876	NRA-SW	183.1
044003 *	Asker at Bridport	3470 0928	NRA-SW	49.1
044004	Frome at Dorchester total	3708 0903	NRA-SW	206.0
044006	Sydling Water at Sydling St Nicholas	3632 0997	NRA-SW	12.4
044008 *	Sth Winterbourne at W'bourne Steepleton	3629 0897	NRA-SW	19.9
044009	Wey at Broadwey	3666 0839	NRA-SW	7.0
045001	Exe at Thorverton	2936 1016	NRA-SW	600.9
045002	Exe at Stoodleigh	2943 1178	NRA-SW	421.7
045003	Culm at Wood Mill	3021 1058	NRA-SW	226.1
045004	Axe at Whitford	3262 0953	NRA-SW	288.5
045005	Otter at Dotton	3087 0885	NRA-SW	202.5
045006 *	Quarme at Enterwell	2919 1356	NRA-SW	20.4
045008	Otter at Fenny Bridges	3115 0986	NRA-SW	104.2
045009	Exe at Pixton	2935 1260	NRA-SW	147.6
045010 *	Haddeo at Hartford	2952 1294	NRA-SW	50.0
045011 *	Barle at Brushford	2927 1258	NRA-SW	128.0
045012	Creedy at Cowley	2901 0967	NRA-SW	261.6
045013 *	Tale at Fairmile	3088 0972	NRA-SW	34.4
046002	Teign at Preston	2856 0746	NRA-SW	380.0
046003	Dart at Austins Bridge	2751 0659	NRA-SW	247.6
046005	East Dart at Bellever	2657 0775	NRA-SW	21.5
046006	Erme at Ermington	2642 0532	NRA-SW	43.5
046007 *	West Dart at Dunnabridge	2643 0742	NRA-SW	47.9
046008 *	Avon at Loddiswell	2719 0476	NRA-SW	102.3
047001	Tamar at Gunnislake	2426 0725	NRA-SW	916.9
047003 *	Tavy at Lopwell	2475 0652	NRA-SW	205.9
047004	Lynher at Pillaton Mill	2369 0626	NRA-SW	135.5
047005 *	Ottery at Werrington Park	2337 0866	NRA-SW	120.7
047006 *	Lyd at Lifton Park	2389 0842	NRA-SW	218.1
047007	Yealm at Puslinch	2574 0511	NRA-SW	54.9
047008	Thrushel at Tinhay	2398 0856	NRA-SW	112.7
047009	Tiddy at Tideford	2344 0596	NRA-SW	37.2
047010	Tamar at Crowford Bridge	2290 0991	NRA-SW	76.7
047011 *	Plym at Carn Wood	2522 0613	NRA-SW	79.2
047013	Withey Brook at Bastreet	2244 0764	NRA-SW	16.2
047014	Walkham at Horrabridge	2513 0699	NRA-SW	43.2
047015	Tavy at Denham / Ludbrook	2476 0681	NRA-SW	197.3
047016	Lumburn at Lumburn Bridge	2459 0732	NRA-SW	20.5
047017 *	Wolf at Combe Park Farm	2419 0898	NRA-SW	31.1
048001	Fowey at Trekeivesteps	2227 0698	NRA-SW	36.8
048002 *	Fowey at Restormel one	2108 0613	NRA-SW	171.2
048003	Fal at Tregony	1921 0447	NRA-SW	87.0
048004	Warleggan at Trengoffa	2159 0674	NRA-SW	25.3
048005	Kenwyn at Truro	1820 0450	NRA-SW	19.1
048006 *	Cober at Helston	1654 0273	NRA-SW	40.1
048007	Kennall at Ponsanooth	1762 0377	NRA-SW	26.6
048009 *	St Neot at Craigshill Wood	2184 0662	NRA-SW	22.7
048010	Seaton at Trebrownbridge	2299 0595	NRA-SW	38.1
048011	Fowey at Restormel	2098 0624	NRA-SW	169.1
049001	Camel at Denby	2017 0682	NRA-SW	208.8
049002	Hayle at St Erth	1549 0341	NRA-SW	48.9
049003	De Lank at De Lank	2133 0765	NRA-SW	21.7
049004	Gannel at Gwills	1829 0593	NRA-SW	41.0
050001	Taw at Umberleigh	2608 1237	NRA-SW	826.2
050002	Torridge at Torrington	2500 1185	NRA-SW	663.0
050004 *	Hole Water at Muxworthy	2705 1373	NRA-SW	5.4
050005	West Okement at Vellake	2557 0903	NRA-SW	13.3
050006	Mole at Woodleigh	2660 1211	NRA-SW	327.5
050007	Taw at Taw Bridge	2673 1068	NRA-SW	71.4
050011 *	Okement at Jacobstowe	2592 1019	NRA-SW	82.1
050012 *	Yeo at Veraby	2775 1267	NRA-SW	53.7
050013	Bray at Leehamford Bridge	2677 1399	NRA-SW	17.6
051001	Doniford Stream at Swill Bridge	3088 1428	NRA-SW	75.8
051002	Horner Water at West Luccombe	2898 1458	NRA-SW	20.8
051003	Washford at Beggearn Huish	3040 1395	NRA-SW	36.3
052001 *	Axe at Wookey	3527 1458	NRA-SW	18.2
052002 *	Yeo at Sutton Bingham Res.	3556 1116	NRA-SW	30.3
052003	Halse Water at Bishops Hull	3206 1253	NRA-SW	87.8
052004	Isle at Ashford Mill	3361 1188	NRA-SW	90.1
052005	Tone at Bishops Hull	3206 1250	NRA-SW	202.0
052006	Yeo at Pen Mill	3573 1162	NRA-SW	213.1
052007	Parrett at Chiselborough	3461 1144	NRA-SW	74.8
052008 *	Tone at Clatworthy Reservoir	3044 1313	NRA-SW	18.1
052009	Sheppey at Fenny Castle	3498 1439	NRA-SW	59.6
052010	Brue at Lovington	3590 1318	NRA-SW	135.2
052011	Cary at Somerton	3498 1291	NRA-SW	82.4
052014	Tone at Greenham	3078 1202	NRA-SW	57.2
052015	Land Yeo at Wraxall Bridge	3483 1716	NRA-SW	23.3
052016	Currypool Stream at Currypool Farm	3221 1382	NRA-SW	15.7
052017	Congresbury Yeo at Iwood	3452 1631	NRA-SW	66.6
052020 *	Gallica Stream at Gallica Bridge	3571 1100	NRA-SW	16.4
053001 *	Avon at Melksham	3903 1641	NRA-SW	665.6

Station number	River and station name	Grid reference	Auth-ority	Area (sq km)
053002	Semington Brook at Semington	3907 1605	NRA-SW	157.7
053003 *	Avon at Bath St James	3753 1645	NRA-SW	1595.0
053004	Chew at Compton Dando	3648 1647	NRA-SW	129.5
053005	Midford Brook at Midford	3763 1611	NRA-SW	147.4
053006	Frome(Bristol) at Frenchay	3637 1772	NRA-SW	148.9
053007	Frome(Somerset) at Tellisford	3805 1564	NRA-SW	261.6
053008	Avon at Great Somerford	3966 1832	NRA-SW	303.0
053009	Wellow Brook at Wellow	3741 1581	NRA-SW	72.6
053013	Marden at Stanley	3955 1729	NRA-SW	99.2
053017	Boyd at Bitton	3681 1698	NRA-SW	48.0
053018	Avon at Bathford	3786 1671	NRA-SW	1552.0
053019	Woodbridge Brook at Crab Mill	3949 1866	NRA-SW	46.6
053020	Gauze Brook at Rodbourne	3937 1840	NRA-SW	28.2
053022 *	Avon at Bath ultrasonic	3738 1651	NRA-SW	1605.0
053023	Sherston Avon at Fosseway	3891 1870	NRA-SW	89.7
053024	Tetbury Avon at Brokenborough	3914 1893	NRA-SW	73.6
053025	Mells at Vallis	3757 1491	NRA-SW	119.0
053026	Frome(Bristol) at Frampton Cotterell	3667 1822	NRA-SW	78.5
053028	By Brook at Middlehill	3815 1686	NRA-SW	102.0
053029	Biss at Trowbridge	3854 1579	NRA-SW	
054001	Severn at Bewdley	3782 2762	NRA-ST	4325.0
054002	Avon at Evesham	4040 2438	NRA-ST	2210.0
054004	Sowe at Stoneleigh	4332 2731	NRA-ST	262.0
054005	Severn at Montford	3412 3144	NRA-ST	2025.0
054006	Stour at Callows Lane, Kidderminster	3829 2768	NRA-ST	324.0
054007	Arrow at Broom	4086 2536	NRA-ST	319.0
054008	Teme at Tenbury	3597 2686	NRA-ST	1134.4
054010 *	Stour at Alscot Park	4208 2507	NRA-ST	319.0
054011 *	Salwarpe at Harford Hill	3868 2618	NRA-ST	184.0
054012	Tern at Walcot	3592 3123	NRA-ST	852.0
054013 *	Clywedog at Cribynau	2944 2855	NRA-ST	57.0
054014	Severn at Abermule	3164 2958	NRA-ST	580.0
054015 *	Bow Brook at Besford Bridge	3927 2463	NRA-ST	156.0
054016	Roden at Rodington	3589 3141	NRA-ST	259.0
054017 *	Leadon at Wedderburn Bridge	3777 2234	NRA-ST	293.0
054018	Rea Brook at Hookagate	3486 3092	NRA-ST	178.0
054019	Avon at Stareton	4333 2715	NRA-ST	347.0
054020	Perry at Yeaton	3434 3192	NRA-ST	180.8
054022	Severn at Plynlimon flume	2853 2872	IH	8.7
054023 *	Badsey Brook at Offenham	4063 2449	NRA-ST	95.8
054024	Worfe at Burcote	3747 2953	NRA-ST	258.0
054025	Dulas at Rhos-y-pentref	2950 2824	NRA-ST	52.7
054026 *	Chelt at Slate Mill	3892 2264	NRA-ST	34.5
054027 *	Frome at Ebley Mill	3831 2047	NRA-ST	198.0
054028	Vyrnwy at Llanymynech	3252 3195	NRA-ST	778.0
054029	Teme at Knightsford Bridge	3735 2557	NRA-ST	1480.0
054032	Severn at Saxons Lode	3883 2390	NRA-ST	6850.0
054034	Dowles Brook at Oak Cottage, Dowles	3768 2764	NRA-ST	40.8
054036	Isbourne at Hinton on the Green	4023 2408	NRA-ST	90.7
054038	Tanat at Llanyblodwel	3252 3225	NRA-ST	229.0
054040	Meese at Tibberton	3680 3205	NRA-ST	187.8
054041	Tern at Eaton On Tern	3649 3230	NRA-ST	192.0
054042 *	Clywedog at Clywedog Dm Lower Weir	2914 2867	NRA-ST	49.0
054043 *	Severn at Upton On Severn	3883 2399	NRA-ST	6850.0
054044	Tern at Ternhill	3629 3316	NRA-ST	92.6
054045 *	Perry at Perry Farm	3347 3303	NRA-ST	49.1
054046	Worfe at Cosford	3781 3046	NRA-ST	54.9
054047 *	Perry at Ruyton Bridge	3403 3223	NRA-ST	155.0
054048	Dene at Wellesbourne	4273 2556	NRA-ST	102.0
054049	Leam at Princes Drive Weir	4307 2654	NRA-ST	362.0
054050	Leam at Eathorpe	4388 2688	NRA-ST	300.0
054052 *	Bailey Brook at Ternhill	3629 3316	NRA-ST	34.4
054055 *	Rea at Nean Sollars	3664 2724	NRA-ST	129.0
054056 *	Clun at Clungunford	3393 2786	NRA-ST	195.0
054057	Severn at Haw Bridge	3844 2279	NRA-ST	9895.0
054058 *	Stoke Park Brook at Stoke Park	3644 3260	NRA-ST	14.3
054059 *	Allford Brook at Allford	3654 3223	NRA-ST	10.2
054060 *	Potford Brook at Sandyford Bridge	3634 3220	NRA-ST	25.0
054061 *	Hodnet Brook at Hodnet	3628 3288	NRA-ST	5.1
054062 *	Stoke Brook at Stoke	3637 3280	NRA-ST	13.7
054063 *	Stour at Prestwood Hospital	3865 2858	NRA-ST	89.9
054065 *	Roden at Stanton	3565 3241	NRA-ST	210.0
054066 *	Platt Brook at Platt	3628 3229	NRA-ST	15.7
054067 *	Smestow Brook at Swindon	3861 2906	NRA-ST	81.3
054068 *	Tetchill Brook at Hordley	3379 3288	NRA-ST	21.2
054069 *	Springs Brook at Lower Hordley	3387 3297	NRA-ST	10.4
054070 *	War Brook at Walford	3432 3198	NRA-ST	22.5
054080 *	Severn at Dolwen	2996 2851	NRA-ST	187.0
054081	Clywedog at Bryntail	2913 2868	NRA-ST	49.0
054083 *	Crow Brook at Horton	3678 3141	NRA-ST	16.7
054084 *	Cannop Brook at Parkend	3616 2075	NRA-ST	31.5
054085 *	Cannop Brook at Cannop Cross	3609 2115	NRA-ST	10.4
054086	Cownwy Diversion at Cownwy Weir	2999 3179	NRA-ST	13.2
054087 *	Allford Brook at Childs Ercall	3667 3228	NRA-ST	4.7
054088	Little Avon at Berkeley Kennels	3683 1988	NRA-SW	134.0
054089	Avon at Bredon	3921 2374	NRA-ST	2674.0
054090	Tanllwyth at Tanllwyth Flume	2843 2876	IH	0.9
054091	Severn at Hafren Flume	2843 2878	IH	3.6
054092	Hore at Hore Flume	2846 2873	IH	3.2
054094	Strine at Crudgington	3640 3175	NRA-ST	134.0
054095	Severn at Buildwas	3644 3044	NRA-ST	3717.0
054098	Hadley Brook at Wards Bridge	3870 2631	NRA-ST	53.4
055002	Wye at Belmont	3485 2388	NRA-WEL	1895.9
055003 *	Lugg at Lugwardine	3548 2405	NRA-WEL	885.8
055004 *	Irfon at Abernant	2892 2460	NRA-WEL	72.8
055005 *	Wye at Rhayader	2969 2676	NRA-WEL	166.8
055006 *	Elan at Caban Coch Reservoir	2926 2645	NRA-WEL	184.0
055007	Wye at Erwood	3076 2445	NRA-WEL	1282.1
055008	Wye at Cefn Brwyn	2829 2838	IH	10.6
055009 *	Monnow at Kentchurch	3419 2251	NRA-WEL	357.4
055010 *	Wye at Pant Mawr	2843 2825	NRA-WEL	27.2
055011 *	Ithon at Llandewi	3105 2683	NRA-WEL	111.4
055012	Irfon at Cilmery	2995 2507	NRA-WEL	244.2
055013	Arrow at Titley Mill	3328 2585	NRA-WEL	126.4
055014	Lugg at Byton	3364 2647	NRA-WEL	203.3
055015 *	Honddu at Tafolog	3277 2294	NRA-WEL	25.1
055016	Ithon at Disserth	3024 2578	NRA-WEL	358.0
055017 *	Chwefru at Carreg-y-wen	2998 2531	NRA-WEL	29.0
055018	Frome at Yarkhill	3615 2428	NRA-WEL	144.0
055021	Lugg at Butts Bridge	3502 2589	NRA-WEL	371.0
055022 *	Trothy at Mitchel Troy	3503 2112	NRA-WEL	142.0
055023	Wye at Redbrook	3528 2110	NRA-WEL	4010.0
055025	Llynfi at Three Cocks	3166 2373	NRA-WEL	132.0
055026	Wye at Ddol Farm	2976 2676	NRA-WEL	174.0
055027 *	Rudhall Brook at Sandford Bridge	3641 2257	NRA-WEL	13.2
055028	Frome at Bishops Frome	3667 2489	NRA-WEL	77.7
055029	Monnow at Grosmont	3415 2249	NRA-WEL	354.0
055030 *	Claerwen at Dol-y-mynach	2910 2620	NRA-WEL	95.3
055031	Yazor Brook at Three Elms	3492 2415	NRA-WEL	42.3
055032	Elan at Elan Village	2934 2653	NRA-WEL	184.0
055033	Wye at Gwy flume	2824 2853	IH	3.9
055034 *	Cyff at Cyff flume	2824 2842	IH	3.1
055035 *	Iago at Iago flume	2826 2854	IH	1.1
056001	Usk at Chain Bridge	3345 2056	NRA-WEL	911.7
056002	Ebbw at Rhiwderyn	3259 1889	NRA-WEL	216.5
056003 *	Honddu at The Forge Brecon	3051 2297	NRA-WEL	62.1
056004 *	Usk at Llandetty	3127 2203	NRA-WEL	543.9
056005	Lwyd at Ponthir	3330 1924	NRA-WEL	98.1
056006 *	Usk at Trallong	2947 2295	NRA-WEL	183.8
056007	Senni at Pont Hen Hafod	2928 2255	NRA-WEL	19.9
056008 *	Monks Ditch at Llanwern	3372 1885	NRA-WEL	15.4
056010	Usk at Trostrey Weir	3358 2042	NRA-WEL	927.2
056011 *	Sirhowy at Wattsville	3206 1912	NRA-WEL	76.1
056012 *	Grwyne at Millbrook	3241 2176	NRA-WEL	82.2
056013	Yscir at Pontaryscir	3003 2304	NRA-WEL	62.8
056014	Usk at Usk Reservoir	2840 2290	NRA-WEL	17.0
056015	Olway Brook at Olway Inn	3384 2010	NRA-WEL	105.1
056016 *	Caerfanell Outfall at Talybont Reservoir	3104 2206	NRA-WEL	32.4
057001 *	Taf Fechan at Taf Fechan Reservoir	3060 2117	NRA-WEL	33.7
057002 *	Taf Fawr at Llwynon Reservoir	3012 2111	NRA-WEL	43.0
057003 *	Taff at Tongwynlais	3132 1818	NRA-WEL	486.9
057004	Cynon at Abercynon	3079 1956	NRA-WEL	106.0
057005	Taff at Pontypridd	3079 1897	NRA-WEL	454.8
057006	Rhondda at Trehafod	3054 1909	NRA-WEL	100.5
057007	Taff at Fiddlers Elbow	3089 1951	NRA-WEL	194.5
057008	Rhymney at Llanedeyrn	3225 1821	NRA-WEL	178.7
057009	Ely at St Fagans	3121 1770	NRA-WEL	145.0
057010	Ely at Laneley	3034 1827	NRA-WEL	39.4
057011 *	Blaen Taf Fawr at Beacons Reservoir	2987 2193	NRA-WEL	5.1
057012 *	Garwnant at Llwynon Reservoir	3004 2129	NRA-WEL	4.3
057015	Taff at Merthyr Tydfil	3043 2068	NRA-WEL	104.1
057016	Taf Fechan at Pontsticill	3060 2115	NRA-WEL	33.8
058001	Ogmore at Bridgend	2904 1794	NRA-WEL	158.0
058002	Neath at Resolven	2815 2017	NRA-WEL	190.9
058003 *	Ewenny at Ewenny Priory	2914 1780	NRA-WEL	62.9
058005	Ogmore at Brynmenyn	2904 1844	NRA-WEL	74.3
058006	Mellte at Pontneddfechan	2915 2082	NRA-WEL	65.8
058007	Llynfi at Coytrahen	2891 1855	NRA-WEL	50.2
058008	Dulais at Cilfrew	2778 2008	NRA-WEL	43.0
058009	Ewenny at Keepers Lodge	2920 1782	NRA-WEL	62.5
058010 *	Hepste at Esgair Carnau	2969 2134	NRA-WEL	11.0
058011	Thaw at Gigman Bridge	3017 1716	NRA-WEL	49.2
058012	Afan at Marcroft Weir	2771 1910	NRA-WEL	87.8
059001	Tawe at Ynystanglws	2685 1998	NRA-WEL	227.7
059002	Loughor at Tir-y-dail	2623 2127	NRA-WEL	46.4
060002	Cothi at Felin Mynachdy	2508 2225	NRA-WEL	297.8
060003	Taf at Clog-y-Fran	2238 2160	NRA-WEL	217.3
060004 *	Dewi Fawr at Glasfryn Ford	2290 2175	NRA-WEL	40.1
060005	Bran at Llandovery	2771 2343	NRA-WEL	66.8
060006	Gwili at Glangwili	2431 2220	NRA-WEL	129.5
060007	Tywi at Dolau Hirion	2762 2362	NRA-WEL	231.8
060008	Tywi at Ystradffin	2786 2472	NRA-WEL	89.8
060009	Sawdde at Felin-y-cwm	2712 2266	NRA-WEL	81.1
060010	Tywi at Nantgaredig	2485 2206	NRA-WEL	1090.4
060012 *	Twrch at Ddol Las	2650 2440	NRA-WEL	20.7
060013 *	Cothi at Pont Ynys Brechfa	2537 2301	NRA-WEL	261.6
061001	Western Cleddau at Prendergast Mill	1954 2177	NRA-WEL	197.6
061002	Eastern Cleddau at Canaston Bridge	2072 2153	NRA-WEL	183.1
061003	Gwaun at Cilrhedyn Bridge	2005 2349	NRA-WEL	31.3
061004 *	Western Cleddau at Redhill	1942 2184	NRA-WEL	197.6
062001	Teifi at Glan Teifi	2244 2416	NRA-WEL	893.6
062002 *	Teifi at Llanfair	2433 2406	NRA-WEL	510.0
063001	Ystwyth at Pont Llolwyn	2591 2774	NRA-WEL	169.6
063002 *	Rheidol at Llanbadarn Fawr	2601 2804	NRA-WEL	182.1
063003 *	Wyre at Llanrhystyd	2542 2698	NRA-WEL	40.6
063004	Ystwyth at Cwm Ystwyth	2791 2737	NRA-WEL	32.1
063005 *	Maesnant at Nant-y-Moch C	2778 2877	IH	0.6
063006 *	Maesnant Fach at Nant-y-Moch E	2765 2865	IH	0.8
064001	Dyfi at Dyfi Bridge	2745 3019	NRA-WEL	471.3
064002	Dysynni at Pont-y-Garth	2632 3066	NRA-WEL	75.1
064006	Leri at Dolybont	2635 2882	NRA-WEL	47.2
064007 *	Delyn at Llanbrynmair	2899 3062	IH	1.1
064008 *	Cwm at Llanbrynmair E	2916 3087	IH	3.0
065001	Glaslyn at Beddgelert	2592 3478	NRA-WEL	68.6
065002 *	Dwyryd at Maentwrog	2670 3415	NRA-WEL	78.2
065004	Gwyrfai at Bontnewydd	2484 3599	NRA-WEL	47.9
065005	Erch at Pencaenewydd	2400 3404	NRA-WEL	18.1
065006	Seiont at Peblig Mill	2493 3623	NRA-WEL	74.4
065007	Dwyfawr at Garndolbenmaen	2499 3429	NRA-WEL	52.4
066001	Clwyd at Pont-y-cambwll	3069 3709	NRA-WEL	404.0
066002 *	Elwy at Pant yr Onen	3021 3704	NRA-WEL	220.0
066003	Aled at Bryn Aled	2957 3703	NRA-WEL	70.0
066004 *	Wheeler at Bodfari	3105 3714	NRA-WEL	62.9
066005	Clwyd at Ruthin Weir	3122 3592	NRA-WEL	95.3
066006	Elwy at Pont-y-Gwyddel	2952 3718	NRA-WEL	194.0
066008	Aled at Aled Isaf Reservoir	2915 3598	NRA-WEL	11.6
066011	Conwy at Cwm Llanerch	2802 3581	NRA-WEL	344.5
067001	Dee at Bala	2942 3357	NRA-WEL	261.6
067002 *	Dee at Erbistock Rectory	3357 3413	NRA-WEL	1040.0
067003	Brenig at Llyn Brenig outflow	2974 3539	NRA-WEL	20.2
067005 *	Ceiriog at Brynkinalt Weir	3295 3373	NRA-WEL	113.7
067006	Alwen at Druid	3042 3436	NRA-WEL	184.7
067008	Alyn at Pont-y-Capel	3336 3541	NRA-WEL	227.1
067009	Alyn at Rhydymwyn	3206 3667	NRA-WEL	77.8
067010 *	Gelyn at Cynefail	2843 3420	NRA-WEL	13.1
067011 *	Nant Aberderfel at Nant Aberderfel	2851 3392	NRA-WEL	3.7
067012 *	Tryweryn at Upper Tryweryn	2838 3398	NRA-WEL	27.2
067013 *	Hirnant at Plas Rhiwedog	2946 3349	NRA-WEL	33.9
067015	Dee at Manley Hall	3348 3415	NRA-WEL	1019.3
067016 *	Worthenbury Brook at Worthenbury	3418 3464	NRA-WEL	142.1
067017	Tryweryn at Llyn Celyn outflow	2880 3399	NRA-WEL	59.9
067018	Dee at New Inn	2874 3308	NRA-WEL	53.9
067020	Dee at Chester Weir	3408 3659	NRA-WEL	1816.8
067025	Clywedog at Bowling Bank	3396 3483	NRA-WEL	98.6

Station number	River and station name	Grid reference	Auth-ority	Area (sq km)
067026 *	Dee at Eccleston Ferry	3415 3612	NRA-WEL	1816.8
067028 *	Ceidiog at Llandrillo	3034 3371	NRA-WEL	36.5
067029 *	Trystion at Pen-y-felin Fawr	3066 3405	NRA-WEL	12.3
068001	Weaver at Ashbrook	3670 3633	NRA-NW	622.0
068002 *	Gowy at Picton	3443 3714	NRA-NW	156.2
068003	Dane at Rudheath	3668 3718	NRA-NW	407.1
068004	Wistaston Brook at Marshfield Bridge	3674 3552	NRA-NW	92.7
068005	Weaver at Audlem	3653 3431	NRA-NW	207.0
068006 *	Dane at Hulme Walfield	3845 3644	NRA-NW	150.0
068007	Wincham Brook at Lostock Gralam	3697 3757	NRA-NW	148.0
068010 *	Fender at Ford	3281 3880	NRA-NW	18.4
068015	Gowy at Huxley	3497 3624	NRA-NW	49.0
068018 *	Dane at Congleton Park	3861 3632	NRA-NW	145.0
068020	Gowy at Bridge Trafford	3448 3711	NRA-NW	156.0
069001 *	Mersey at Irlam Weir	3728 3936	NRA-NW	679.0
069002	Irwell at Adelphi Weir	3824 3987	NRA-NW	559.4
069003	Irk at Scotland Weir	3841 3992	NRA-NW	72.5
069004 *	Etherow at Bottoms Reservoir	4023 3971	NRA-NW	78.2
069005 *	Glaze Brook at Little Woolden Hall	3685 3939	NRA-NW	152.0
069006	Bollin at Dunham Massey	3727 3875	NRA-NW	256.0
069007	Mersey at Ashton Weir	3772 3936	NRA-NW	660.0
069008	Dean at Stanneylands	3846 3830	NRA-NW	51.8
069011	Micker Brook at Cheadle	3855 3889	NRA-NW	67.3
069012	Bollin at Wilmslow	3850 3815	NRA-NW	72.5
069013	Sinderland Brook at Partington	3726 3905	NRA-NW	44.8
069015	Etherow at Compstall	3962 3908	NRA-NW	156.0
069017	Goyt at Marple Bridge	3964 3898	NRA-NW	183.0
069018 *	Newton Brook at Newton Le Willows	3585 3933	NRA-NW	32.8
069019 *	Worsley Brook at Eccles	3753 3980	NRA-NW	24.9
069020	Medlock at London Road	3849 3975	NRA-NW	57.5
069023	Roch at Blackford Bridge	3807 4077	NRA-NW	186.0
069024	Croal at Farnworth Weir	3743 4068	NRA-NW	145.0
069027	Tame at Portwood	3906 3918	NRA-NW	150.0
069030	Sankey Brook at Causey Bridge	3588 3922	NRA-NW	154.0
069031 *	Ditton Brook at Greens Bridge	3457 3865	NRA-NW	47.9
069032	Alt at Kirkby	3392 3983	NRA-NW	90.1
069034 *	Musbury Brook at Helmshore	3775 4213	NRA-NW	3.1
069035	Irwell at Bury Bridge	3797 4109	NRA-NW	155.0
069037 *	Mersey at Westy	3617 3877	NRA-NW	2030.0
069040	Irwell at Stubbins	3793 4188	NRA-NW	105.0
069041	Tame at Broomstair Bridge	3938 3953	NRA-NW	113.0
070002	Douglas at Wanes Blades Bridge	3476 4126	NRA-NW	198.0
070003	Douglas at Central Park Wigan	3587 4061	NRA-NW	55.3
070004	Yarrow at Croston Mill	3498 4180	NRA-NW	74.4
070005	Lostock at Littlewood Bridge	3497 4197	NRA-NW	58.0
071001	Ribble at Samlesbury	3589 4304	NRA-NW	1145.0
071003 *	Croasdale at Croasdale flume	3706 4546	NWW -	10.4
071004	Calder at Whalley Weir	3729 4360	NRA-NW	316.0
071005 *	Bottoms Beck at Bottoms Beck flume	3745 4565	NWW	10.6
071006	Ribble at Henthorn	3722 4392	NRA-NW	456.0
071007 *	Ribble at Hodderfoot	3709 4379	NRA-NW	720.0
071008	Hodder at Hodder Place	3704 4399	NRA-NW	261.0
071009	Ribble at Jumbles Rock	3702 4376	NRA-NW	1053.0
071010	Pendle Water at Barden Lane	3837 4351	NRA-NW	108.0
071011	Ribble at Arnford	3839 4556	NRA-NW	204.0
071013	Darwen at Ewood Bridge	3677 4262	NRA-NW	39.5
071014	Darwen at Blue Bridge	3565 4278	NRA-NW	128.0
072001 *	Lune at Halton	3503 4647	NRA-NW	994.6
072002	Wyre at St Michaels	3463 4411	NRA-NW	275.0
072004	Lune at Caton	3529 4653	NRA-NW	983.0
072005	Lune at Killington New Bridge	3622 4907	NRA-NW	219.0
072006	Lune at Kirkby Lonsdale	3615 4778	NRA-NW	507.1
072007	Brock at U/S A6	3512 4405	NRA-NW	32.0
072008	Wyre at Garstang	3488 4447	NRA-NW	114.0
072009	Wenning at Wennington Road Bridge	3615 4701	NRA-NW	142.0
072011	Rawthey at Brigg Flatts	3639 4911	NRA-NW	200.0
072014	Conder at Galgate	3481 4554	NRA-NW	28.5
072015	Lune at Lunes Bridge	3612 5029	NRA-NW	141.5
072016	Wyre at Scorton Weir	3501 4500	NRA-NW	88.8
073001 *	Leven at Newby Bridge	3371 4863	NRA-NW	241.0
073002	Crake at Low Nibthwaite	3294 4882	NRA-NW	73.0
073003	Kent at Burneside	3507 4956	NRA-NW	73.6
073005	Kent at Sedgwick	3509 4874	NRA-NW	209.0
073006	Cunsey Beck at Eel House Bridge	3369 4940	NRA-NW	18.7
073008	Bela at Beetham	3496 4806	NRA-NW	131.0
073009	Sprint at Sprint Mill	3514 4961	NRA-NW	34.6
073010	Leven at Newby Bridge	3367 4863	NRA-NW	247.0
073011	Mint at Mint Bridge	3524 4944	NRA-NW	65.8
073013	Rothay at Miller Bridge House	3371 5042	NRA-NW	64.0
073014	Brathay at Jeffy Knotts	3360 5034	NRA-NW	57.4
074001	Duddon at Duddon Hall	3196 4896	NRA-NW	85.7
074002	Irt at Galesyke	3136 5038	NRA-NW	44.2
074003	Ehen at Ennerdale Weir	3084 5154	NRA-NW	44.2
074005	Ehen at Braystones	3009 5061	NRA-NW	125.5
074006	Calder at Calder Hall	3035 5045	NRA-NW	44.8
074007	Esk at Cropple How	3131 4978	NRA-NW	70.2
074008	Duddon at Ulpha	3209 4947	NRA-NW	47.9
075001	St Johns Beck at Thirlmere Reservoir	3313 5195	NRA-NW	42.1
075002	Derwent at Camerton	3038 5305	NRA-NW	663.0
075003	Derwent at Ouse Bridge	3199 5321	NRA-NW	363.0
075004	Cocker at Southwaite Bridge	3131 5281	NRA-NW	116.6
075005	Derwent at Portinscale	3251 5239	NRA-NW	235.0
075006 *	Newlands Beck at Braithwaite	3240 5239	NRA-NW	33.9
075007 *	Glenderamackin at Threlkeld	3323 5248	NRA-NW	64.5
075009	Greta at Low Briery	3286 5242	NRA-NW	145.6
075016	Cocker at Scalehill	3149 5214	NRA-NW	64.0
075017	Ellen at Bullgill	3096 5384	NRA-NW	96.0
076001	Haweswater Beck at Burnbanks	3508 5159	NRA-NW	33.0
076002	Eden at Warwick Bridge	3470 5567	NRA-NW	1366.7
076003	Eamont at Udford	3578 5306	NRA-NW	396.2
076004	Lowther at Eamont Bridge	3527 5287	NRA-NW	158.5
076005	Eden at Temple Sowerby	3605 5283	NRA-NW	616.4
076007	Eden at Sheepmount	3390 5571	NRA-NW	2286.5
076008	Irthing at Greenholme	3486 5581	NRA-NW	334.6
076009	Caldew at Holm Hill	3378 5469	NRA-NW	147.2
076010	Petteril at Harraby Green	3412 5545	NRA-NW	160.0
076011	Coal Burn at Coalburn	3693 5777	IH	1.5
076014	Eden at Kirkby Stephen	3773 5097	NRA-NW	69.4
076015	Eamont at Pooley Bridge	3472 5249	NRA-NW	145.0

Station number	River and station name	Grid reference	Auth-ority	Area (sq km)
077001	Esk at Netherby	3390 5718	NRA-NW	841.7
077002	Esk at Canonbie	3397 5751	SRPB	495.0
077003	Liddel Water at Rowanburnfoot	3415 5759	SRPB	319.0
077004	Kirtle Water at Mossknowe	3285 5693	SRPB	72.0
077005	Lyne at Cliff Bridge	3412 5662	NRA-NW	191.0
078001 *	Annan at St Mungos Manse	3125 5755	SRPB	730.3
078002 *	Ae at Etshieshields	3068 5852	SRPB	143.2
078003	Annan at Brydekirk	3191 5704	SRPB	925.0
078004	Kinnel Water at Redhall	3077 5868	SRPB	76.1
078005	Kinnel Water at Bridgemuir	3091 5845	SRPB	229.0
078006	Annan at Woodfoot	3099 6010	SRPB	217.0
079001 *	Afton Water at Afton Reservoir	2631 6050	SRPB	8.5
079002	Nith at Friars Carse	2923 5851	SRPB	799.0
079003	Nith at Hall Bridge	2684 6129	SRPB	155.0
079004	Scar Water at Capenoch	2845 5940	SRPB	142.0
079005	Cluden Water at Fiddlers Ford	2928 5795	SRPB	238.0
079006	Nith at Drumlanrig	2858 5994	SRPB	471.0
079007	Lochar Water at Kirkblain Bridge	3026 5695	SRPB	125.0
080001	Urr at Dalbeattie	2822 5610	SRPB	199.0
080002	Dee at Glenlochar	2733 5641	SRPB	809.0
080003	White Laggan Burn at Loch Dee	2468 5781	SRPB	5.7
080004	Greenburn at Loch Dee	2481 5791	SRPB	2.6
080005	Dargall Lane at Loch Dee	2451 5787	SRPB	2.1
080006	Blackwater at Loch Dee	2478 5797	SRPB	15.6
081001 *	Penwhirn Burn at Penwhirn Reservoir	2128 5694	DGRW	18.2
081002	Cree at Newton Stewart	2412 5653	SRPB	368.0
081003	Luce at Airyhemming	2180 5599	SRPB	171.0
081004	Bladnoch at Low Malzie	2382 5545	SRPB	334.0
081005	Piltanton Burn at Barsolus	2107 5564	SRPB	34.2
081006	Water of Minnoch at Minnoch Bridge	2363 5746	SRPB	141.0
081007	Water of Fleet at Rusko	2592 5590	SRPB	
082001	Girvan at Robstone	2217 5997	CRPB	245.5
082002	Doon at Auchendrane	2338 6160	CRPB	323.8
082003	Stinchar at Balnowlart	2108 5832	CRPB	341.0
083001 *	Caaf Water at Knockendon Reservoir	2245 6514	SRCW	6.0
083002 *	Garnock at Dalry	2293 6488	CRPB	88.8
083003	Ayr at Catrine	2525 6259	CRPB	166.3
083004	Lugar at Langholm	2508 6217	CRPB	181.0
083005	Irvine at Shewalton	2345 6369	CRPB	380.7
083006	Ayr at Mainholm	2361 6216	CRPB	574.0
083007	Lugton Water at Eglinton	2315 6420	CRPB	54.6
083008	Annick Water at Dreghorn	2352 6384	CRPB	95.3
083009	Garnock at Kilwinning	2307 6424	CRPB	183.8
083010	Irvine at Newmilns	2532 6372	CRPB	72.8
084001	Kelvin at Killermont	2558 6705	CRPB	335.1
084002 *	Calder at Muirshiel	2309 6638	SRCW	12.4
084003	Clyde at Hazelbank	2835 6452	CRPB	1092.9
084004	Clyde at Sills	2927 6424	CRPB	741.8
084005	Clyde at Blairston	2704 6579	CRPB	1704.2
084006 *	Kelvin at Bridgend	2672 6749	CRPB	63.7
084007	South Calder Wtr at Forgewood	2751 6585	CRPB	93.0
084008	Rotten Calder Wtr at Redlees	2679 6604	CRPB	51.3
084009	Nethan at Kirkmuirhill	2809 6429	CRPB	66.0
084011	Gryfe at Craigend	2415 6664	CRPB	71.0
084012	White Cart Water at Hawkhead	2499 6629	CRPB	227.2
084013	Clyde at Daldowie	2672 6616	CRPB	1903.1
084014	Avon Water at Fairholm	2755 6518	CRPB	265.5
084015	Kelvin at Dryfield	2638 6739	CRPB	235.4
084016	Luggie Water at Condorrat	2739 6725	CRPB	33.9
084017	Black Cart Water at Milliken Park	2411 6620	CRPB	103.1
084018	Clyde at Tulliford Mill	2891 6404	CRPB	932.6
084019	North Calder Wtr at Calderpark	2681 6625	CRPB	129.8
084020	Glazert Water at Milton of Campsie	2656 6763	CRPB	51.9
084021 *	White Cart Water at Netherlee	2587 6597	CRPB	91.6
084022	Duneaton at Maidencots	2929 6259	CRPB	110.3
084023	Bothlin Burn at Auchengeich	2680 6717	CRPB	35.7
084024	North Calder Wtr at Hillend	2828 6678	CRPB	19.9
084025	Luggie Water at Oxgang	2668 6734	CRPB	87.7
084026	Allander Water at Milngavie	2558 6738	CRPB	32.8
084027	North Calder Wtr at Calderbank	2765 6624	CRPB	60.6
084028	Monkland Canal at Woodhall	2765 6626	CRPB	60.6
084029	Cander Water at Candermill	2765 6471	CRPB	24.5
084030	White Cart Water at Overlee	2579 6575	CRPB	111.8
085001	Leven at Linnbrane	2394 6803	CRPB	784.3
085002	Endrick Water at Gaidraw	2485 6866	CRPB	219.9
085003	Falloch at Glen Falloch	2321 7197	CRPB	80.3
085004	Luss Water at Luss	2356 6929	CRPB	35.3
086001	Little Eachaig at Dalinlongart	2143 6821	CRPB	30.8
086002	Eachaig at Eckford	2140 6843	CRPB	139.9
089008	Eas Daimh at Eas Daimh	2239 7276	CRPB	4.5
089009	Eas ÀGhaill at Succoth	2209 7265	CRPB	9.7
090003	Nevis at Claggan	2116 7742	HRPB	76.8
091002	Lochy at Camisky	2145 7805	HRPB	1252.0
093001	Carron at New Kelso	1942 8429	HRPB	137.8
094001	Ewe at Poolewe	1859 8803	HRPB	441.1
095001	Inver at Little Assynt	2147 9250	HRPB	137.5
095002	Broom at Inverbroom	2184 8842	HRPB	141.4
096001	Halladale at Halladale	2891 9561	HRPB	204.6
096002	Naver at Apigill	2713 9568	HRPB	477.0
096003	Strathy at Strathy Bridge	2836 9652	HRPB	111.8
096004	Strathmore at Altnabad	2453 9429	HRPB	105.0
097001 *	Calder Burn at Achavarn	3085 9596	HRCW	24.5
097002	Thurso at Halkirk	3131 9595	HRPB	412.8
101001 *	Eastern Yar at Alverstone Mill	4577 0857	NRA-S	57.5
101002	Medina at Upper Shide	4503 0874	NRA-S	29.8
101003	Lukely Brook at Newport	4491 0886	NRA-S	18.2
101004	Eastern Yar at Burnt House	4583 0853	NRA-S	59.6
101005	Eastern Yar at Budbridge	4531 0835	NRA-S	22.5
101006	Wroxall Stream at Waightshale	4536 0839	NRA-S	15.8
101007	Scotchells Brook at Burnt House	4583 0852	NRA-S	9.2

Station number		River and station name	Grid reference	Auth-ority	Area (sq km)
102001		Cefni at Bodffordd	2429 3770	NRA-WEL	25.0
106001		Creed at Creed Bridge	1402 9325	HRPB	43.4
201002	*	Fairy Water at Dudgeon Bridge	*2406 3758*	DOEN	161.2
201005		Camowen at Camowen Terrace	*2460 3730*	DOEN	274.6
201006	*	Drumragh at Campsie Bridge	*2458 3722*	DOEN	324.6
201007		Burn Dennet at Burndennet Bridge	*2372 4047*	DOEN	145.3
201008		Derg at Castlederg	*2265 3842*	DOEN	337.3
201009	*	Owenkillew at Crosh	*2418 3866*	DOEN	442.4
201010	*	Mourne at Drumnabuoy House	*2347 3960*	DOEN	1844.5
202001	*	Roe at Ardnargle	*2674 4247*	DOEN	365.6
202002	*	Faughan at Drumahoe	*2464 4151*	DOEN	272.3
203010		Blackwater at Maydown Bridge	*2820 3519*	DOEN	951.4
203011	*	Main at Dromona	*3052 4086*	DOEN	228.8
203012		Ballinderry at Ballinderry Bridge	*2926 3799*	DOEN	419.5
203013	*	Main at Andraid	*3092 3973*	DOEN	646.8
203017	*	Upper Bann at Dynes Bridge	*3043 3509*	DOEN	335.6
203018	*	Six Mile Water at Antrim	*3146 3867*	DOEN	277.3
203019	*	Claudy at Glenone Bridge	*2962 4037*	DOEN	130.1
203020		Moyola at Moyola New Bridge	*2955 3905*	DOEN	306.5
203021	*	Kells Water at Currys Bridge	*3106 3971*	DOEN	127.0
203023	*	Torrent at The Moor Bridge	*2858 3649*	DOEN	59.9
203024	*	Cusher at Gambles Bridge	*3048 3471*	DOEN	176.7
203025	*	Callan at Callan New Bridge	*2893 3524*	DOEN	164.1
203026	*	Glenavy at Glenavy	*3149 3725*	DOEN	44.6
203027	*	Braid at Ballee	*3097 4014*	DOEN	177.2
203028		Agivey at White Hill	*2883 4193*	DOEN	98.9
203029	*	Six Mile Water at Ballyclare	*3282 3902*	DOEN	58.4
203033	*	Upper Bann at Bannfield	*3233 3341*	DOEN	100.9
203038	*	Rocky at Rocky Mountain	*3243 3265*	DOEN	6.7
203040	*	Lower Bann at Movanagher	*2931 4154*	DOEN	5209.8
203042	*	Crumlin at Cidercourt Bridge	*3135 3765*	DOEN	
203092	*	Main at Dunminning Lower	*3051 4111*	DOEN	211.8
203093	*	Main at Shane's Viaduct	*3086 3896*	DOEN	704.2
204001	*	Bush at Seneirl	*2942 4362*	DOEN	306.1
205003	*	Lagan at Dunmurry	*3299 3679*	DOEN	444.7
205004		Lagan at Newforge	*3329 3693*	DOEN	490.4
205005		Ravernet at Ravernet	*3267 3613*	DOEN	69.5
205006	*	Lagan at Blaris	*3259 3628*	DOEN	315.9
205008	*	Lagan at Drummiller	*3236 3525*	DOEN	85.2
205010	*	Lagan at Banoge	*3123 3540*	DOEN	189.8
205020	*	Enler at Comber	*3459 3697*	DOEN	59.8
206001	*	Clanrye at Mount Mill Bridge	*3086 3309*	DOEN	132.7
206002	*	Jerretspass at Jerretspass	*3064 3332*	DOEN	41.7
236005	*	Colebrooke at Ballindarragh Bridge	*2331 3359*	DOEN	309.1
236007	*	Sillees at Drumrainy Bridge	*2205 3400*	DOEN	167.6

† Irish Grid references are italicised.

* = closed, or no data for post 1990 have been received.

Refer to pages 170 and 171 for key to measuring authority codes.

Background

Groundwater may be obtained from almost any stratum in the sedimentary succession in the British Isles, as well as from igneous and metamorphic rocks. In many, such as clays and shales, volcanics and metamorphics, the permeable zone may well be limited to the depth to which weathering may reach, this is unlikely to be more than some 50 metres beneath the ground surface. In those strata which are not generally recognised to be aquifers, well-yields tend to be small (of the order of only a few cubic metres per day), uncertain as a continuous source (tending to fail in prolonged droughts), with an indifferent groundwater quality, and with the sources vulnerable to pollution.

The more generally recognised aquifers are listed in Table 8, with the Chalk and Upper Greensand, the Lincolnshire Limestone and the Permo-Triassic sandstones as the most important from the viewpoint of public supply. From such aquifers as these, yields of 3000 to 4500 cubic metres a day are not unusual. For the next category, including the Lower Greensand and the Magnesian Limestone, yields to individual wells of 1500 to 3000 cubic metres a day can generally be expected. In the other aquifers, whilst occasional sources sufficient for large supplies may be developed, they tend to be important only locally. The outcrop areas of the major aquifers are shown in Figure 9; throughout Wales, Scotland and Northern Ireland, aquifers are less extensively developed and tend to be only of relatively local importance.

The groundwater resources of an aquifer are naturally replenished from rainfall. During the summer months, when the potential evapotranspiration is high and soil moisture deficits are appreciable, little infiltration takes place. There is a notable exception to this rule in the Eden valley of Cumbria where, enclosed between the massifs of Cross Fell and the Lake District, sufficiently heavy and continuous summer rainfall occurs to maintain infiltration through part at least of most summers. The normal recharge of an aquifer takes place during the winter months when the potential evapotranspiration is low and soil moisture deficits are negligible.

Only the largest artificial reservoirs in the United Kingdom have sufficient capacity to support demands through the driest summers, assuming that they were full at the start of the summer, without some continuous contributions from river intakes. Prolonged dry spells lead, in many rivers, to reduced flow, particularly where the natural groundwater contribution (termed baseflow) is limited. Consequently, while surface water droughts may be in part due to the failure of runoff from winter rainfall to fill the reservoirs, they are more frequently caused by a decrease in the summer flows of streams and rivers. Surface water droughts do, however, lead to increased consumption of groundwater (where available). By way of contrast, a groundwater drought is caused by a lack of winter rainfall. Potentially, the most serious droughts occur when, as in 1975/76, a dry summer succeeds a notably dry winter, or as in 1988–92 in eastern England, recharge is significantly below average over two or three successive winters.

The Observation Borehole Network

Groundwater level observation wells (in this context, a well includes both shafts – constructed by hand digging – and boreholes – constructed by machinery) are generally used for one of two purposes: to monitor levels regionally and thus to estimate groundwater resource fluctuations, or to monitor the effects locally of groundwater abstractions. The number of observation wells required in different areas varies widely. Over the last two decades, a target density was sought of one well to 25 to 35 km^2.

The observation well network was reviewed in 1981 by the British Geological Survey (then the Institute of Geological Sciences) with the aim of selecting 200 to 300 sites from the existing national archive, to be used for periodical assessments of the national groundwater situation. The selection was based upon the hydrogeological units identified in an investigation of the groundwater resources of the United Kingdom[1]; one site was chosen for each aquifer present within each unit. For Scotland and for Northern Ireland this was not possible due to the very limited number of observation wells available. In England and Wales, the total number finally selected was 175[2].

Details of the wells in this national network are given in the Register of Selected Groundwater Observation Wells (see page 148). This network has remained relatively stable over the last few years but a recent review of the groundwater level monitoring network in England and Wales, undertaken by BGS on behalf of the National Rivers Authority is expected to initiate significant changes.

Measurement and Recording of Groundwater Levels

The majority of observation wells are measured manually either weekly or monthly. The usual instrument is an electric probe suspended upon a graduated cable or tape, contact being made by the water to complete a circuit which gives either an audible or visual signal at the surface. Measurements are normally made to the nearest 10 millimetres, although instruments may be accurate to 1 mm.

Some observation wells are equipped with continuous water level recorders. These recorders measure level either by a float or with a pressure transducer. Data are recorded either on paper charts, punched tape (now rarely used) or by solid state data loggers.

TABLE 8 GENERALISED LIST OF AQUIFERS IN THE UNITED KINGDOM

Era	System	Subsystem	Aquifer	Importance
CAINOZOIC	Quaternary	Holocene	Superficial deposits	*
		Pleistocene	Upper and Middle Pleistocene	*
			Crag	**
	Neogene	Pliocene	Coralline Crag	**
		Oligocene		
	Paleogene	Eocene	Bagshot Beds	
			Lower London Tertiaries	
			Blackheath & Oldhaven Beds	
			Woolwich & Reading Beds	*
			Thanet Beds	**
MESOZOIC	Cretaceous	Upper Cretaceous	Chalk and Upper Greensand	****
		Lower Cretaceous	Lower Greensand	***
			Hastings Beds	**
	Jurassic	Upper Jurassic	Portland & Purbeck Beds	*
			(with Spilsby Sandstone)	(**)
			Corallian	**
		Middle Jurassic	Great & Inferior Oolitic limestones	**
			(with Lincolnshire Limestone)	(****)
		Lower Jurassic	Bridport & Yeovil Sands	**
			Marlstone Rock	*
PALAEOZOIC	Triassic	Upper Triassic	Permo-Triassic sandstones	
		Lower Triassic		
	Permian			
			Magnesian Limestone	***
	Carboniferous	Upper Carboniferous	Coal Measures	**
			Millstone Grit	**
		Lower Carboniferous	Carboniferous Limestone	**
	Devonian		Old Red Sandstone	*

Key to aquifer importance:
* aquifer of minor importance only
** aquifer producing small, but useful, local supplies
*** aquifer of local importance, often providing public supplies
**** aquifer of major importance

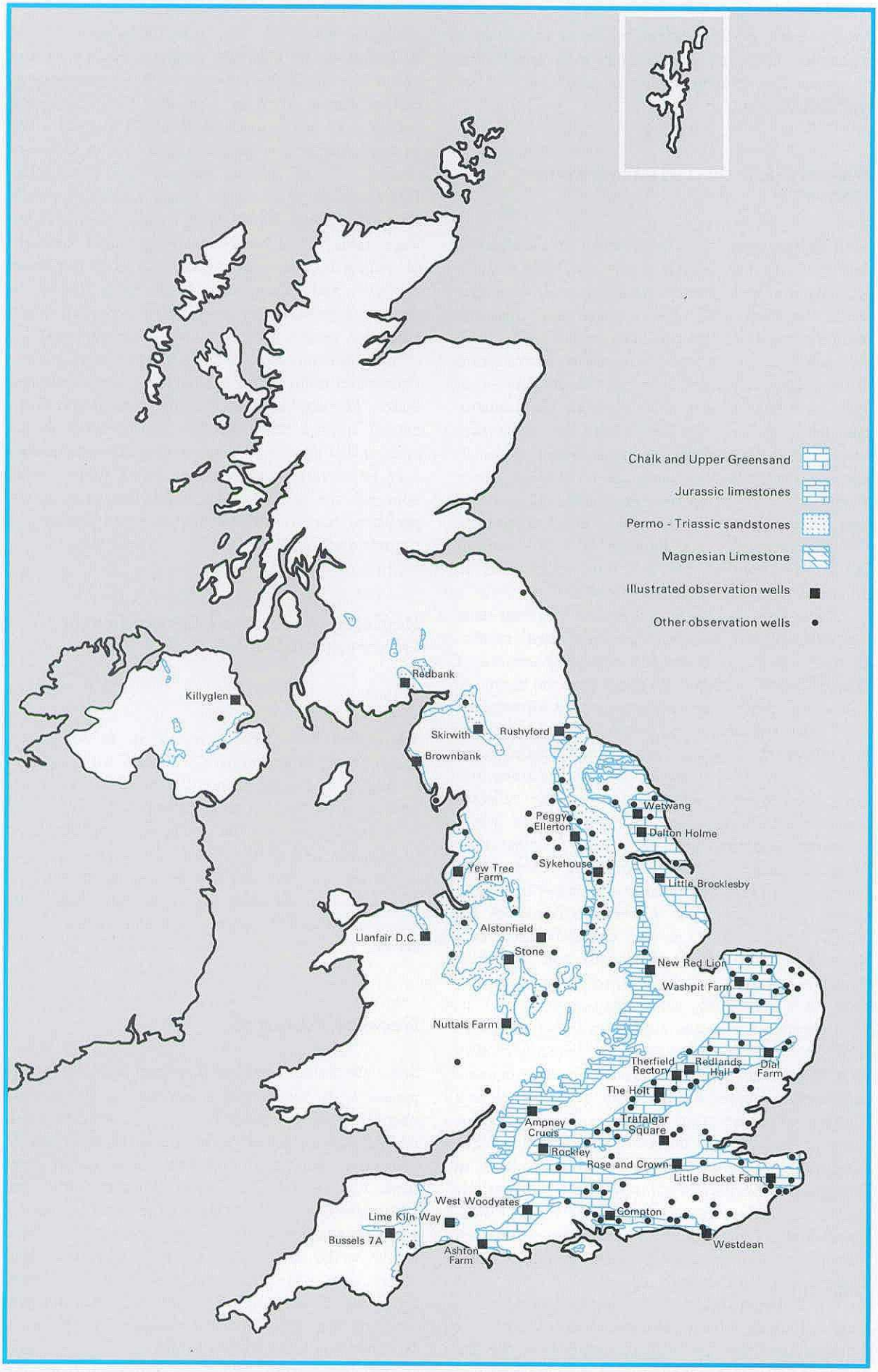


Figure 9 Principal aquifers and representative borehole locations

At a number of observation boreholes provision is made for the routine transmission – usually by telephone line – of groundwater levels to local, or regional, centres.

Observation Well Hydrographs 1989–93

Well hydrographs for 32 observation sites are shown in Figure 10. For each borehole the 1989 to 1993 groundwater hydrographs are illustrated, as a blue trace, together with the average and extreme monthly levels for the pre-1989 record. A break in the well hydrograph trace indicates an interruption in the record of greater than eight weeks. Five-year plots have been used both to illustrate the dramatic changes in groundwater levels over the recent past and because the volume of groundwater stored in aquifers can reflect not only the infiltration taking place during the winter months of 1992/93, but also that occurring in previous years. When comparing the hydrographs for a number of sites, account should be taken of the differing scales used to illustrate the water-table fluctuations.

For a few wells and boreholes the long-term monthly extremes and/or means have been omitted. In some cases this is due to the limited amount of historical data available. At other sites the historical data do not provide an appropriate basis for comparison with contemporary groundwater levels. For several of the featured wells and boreholes the earliest level records are of dubious accuracy and have been ignored when computing the relevant maximum, minimum and mean values. For others substantial changes in the pattern and/or magnitude of groundwater abstraction limit the representativeness of any segment in the groundwater level time series. The majority of observation boreholes for which data are held on the Groundwater Level Archive monitor the natural variation in levels. However, in parts of the United Kingdom levels have been influenced, sometimes over long periods, by pumping for water supply or other purposes which exceeds the natural rate of replenishment. As a consequence the regional water-table may become substantially depressed. For instance, the levels at a number of observation boreholes in the Permo-Triassic sandstones of the Midlands are indicative of a significant regional decline. By contrast those at Rushyford (Northumbria) now stand substantially higher than 15 years ago despite the recent downtrend. This reflects, in part, a rundown of the coal industry and the consequent cessation of continuous pumping for mine dewatering.

On a larger scale, groundwater levels in the confined Chalk and Upper Greensand aquifer below London have risen by over 35 metres since the late 1960s. The increase in the recent past is illustrated on the hydrograph on page 151 – the monthly extremes relate to the post-1950 period only. Although earlier data are very patchy, it is known that in the 1840s groundwater levels stood around 30 metres higher than at present. The subsequent decline – to a minimum of 85 mOD in 1968 – and partial recovery is principally a consequence of changes in the rate of groundwater abstraction. Decreasing demands on the Chalk aquifer, especially after the Second World War, initially stabilised the water-table, which had been falling steadily over the preceding 150 years in response to London's water demands, and subsequently levels have risen at the rate of approximately one metre per year. More moderate recent increases have been reported for other conurbations in Britain; in most cases leakage from water mains is considered to be an exacerbating factor. The implications of rising groundwater levels extend beyond the potential improvement in resources that the rise represents. Groundwater quality may be adversely affected as levels more closely approach the surface and a number of geotechnical problems may result, for instance the flooding of tunnels and foundations.

Register of Selected Groundwater Observation Wells

Scope

The listed sites were selected so as to give a reasonably representative cover for aquifers through-out England and Wales. The wells are grouped according to the aquifer to which the water level variations in the wells are attributed. A generalised list of aquifers is given on page 146, while the aquifers are tabulated in stratigraphical order, most of the local names for individual strata are omitted and the intervening aquicludes are not shown.

Network Changes

Since the original selection of boreholes for incorporation in the national network a number of changes have been made to the list of selected wells. At some locations, observations could no longer be continued, and new sites have been added from time to time. In the Coal Measures and the Millstone Grit, certain sites have not been monitored for some years due to the presence of methane in the wells; these sites have been discarded until either they have been made safe or have been replaced. Details of the wells in the national network are given in the Register of Selected Groundwater Observation Wells.

No sites were added or removed from the Register in 1993.

The Register

The six columns of the Register are:

Well Number

The well numbering system is based on the National Grid. Each 100 kilometre square is designated by prefix characters, e.g. SE, and is divided into 100 squares of 10 kilometre sides designated by numbers 00 (in the south-west corner to 99 (in the north-east corner). Thus, the site SE93/4, is located in the 10 kilometre square SE93, while the number after the solidus denotes that the site is the fourth accessed in this square in the National Well Record collection. A suffix such as A, B, etc., defines the particular well when there are several at the same site. For Northern Ireland, which is on the Irish Grid, the first of the prefix characters is always 'I'.

Two asterisks following the well number indicates a well or borehole for which hydrographs are shown on pages 150 to 153. The location of the index wells, and the outcrop areas of the principal aquifers, are shown on Figure 9.

Grid Reference

The six or eight figure references given in the Register relate to the 100 kilometre National (or Irish) Grid square designated by the preceding two - figure code; the corresponding two-letter code appears as the prefix characters in the Well Number. The Irish Grid References are italicised.

Site

The name by which the well or borehole is normally referenced. The location of all the sites listed in the Register are shown on Figure 9.

Measuring Authority

An abbreviation referencing the organisation responsible for groundwater level measurement. A full list of codes, together with the corresponding names and addresses appears on pages 170 and 171.

Records Commence

The first year for which records are held on the National Groundwater Level Archive.

Indicated % Annual Recharge

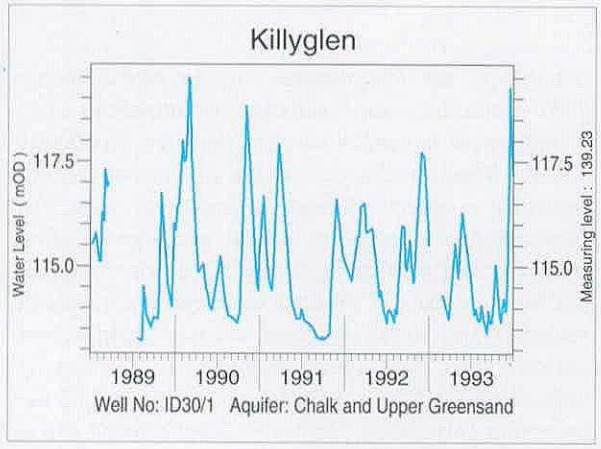
The difference between the level measured at the end of the summer recession of groundwater levels and that measured at the beginning of the summer recession of the following year reflects the amount of recharge received in that period. This method, detailed in the *Hydrometric Register and Statistics 1981–5* volume, is most suited to circumstances when a single peak is readily identifiable in each recharge season. Where recharge follows an uneven pattern resulting in poorly defined or multiple peaks, the percentage of the mean annual recharge is often unrepresentative. Consequently, the original method has been modified to produce more realistic values of recharge and to allow more accurate comparison between sites. First, the recharge period is arbitrarily defined as the first day of August to the end of the following July. Next, the water level at each site is estimated, by extrapolation where necessary, for the last day of each month. Finally, all the rises in successive months are summed over each recharge period. The use of end-of-month levels is dictated to a large extent by the existence of end-of-month data alone for the longest pre-1993 records. However, where some sites are measured at close time intervals (weekly or daily), the summed cumulative rises give a significant larger total than the rise determined by end-of-monthly levels alone. To compare sites with differing intervals between measurements, it is thus necessary to resort to a common base.

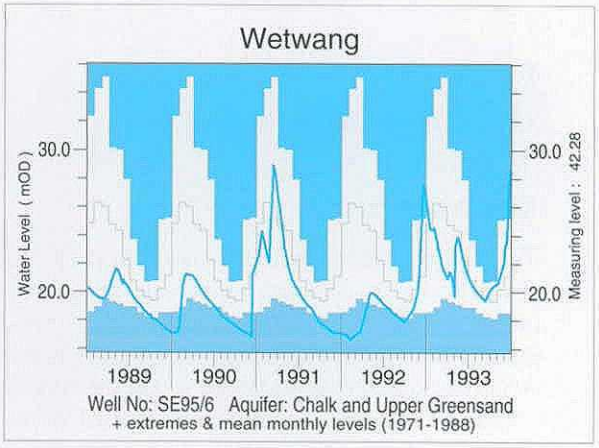
The summed rise for each year is called the 'annual fluctuation', and the mean of the annual fluctuations over the period of record is termed the 'mean annual recharge' (MAR). This also assumes that the natural discharge (via, for instance, springs and seepages) is constant; while this is not the case in view of the large differences of head that are recorded in some observation wells, there is insufficient information currently available to permit corrective factors to be determined. It is considered that for most wells the errors caused by this assumption will be small.

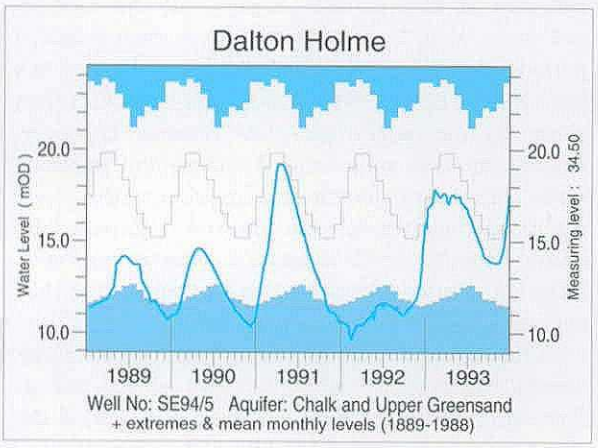
The annual infiltration is then expressed as a percentage of the MAR and thus represents the percentage of the mean annual recharge received for that year. Acknowledging the limited precision in the estimation procedure the percentages are rounded (to the nearest 5%) and are tabulated in the last column of the Register. Exceptionally low percentage recharge values are conventionally presented as '<10'. Where data for the year are inadequate for the purpose of calculating the annual percentage recharge, no value is given. This process has now been computerised.

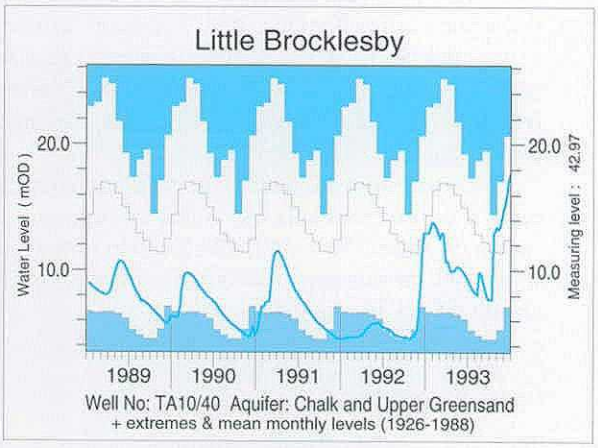
References

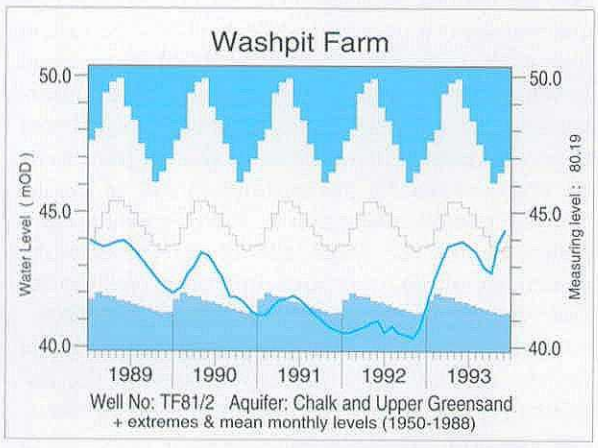
1. Monkhouse, R.A. and Richards, H.J. 1983. Groundwater resources of the United Kingdom. Commission of the European Communities, pub. Th. Schaeffer Druckerei GmbH, Hannover, 252 pages.
2. Monkhouse, R.A. and Murti, P.K. 1981. The rationalisation of groundwater observation well networks in England and Wales. Institute of Geological Sciences, Report No. WD/81/1, 18 pages.

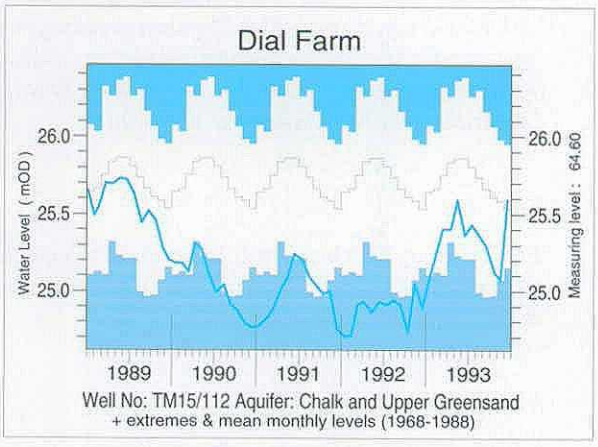


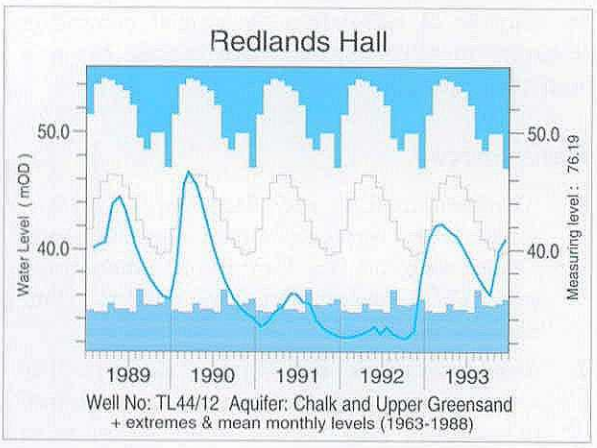












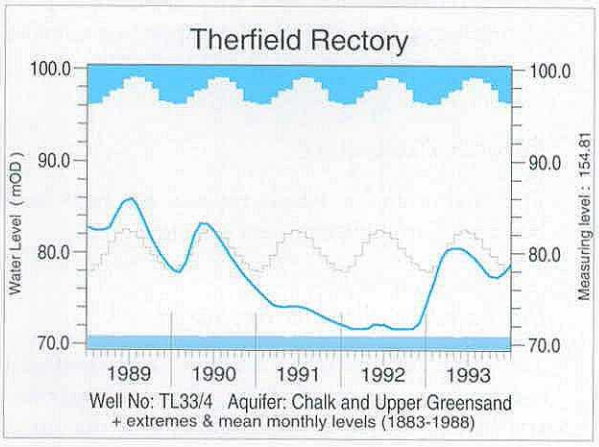
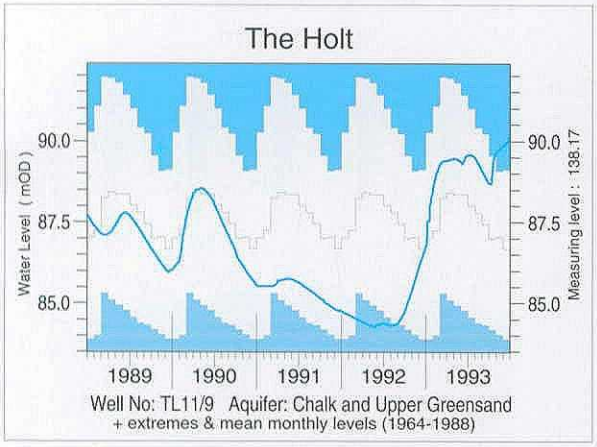
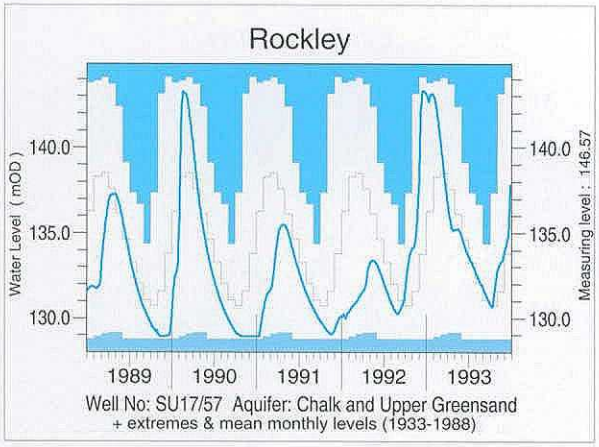
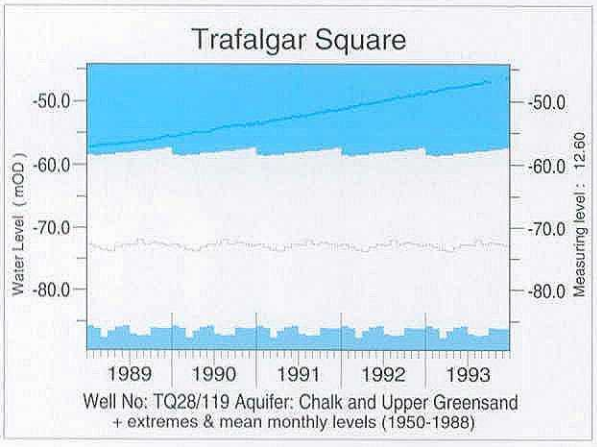
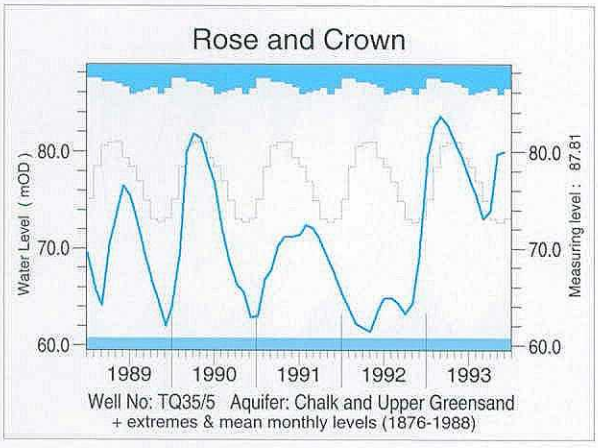


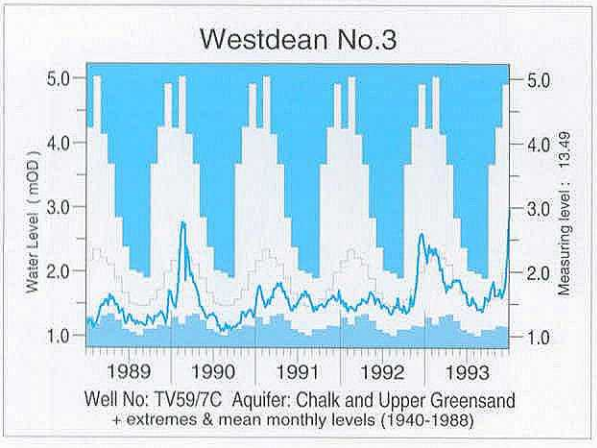
Figure 10 Hydrographs of groundwater level fluctuations 1988–93

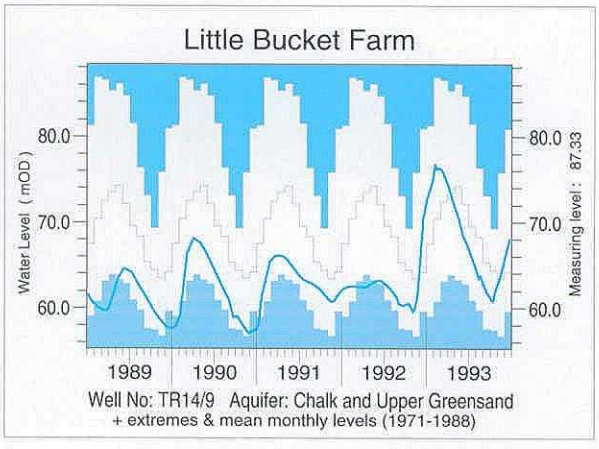


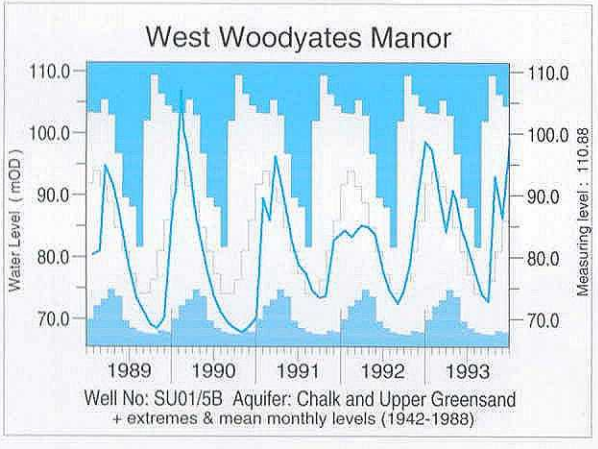


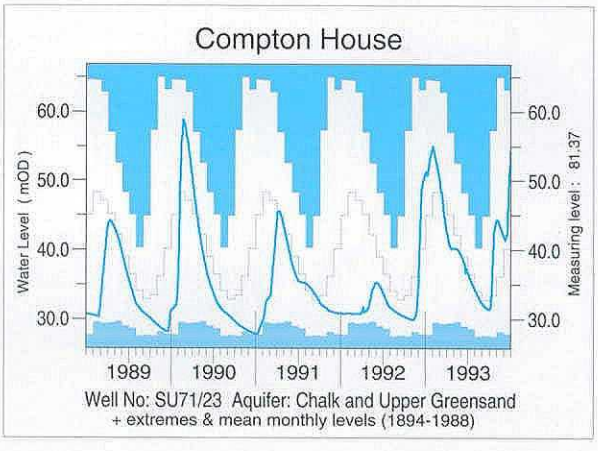












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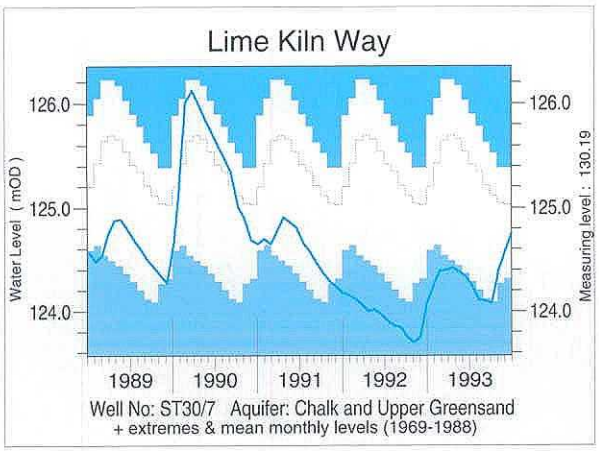
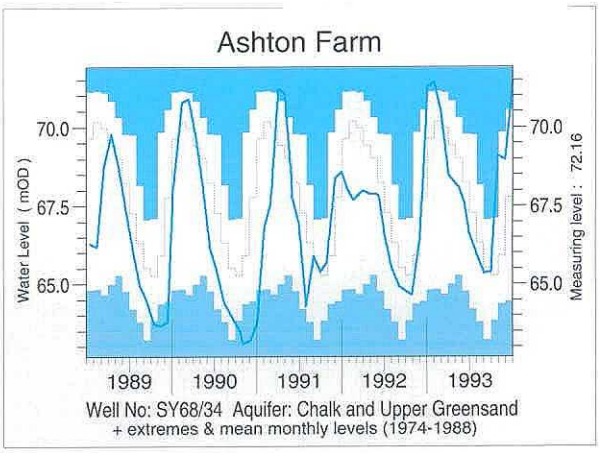
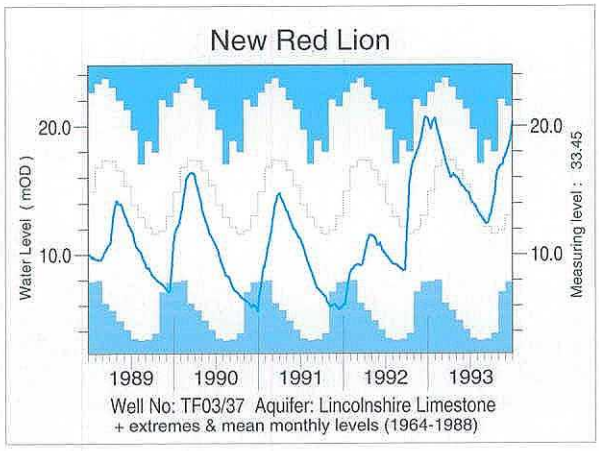
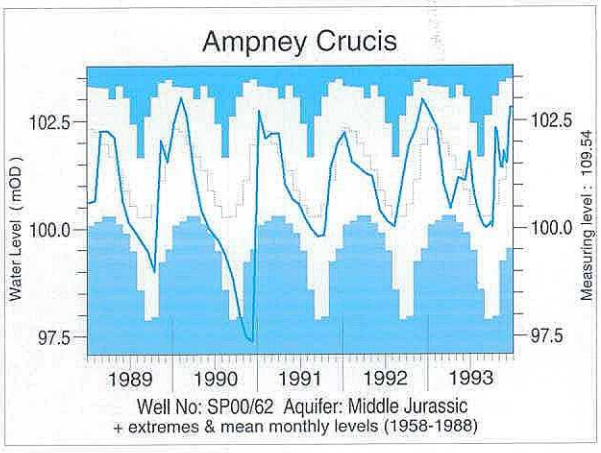
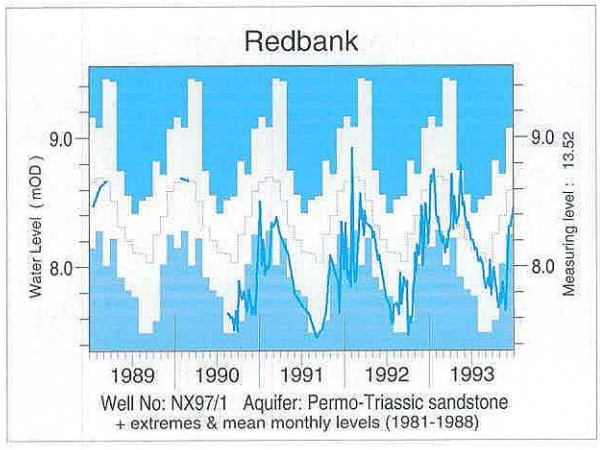
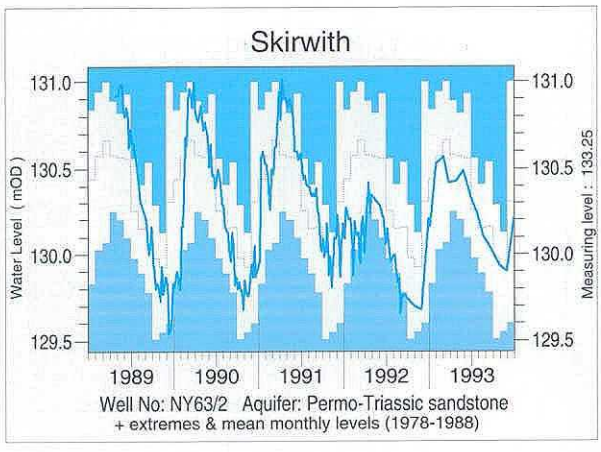


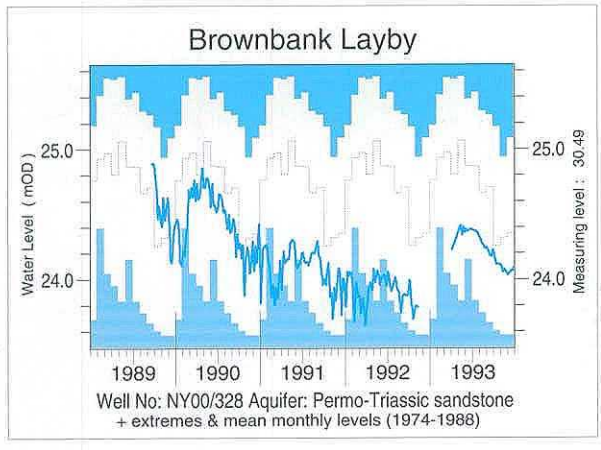












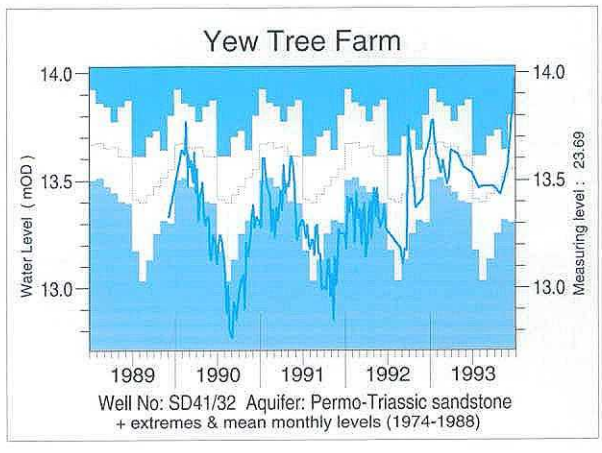
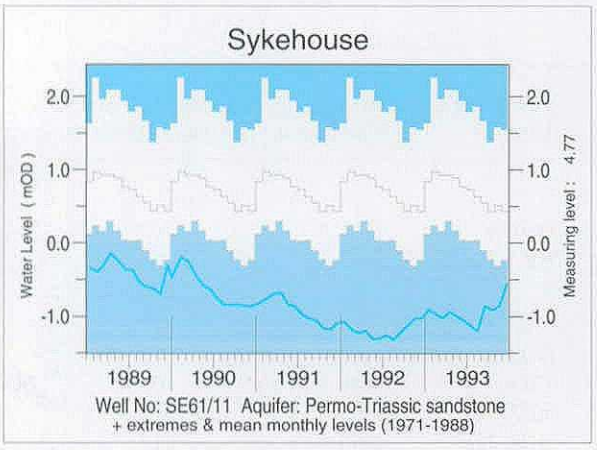
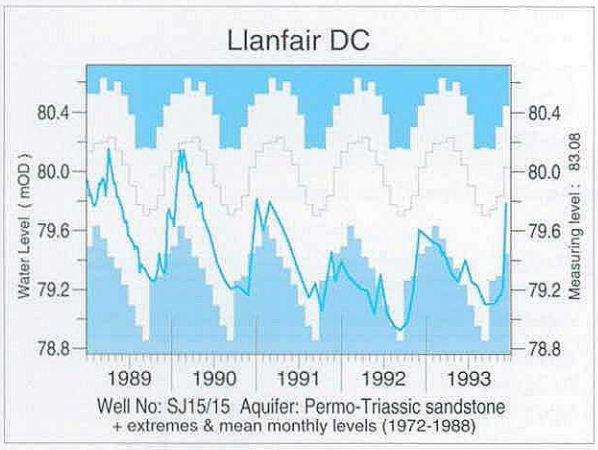
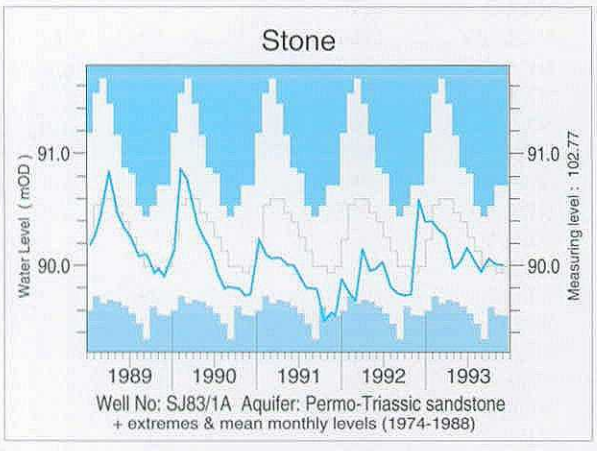
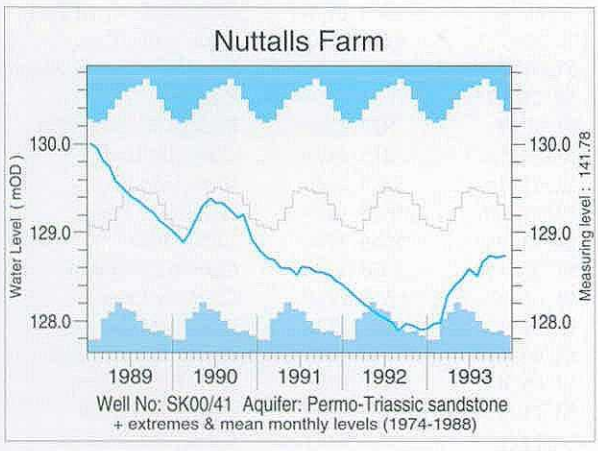


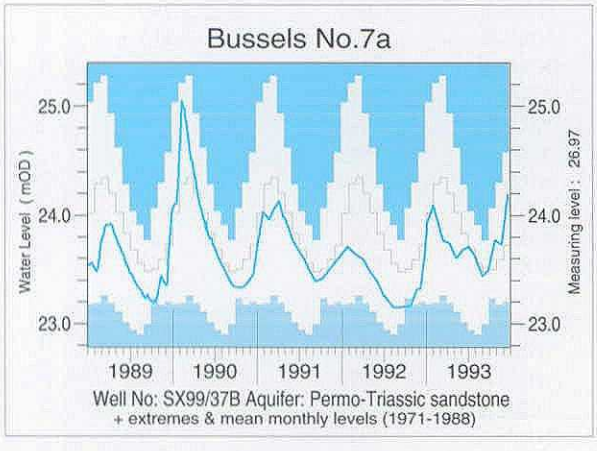
Figure 10—(continued)

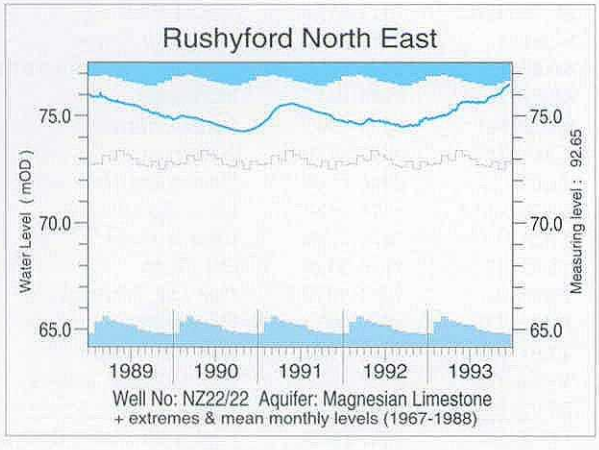


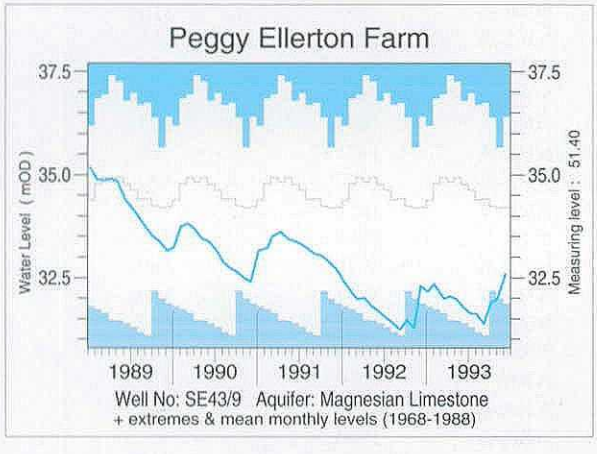












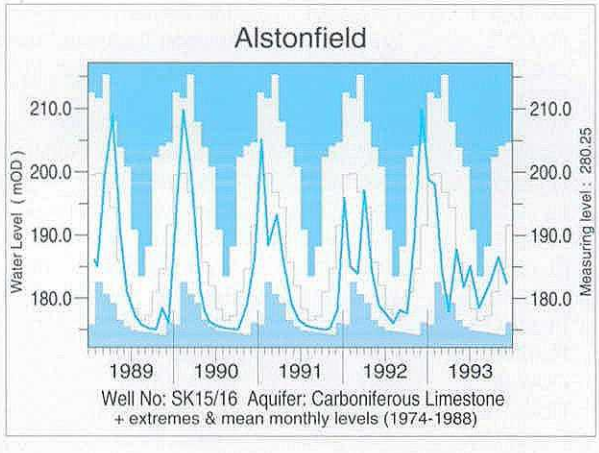


Figure 10—(continued)

Well Number	Grid Reference	Site	Measuring Authority	Records Commence	Indicated % Annual Recharge 1992/93
Aquifer: Superficial Deposits					
IJ28/1	2248 8620	Dunadry	DOEN	1985	80
SO44/4	4683 4253	Stretton Sugwas	NRA-WEL	1973	90
Aquifer: Chalk and Upper Greensand					
ID30/1**	3663 0310	Killyglen	DOEN	1985	
SE94/5**	9651 4530	Dalton Holme	NRA-NY	1889	105
SE95/6**	9578 5939	Wetwang	NRA-NY	1971	125
SE97/31	9345 7079	Green Lane	NRA-NY	1971	110
SP90/26	9470 0875	Champneys	NRA-T	1962	
SP91/59	9380 1570	Pitstone Green Farm	NRA-A	1970	
ST30/7**	3763 0667	Lime Kiln Way	NRA-SW	1969	80
SU01/5B**	0160 1960	West Woodyates Manor	NRA-SW	1942	125
SU17/57**	1655 7174	Rockley	NRA-T	1933	125
SU32/3	3817 2743	Bailey's Down Farm	NRA-S	1964	110
SU34/8A	3215 4875	Clanville Lodge	NRA-S	1962	200
SU35/14	3315 5645	Woodside	NRA-S	1963	135
SU51/10	5875 1655	Hill Place Farm	NRA-S	1965	100
SU53/94	5586 3498	Abbotstone	NRA-S	1976	135
SU57/159	5628 7530	Calversleys Farm	NRA-T	1974	195
SU61/32	6578 1775	Chidden Farm	NRA-S	1958	105
SU61/46	6890 1532	Hinton Manor	NRS-S	1953	100
SU64/28	6360 4049	Lower Wield Farm	NRA-S	1962	145
SU68/49	6442 8525	Well Place Farm	NRA-T	1976	360
SU71/23**	7755 1490	Compton House	NRA-S	1894	115
SU73/8	7048 3491	Faringdon Station	NRA-T	1966	120
SU76/46	7367 6251	Riseley Mill	NRA-T	1975	---
SU78/45A	7419 8924	Stonor Park	NRA-T	1961	240
SU81/1	8356 1440	Chilgrove House	NRA-S	1836	115
SU87/1	8336 7885	Folly Cottage, Coldharbour	NRA-T	1950	130
SU89/7	8103 9417	Piddington	NRA-T	1966	215
SY68/34**	6615 8805	Ashton Farm	NRA-SW	1974	120
TA06/16	0490 6120	Nafferton	NRA-NY	1964	105
TA07/28	0940 7740	Hunmanby Hall	NRA-NY	1976	
TA10/40**	1371 0888	Little Brocklesby	NRA-A	1926	145
TA21/14	2670 1890	Church Farm	NRA-NY	1971	125
TF72/11	7710 2330	Off Farm	NRA-A	1971	130
TF73/9	7790 3270	Coe Ltd, Bircham	NRA-A	1971	285
TF80/33	8730 0526	Houghton Common	NRA-A	1971	110
TF81/2**	8138 1960	Washpit Farm	NRA-A	1950	110
TF83/1	8578 3606	South Creake School	NRA-A	1952	230
TF92/5	9869 2183	Tower Hills P.S.	NRA-A	1974	190
TG00/92	0440 0020	High Elm Farm, Deopham	NRA-A	1971	95
TG03/25B	0382 3583	The Hall, Brinton	NRA-A	1952	210
TG11/5	1691 1101	The Spinney, Costessey	NRA-A	1952	115
TG12/7	1126 2722	Heydon Pumping Station	NRA-A	1974	130
TG21/9	2400 1657	Frettenham Depot	NRA-A	1952	80
TG21/10	2699 1140	Grange Farm	NRA-A	1952	70
TG23/21	2932 3101	Melbourne House	NRA-A	1974	225
TG31/20	3365 1606	Woodbastwick Hall	NRA-A	1974	60
TG32/16	3700 2682	Brumstead Hall	NRA-A	1978	120
TL11/4	1560 1555	Mackerye End House	NRA-T	1963	---
TL11/9**	1692 1965	The Holt	NRA-T	1964	200
TL13/24	1200 3026	West Hitchin	NRA-A	1970	180
TL22/10	2978 2433	Box Hall	NRA-T	1964	100
TL33/4**	3330 3720	Therfield Rectory	NRA-T	1883	160
TL42/6	4536 2676	Hixham Hall	NRA-T	1964	143
TL42/8	4669 2955	Berden Hall	NRA-T	1964	160
TL44/12**	4522 4182	Redlands Hall	NRA-A	1963	120
TL55/109	5925 5605	Lower Farm	NRA-A	1983	
TL72/54	7982 2516	Rectory Road	NRA-A	1968	90
TL84/6	8465 4106	Smeetham Cottages, Bulmer	NRA-A	1963	130

Well Number	Grid Reference	Site	Measuring Authority	Records Commence	Indicated % Annual Recharge 1992/93
TL86/110	8850 6470	Cattishall Farm	NRA-A	1969	155
TL89/37	8131 9001	Grimes Graves	NRA-A	1971	125
TL92/1	9657 2562	Lexden Pumping Station	NRA-A	1961	110
TM15/112**	1201 5618	Dial Farm	NRA-A	1968	125
TM26/46	2461 6109	Fairfields	NRA-A	1974	---
TM26/95	2786 6397	Strawberry Hill	NRA-A	1974	80
TQ01/133	0850 1170	Chantry Post, Sullington	NRA-S	1977	70
TQ21/11	2850 1289	Old Rectory, Pyecombe	NRA-S	1958	105
TQ28/119B**	2996 8051	Trafalgar Square	NRA-T	1901	---
TQ31/50	3220 1180	North Bottom	NRA-S	1979	50
TQ35/5**	3363 5924	Rose & Crown	NRA-T	1974	195
TQ38/9	3509 8536	Hackney Public Baths	NRA-T	1953	---
TQ50/7	5592 0380	Old Rectory, Folkington	NRA-S	1965	130
TQ56/19	5648 6124	West Kingsdown	NRA-T	1961	90
TQ57/118	5880 7943	Thurrock A13	NRA-A	1979	170
TQ58/2B	5622 8408	Bush Pit Farm	NRA-T	1967	70
TQ86/44	8595 6092	Little Pett Farm	NRA-S	1982	---
TQ99/11	9470 9710	Burnham-on-Crouch	NRA-A	1975	60
TR14/9**	1225 4690	Little Bucket Farm	NRA-S	1971	125
TR14/50	1265 4167	Glebe Cottage	NRA-S	1970	105
TR24/26	2787 4003	Church House	NRA-S	1971	
TR35/49	3330 5090	Cross Manor Cottages	NRA-S	1971	---
TR36/62	3208 6634	Alland Grange	NRA-S	1969	125
TV59/7C**	5290 9920	Westdean No. 3	NRA-S	1940	
Aquifer : Lower Greensand					
SU82/57	8888 2505	Madam's Farm	NRA-S	1984	18
SU84/8A	8716 4087	Tilford Pumping Station	NRA-T	1971	80
TL45/19	4110 5204	River Farm	NRA-A	1973	---
TQ41/82	4370 1320	Lower Barn Cottages	NRA-S	1975	115
TR13/21	1132 3881	Ashley House	NRA-S	1972	95
TR23/32	2075 3650	Morehall Depot	NRA-S	1972	160
Aquifer : Hastings Beds					
TQ22/1	2348 2770	The Bungalow	NRA-S	1964	135
TQ42/80A	4725 2990	Kingstanding	NRA-S	1979	145
TQ61/44	6658 1803	Dallington Herrings	NRA-S	1964	50
TQ62/99	6199 2282	Whiteoaks	NRA-S	1978	200
TQ71/123	7969 1659	Red House	NRA-S	1974	105
Aquifer : Upper Jurassic					
SE68/16	6890 8590	Kirkbymoorside	NRA-NY	1975	45
SE77/76	7690 7300	Broughton	NRA-NY	1975	50
SE98/8	9910 8540	Seavegate Farm	NRA-NY	1971	---
SU49/40B	4117 9307	East Hanney	NRA-T	1978	---
Aquifer : Middle Jurassic					
SP00/62**	0595 0190	Ampney Crucis	NRA-T	1958	100
SP20/113	2721 0634	Alvescot Road	NRA-T	1983	115
ST51/57	5931 1691	Over Compton	NRA-SW	1971	115
ST88/62A	8275 8743	Didmarton 1	NRA-SW	1977	120
Aquifer : Lincolnshire Limestone					
SK97/25	9800 7817	Grange de Lings	NRA-A	1975	80
TF03/37**	0885 3034	New Red Lion	NRA-A	1964	140
TF04/14	0429 4273	Silk Willoughby	NRA-A	1972	110
Aquifer : Permo-Triassic sandstones					
IJ26/1**	2907 6943	Dunmurry	DOEN	1985	70
NX97/1**	9667 7432	Redbank	SRPB	1981	140
NY00/328**	0511 0247	Brownbank Layby	NRA-NW	1974	135
NY45/16	4947 5667	Corby Hill	NRA-NW	1977	85

Well Number	Grid Reference	Site	Measuring Authority	Records Commence	Indicated % Annual Recharge 1992/93
NY63/2**	6130 3250	Skirwith	NRA-NW	1978	120
NZ41/34	4861 1835	Northern Dairies	NRA-NY	1974	180
SD27/8	2172 7171	Furness Abbey	NRA-NW	1972	120
SD41/32**	4400 1164	Yew Tree Farm	NRA-NW	1973	210
SD44/15	4396 4928	Moss Edge Farm	NRA-NW	1961	175
SE36/47	3945 6575	Kelly's Cafe	NRA-NY	1977	110
SE39/20B	3004 9244	Scruton Village	NRA-NY	1969	75
SE45/3	4470 5580	Cattal Maltings	NRA-NY	1969	175
SE52/4	5473 2363	Southfield Lane	NRA-NY	1955	---
SE54/32A	5532 4646	Bilborough	NRA-NY	1984	45
SE60/76	6784 0709	Woodhouse Grange	NRA-ST	1980	45
SE61/11**	6270 1710	Sykehouse	NRA-NY	1971	75
SE72/3B	7047 2149	Rawcliffe Bridge	NRA-NY	1971	40
SE83/9	8040 3640	Holme on Spalding Moor	NRA-NY	1972	115
SJ15/15**	1374 5556	Llanfair D.C.	NRA-WEL	1972	95
SJ33/39	3814 3831	Eastwick Farm	NRA-WEL	1974	---
SJ56/45E	5042 6953	Ashton 4	NRA-NW	1969	255
SJ83/1A	8969 3474	Stone	NRA-ST	1974	80
SJ87/32	8969 7598	Dale Brow	NRA-NW	1973	65
SJ88/93	8611 8645	Bruntwood Hall	NRA-NW	1972	---
SK00/41**	0670 0120	Nuttals Farm	NRA-ST	1974	125
SK10/9	1440 0464	Weeford Flats	NRA-ST	1966	75
SK21/111	2731 1419	Grange Wood	NRA-ST	1967	115
SK24/22	2539 4431	Burtonshuts Farm	NRA-ST	1972	95
SK56/53	5632 6440	Peafield Lane	NRA-ST	1969	---
SK67/17	6448 7257	Morris Dancers	NRA-ST	1969	40
SK68/21	6100 8374	Crossley Hill	NRA-ST	1969	
SK73/50	7693 3228	Woodland Farm	NRA-ST	1980	105
SO71/18	7170 1970	Stores Cottage	NRA-ST	1973	115
SO87/28	8160 7970	Hillfields	NRA-ST	1961	150
SX99/37B**	9528 9872	Bussels No. 7A	NRA-SW	1971	85
SY09/21A	0666 9235	Heathlands	NRA-SW	1951	200
Aquifer : Magnesian Limestone					
NZ22/22**	2875 2896	Rushyford NE	NRA-N	1967	210
NZ32/19	3575 2650	Heley House	NRA-N	1969	115
NZ33/20	3349 3501	Garmondsway	NRA-N	1974	110
SE28/28	2460 8520	Bedale	NRA-NY	1972	65
SE35/4	3830 5830	Castle Farm	NRA-NY	1970	70
SE43/9**	4535 3964	Peggy Ellerton Farm	NRA-NY	1968	90
SE43/14	4660 3550	Coldhill Farm 35	NRA-NY	1971	90
SE51/2	5210 1530	Westfield Farm	NRA-NY	1971	70
SK46/71	4800 6030	Stanton Hill	NRA-ST	1973	105
SK58/43	5248 8018	Southards Lane	NRA-ST	1973	105
Aquifer : Coal Measures					
SE23/4	2850 3414	Trident House	NRA-NY	1971	30
Aquifer : Millstone Grit					
SE02/46	0771 2528	Thrum Hall	NRA-NY	1977	85
SE04/7	0295 4792	Lower Heights Farm	NRA-NY	1971	35
SE24/2B	2067 4053	Green Lane Dyeworks	NRA-NY	1971	---
SE27/8	2120 7380	Kirkby Moor Farm	NRA-NY	1971	---
Aquifer : Carboniferous Limestone					
NT95/21	9695 5055	Middle Ord	NRA-N	1974	65
SE06/1	0241 6183	Jerry Laithe Farm	NRA-NY	1971	200
SK15/16**	1292 5547	Alstonfield	NRA-ST	1974	125
SK17/13	1778 7762	Hucklow South	NRA-ST	1969	115
ST64/33	6560 4790	Oakhill 1	NRA-SW	1974	85

Sites marked '**' are indicator wells; well hydrographs are shown in Figure 9. Where the annual percentage recharge cannot be estimated, the entry '---' is substituted.

THE NATIONAL GROUNDWATER LEVEL ARCHIVE DATA RETRIEVAL SERVICE

The National Groundwater Level Archive includes water level data for around 170 representative wells and boreholes in the United Kingdom; the average length of record is about 20 years. This archive is supplemented by historical water level data (up to 1974 generally) for approximately 3000 additional monitoring sites.

The data are stored on a computer database and water level records may be made available in various forms as specified by users. Retrievals are available for all of the sites listed in the Register of Selected Groundwater Observation Wells, although not all the data contained within the archive have been validated.

In addition five standard options are available for retrieving data. A description of each option is given overleaf. Options 1 to 4 give details of the well site, the period of record available, and maximum and minimum recorded levels in addition to the output specific to each option. Data may be retrieved for a specific well or for groups of wells by well reference numbers, by area (using National Grid References), by aquifer, by hydrometric area, by measuring authority, or by any combination of these parameters. Data may be output to paper or in digital form.

Cost of Service

To cover the computing and handling costs, a moderate charge will be made depending on the data requested. Estimates of these charges may be obtained on request; the right to amend or waive charges is reserved.

Requests for Retrieval Options

Requests for retrieval options should include: the name and address to which the output should be directed, the sites, or areas, for which data are required together with the period of record of interest (where appropriate). Where possible, a daytime telephone number should be given.

Requests should be addressed to:

The British Geological Survey
Maclean Building
WALLINGFORD
OXFORDSHIRE OX10 8BB

Telephone: Wallingford (01491) 838800
Facsimile: (01491) 825338

Email: bgsftp@ua.nwl.ac.uk.

The National Well Record Archive

The British Geological Survey also maintains the National Well Record Archive (NWRA) for England and Wales. Currently this archive includes hydrogeological details and reference information for over 150,000 shafts, boreholes and some springs - predominantly constructed or used for water supply or the monitoring of groundwater levels or quality. The archive is organised into paper files based upon the 10 kilometre squares of the National Grid. Each file includes a register which details the accession number, the depth, the national grid reference and certain other details. This material is an essential component in the hydrogeological enquiry service operated by BGS and the register details are in the process of being transferred to a digital format.

The Archive is located at the Wallingford Office of BGS (address above) and all the non-confidential records are open to inspection by the general public. Those wishing to avail themselves of this facility should contact the BGS Records Section in advance to discuss access procedures and costs.

National Geosciences Information Centre

The NWRA is associated with the National Geosciences Information Service (NGIS), one of a number of computer-based data centres established at NERC Institutes. The NGIS is located at the BGS Headquarters, Keyworth, near Nottingham (Telephone: 01115 9363100) and provides access to a broad range of geological information (for example, geophysical and hydrogeological logs, core samples and chemical analyses).

LIST OF GROUNDWATER RETRIEVAL OPTIONS

OPTION	TITLE	NOTES
1	Table of groundwater levels	All recorded observations of groundwater level in metres above Ordnance Datum, with dates of observation and maximum and minimum levels for each year. Specific years, or ranges of years, may be requested, otherwise the full period of record is given.
	Table of annual maximum and minimum groundwater levels	Annual maximum and minimum groundwater and minimum groundwater levels in metres above Ordnance Datum levels with dates of occurrence. Specific years, or ranges of years, may be requested, otherwise the full period of record is given.
	Table of monthly maximum, minimum and mean groundwater levels	Monthly maximum, minimum and mean groundwater levels in metres above Ordnance Datum, together with the number of years contributing values to the calculation of each monthly mean. A specific period of years may be nominated, otherwise the full period of record is given.
	Hydrographs of groundwater levels	Provides a well hydrograph for a number of groundwater levels of specified years. Castellated annual plots of monthly maximum and mean groundwater levels calculated from a nominated period of years are superimposed upon the hydrograph, provided that the nominated period exceeds 10 years. Tabulations of the monthly maximum, minimum and mean values are also listed, together with the number of years of record used in the calculations, and the number of observations used for each month.
	Site details	The output comprises the well reference number of the British Geological Survey, the original (Water Data Unit) station number (where applicable), the hydrometric area, the aquifer name and code, the site name and location, the National Grid Reference, the depth of the well, the datum points (from which measurements are made), the altitude of the ground surface, the period of record and the measuring authority area in which the well or borehole is located.

The conditions applying to the use of data retrieved from the National Groundwater Level Archive are similar to those outlined on page 135 for the National River Flow Archive.

SURFACE WATER QUALITY DATA

Background

A national archive of water quality data is maintained by the Environmental Protection Statistics Division of the Department of the Environment to provide information concerning the quality of rivers throughout the United Kingdom and to satisfy certain international obligations including the estimation of riverborne inputs of selected contaminants (e.g. nutrients) to the sea. Data for this archive are collected as part of the Harmonised Monitoring programme which provides for the sampling and analysis of water quality on a national basis.

The Harmonised Monitoring Scheme was established, for England and Wales, in 1974; a similar scheme was instituted for Scotland in July 1975. In Scotland responsibility for the collection and analysis of the samples rests with the River Purification Boards; data acquisition is co-ordinated by The Scottish Office Environment Department. In England and Wales responsibility passed, on the 1st September 1989, from the former regional Water Authorities to the newly-created National Rivers Authority.

Measuring authorities send analytical results of routinely collected samples of river water from approximately 220 monitoring stations; sampling frequencies vary substantially but are, typically, in the range 6 to 52 per year. Most of the monitoring stations are located on major rivers at, or near, the tidal limit.

The monitoring programme can embrace a large number – over 80 – of physical and chemical attributes of river water but typically only 25 are measured at any given site. A number of determinands are measured as standard but a larger proportion are monitored only where it is considered necessary to do so.

Currently no data for Northern Ireland are held on the Harmonised Monitoring Archive. Water quality data are, however, routinely collected and archived by the Environmental Protection Division of the Department of the Environment (NI); data for two Northern Ireland monitoring sites are included in this publication.

The measuring authorities maintain major programmes of chemical and biological sampling of rivers for their own purposes; the monitoring networks involved provide a far more comprehensive coverage than the selected sites incorporated in the Harmonised Monitoring programme. From the 31st July 1985, the former Water Authorities were required, under the Control of Pollution Act, to maintain registers of the results of all samples of water and effluent taken for pollution control purposes together with details of all consented discharges. Following the enactment of the Water Bill 1989 this obligation passed to the National Rivers Authority. These registers are maintained at the regional headquarters of the NRA (see page 170) and are open for inspection by the public – free of charge. Persons wishing to consult the registers are advised to first contact the individual regional headquarters; a list of addresses is given on pages 170 and 171.

Data Retrieval

A comprehensive range of retrieval options has been developed by DoE to make available the water quality data held on the Harmonised Monitoring Archive and to provide statistical summaries based on that data. Requests for data, and guidance concerning its availability, should be addressed to:

Department of the Environment
Environmental Protection Statistics Division,
Room A105
Romney House
43 Marsham Street
London SW1P 3PY

Telephone: 071 276 8245

Data listings for monitoring sites in Northern Ireland may be obtained from the Environmental Protection Division of the DOE (NI).

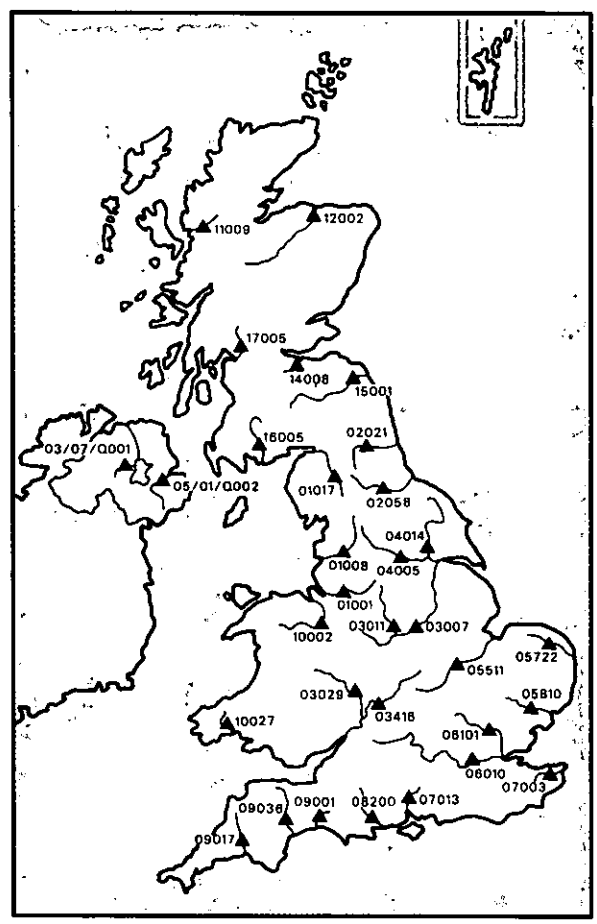


Figure 11 Water quality monitoring station location map

Scope of the Water Quality Data Tabulations

River water quality data are presented for 32 monitoring sites on rivers throughout the United Kingdom. The location of each monitoring site is given on Figure 11. For each site 1993, and period of record, data are given for a range of determinands; the determinands featured may differ between monitoring sites reflecting the character of the rivers themselves and differences in the sampling regimes between monitoring stations.

The following notes are provided to assist in the interpretation of particular data items.

Harmonised Monitoring Station Code

A reference number which serves as the primary identifier of the station. For stations on the Harmonised Monitoring Archive, the first two digits refer to the measuring authority, the remainder refer to individual sites within each measuring authority. For the Northern Ireland stations, the Department of the Environment (NI) reference code is given.

Measuring Authority

An abbreviation referencing the organisation responsible for the operation of the monitoring site. See pages 170 and 171 for a full list of the codes together with the corresponding authority names and addresses.

Grid Reference

The initial two-letter and two-figure codes each designate the relevant 100 kilometre National Grid square or Irish Grid square (see page 36); the standard six-figure map reference follows.

Associated Flow Measurement Station

For monitoring sites in Great Britain, the reference number, name, catchment area and grid reference of the gauging station which provides the discharge data stored on the Harmonised Monitoring Archive. At most sites the flow corresponding to the time the quality sample was taken is archived; at other locations the corresponding daily mean flow is utilised. Where the gauging station and water quality monitoring site are not coincident, some method of flow adjustment may have been employed to allow for the differing catchment areas.

For the Northern Ireland monitoring sites, reference details of the co-located gauging stations are given; the flow data for these stations are held on the National River Flow Archive.

1993 flow data for all but one of the relevant gauging stations in Great Britain may be found in the River Flow Data section. The shortness of the flow record for the Fleet Weir gauging station on the River Aire precludes its incorporation in the River Flow Data section; summary river flow data for 1993 are, however, included at the head of the water quality listing.

Determinands

Inadequate or unrepresentative sampling frequencies, or the presence of a substantial number of samples with concentrations recorded at, or below, the limit of detection, will normally result in the omission of a particular determinand.

Notes:

i. Conductivity results are standardised to 20°C.

ii. The biochemical oxygen demand data normally relate to the inhibited analytical results – BOD(atu).

iii. Nitrate concentrations are normally derived by subtracting the nitrite concentration from the reported Total Oxidised Nitrogen (TON) concentration; if the nitrite determination is below the limit of detection, nitrate is recorded as equivalent to TON*.

Units

The standard units used to record and report each determinand. The number of significant figures given for each determinand corresponds to the way the data are stored on the Harmonised Monitoring or DOE (NI) Archives and reflects the uncertainty associated with the relevant analytical procedures.

1993 Data

Samples

The number of samples taken for each determinand during 1993. Where a proportion of analytical results were below the limit of detection (which may vary according to the analytical procedure used), the number of samples in this category is given in parentheses. Normally determinands are not featured when the number of samples in the year is less than about six. Exclusion may also result from a very uneven sampling pattern through the year.

The precision of the mean, maximum and minimum values computed on the basis of a limited number of samples will vary from determinand to determinand but statistics associated with sampling frequencies of lower than about once a month should be regarded as indicative only.

* Over recent years nitrate values for the featured Severn-Trent NRA sites have been reported as TON.

Mean

The average* of all the sample values for each determinand in 1993. Where concentrations below the limit of detection are held on the Harmonised Monitoring Archive, the threshold value itself is used to compute the mean.

Maximum / Date

The maximum determinand value recorded during 1993 together with its date of occurrence. Where the maximum value recurs the date refers to the initial occurrence.

Minimum / Date

The minimum determinand value together with its date of occurrence. Where the minimum value recurs the date refers to the initial occurrence. A '<' symbol indicates a value below the limit of detection.

Different limits of detection may apply throughout the year at certain monitoring sites, for further details contact the address given on page 159.

Period of Record Data

For half of the featured sites, the pre-1993 summary statistics are presented for the nineteen-year period beginning in 1974; where individual stations were not incorporated into the Harmonised Monitoring network until after 1974, the appropriate first year of data is given. For certain stations the sampling frequency varies significantly from year to year and data for a few determinands may not extend over the full period of record; in particular the first year of data will normally be incomplete.

Where the pre-1993 data series includes values below the limit of detection, the threshold value has been used in the computation of the summary statistics.

For a number of the featured monitoring stations, a considerable amount of pre-1974 data, at least for certain determinands, may be stored on local, or regional, archives maintained by the measuring authorities. Also, for the period 1974–92, such archives may hold analytical results for substantially more samples than are represented on the Harmonised Monitoring Archive. Hence full equivalence between statistical summaries derived from national and regional databases cannot be expected for all monitoring sites.

Mean

The average* value of all the sample values for each determinand.

Percentiles

The 5, 50 and 95 percentile values for each determinand based on all the samples taken over the pre-1993 period.

Quarterly Averages

The mean quarterly average* for each of the three-monthly periods: January to March; April to June, July to September and October to December.

* In all cases this refers to the temporal mean rather than the flow-weighted average.

Mersey at Flixton 1993

Harmonised monitoring station number : 01 001
Measuring authority : NRA-NW NGR : 33 (SJ) 742 938

Flow measurement station : 069007 - Ashton Weir
C.A.(km²) : 660.0 NGR : 33 (SJ) 772 936

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	50	10.5	20.0	08/06	3.0	23/11	10.8	3.9	10.1	19.1	5.8	12.5	16.4	8.7
pH	pH units	51	7.5	8.0	14/09	6.9	16/11	7.3	6.9	7.3	7.6	7.3	7.3	7.3	7.3
Conductivity	µS/cm	51	405	593	05/01	153	14/09	487	286	469	748	461	503	520	453
Suspended solids	mg/l	51	18.6	152.0	07/12	4.0	23/11	39.2	3.8	19.9	113.5	43.5	29.6	26.8	53.5
Dissolved oxygen	mg/l O	47	9.05	12.56	11/05	6.56	25/05	7.98	4.54	7.91	11.24	9.91	7.16	6.04	8.69
BOD (inhibited)	mg/l O	51 (4)	3.3	12.5	07/12	1.6	17/08	6.3	2.7	5.2	12.9	6.4	6.5	5.4	6.3
Ammoniacal nitrogen	mg/l N	51 (4)	1.033	3.410	30/11	0.050	30/03	1.90	0.37	1.67	4.20	2.00	2.28	1.74	1.56
Nitrite	mg/l N	51 (1)	0.252	1.440	11/05	0.020	26/01	0.26	0.06	0.20	0.67	0.10	0.33	0.47	0.18
Nitrate	mg/l N	51	4.98	16.40	30/03	0.60	21/12	4.1	2.0	3.9	7.0	3.1	4.5	5.1	3.7
Chloride	mg/l Cl	51	47.5	140.0	30/03	15.0	14/09	53.2	27.0	49.4	86.7	59.6	51.7	54.0	46.9
Total alkalinity	mg/l $CaCO_3$	50	78.0	102.0	23/03	29.0	14/09	92.1	53.9	90.5	134.3	84.5	98.9	97.3	85.6
Orthophosphate	mg/l P	51	0.972	1.870	09/11	0.160	14/09	1.15	0.20	1.05	2.61	0.69	1.40	1.67	0.93
Silica	mg/l SiO_2	51	8.42	17.50	23/02	2.13	11/05	8.07	5.11	8.11	10.30	8.05	6.83	8.75	8.45
Calcium	mg/l Ca	50	31.6	38.0	23/02	15.0	14/09	32.9	25.6	33.4	38.6	32.7	33.9	33.4	31.3
Magnesium	mg/l Mg	50	7.22	13.40	03/08	3.40	14/09	7.2	4.8	7.2	9.1	6.9	7.9	7.5	6.7

Ribble at Samlesbury 1993

Harmonised monitoring station number : 01 008
Measuring authority : NRA-NW NGR : 34 (SD) 590 305

Flow measurement station : 071001 - Samlesbury
C.A.(km²) : 1145.0 NGR : 34 (SD) 589 304

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	50	9.5	19.0	01/07	2.0	25/11	9.8	1.0	9.8	18.0	4.2	11.8	15.2	7.6
pH	pH units	46	8.0	9.4	13/05	7.4	14/01	7.8	7.0	7.8	8.6	7.5	7.9	8.0	7.6
Conductivity	µS/cm	46	397	581	04/03	166	09/12	416	235	411	626	409	451	437	368
Suspended solids	mg/l	45 (2)	16.0	210.0	05/08	2.0	01/04	19.1	1.7	8.1	65.9	21.0	13.6	16.3	25.0
Dissolved oxygen	mg/l O	47	10.22	12.90	25/11	7.20	05/08	10.13	7.19	10.16	12.83	11.59	9.75	8.73	10.66
BOD (inhibited)	mg/l O	46	2.1	10.4	05/08	0.8	26/08	2.8	1.1	2.5	6.1	2.7	3.2	2.7	2.7
Ammoniacal nitrogen	mg/l N	46 (5)	0.273	3.400	06/05	0.040	15/04	0.26	0.03	0.16	0.85	0.51	0.17	0.14	0.25
Nitrite	mg/l N	46	0.059	0.180	18/03	0.010	21/01	0.08	0.02	0.06	0.21	0.06	0.12	0.09	0.06
Nitrate	mg/l N	46	5.03	14.10	18/03	0.40	06/05	4.2	1.3	3.3	9.9	3.3	5.2	5.0	3.2
Chloride	mg/l Cl	46	32.3	72.0	04/03	10.0	13/08	33.2	14.6	30.2	56.0	37.8	35.9	32.7	26.5
Total alkalinity	mg/l $CaCO_3$	46	128.5	217.0	06/05	43.0	16/12	115.6	66.7	119.5	152.8	109.5	121.5	120.1	110.5
Orthophosphate	mg/l P	45	0.398	1.030	04/11	0.040	13/08	0.44	0.07	0.30	1.24	0.25	0.60	0.62	0.30
Silica	mg/l SiO_2	39 (2)	2.70	9.40	06/05	0.10	25/03	3.26	0.15	3.53	5.79	4.22	1.84	2.49	4.59
Calcium	mg/l Ca	42	50.4	64.0	27/05	29.0	09/12	51.1	34.0	51.2	63.9	50.6	52.0	50.7	49.9
Magnesium	mg/l Mg	42	4.90	8.30	08/07	2.25	13/08	5.2	2.8	5.1	7.5	4.9	5.7	5.3	4.7
Potassium	mg/l K	42	3.73	5.80	13/05	0.18	25/02	4.0	2.0	3.8	7.0	3.5	4.6	4.5	3.4
Sodium	mg/l Na	41	29.5	57.0	09/09	4.4	25/02	30.8	9.5	26.1	64.2	28.1	35.4	35.2	21.8

Eden at Temple Sowerby 1993

Harmonised monitoring station number : 01 017
Measuring authority : NRA-NW NGR : 35 (NY) 604 281

Flow measurement station : 076005 - Temple Sowerby
C.A.(km²) : 616.4 NGR : 35 (NY) 605 283

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	12	9.5	15.5	05/07	3.0	04/01	10.2	2.9	9.4	19.0	4.9	12.3	15.7	7.4
pH	pH units	11	8.1	8.4	06/09	7.7	09/08	8.1	7.4	8.0	8.7	7.9	8.3	8.2	8.0
Conductivity	µS/cm	11	382	446	06/09	287	09/08	359	226	378	476	339	367	385	343
Suspended solids	mg/l	11 (1)	5.4	8.0	05/04	2.0	08/11	8.1	1.2	3.5	27.1	7.3	7.6	4.7	12.7
Dissolved oxygen	mg/l O	12	11.00	13.70	04/01	9.10	09/08	11.20	8.76	11.11	13.82	12.30	11.40	10.48	11.02
BOD (inhibited)	mg/l O	10 (1)	1.4	2.4	01/02	0.5	07/06	1.9	0.7	1.7	3.3	1.7	2.0	2.0	1.7
Chloride	mg/l Cl	11	17.0	25.0	06/09	13.0	07/06	19.1	11.0	17.9	29.0	20.1	20.3	21.3	15.8
Total alkalinity	mg/l $CaCO_3$	11	168.0	190.0	04/01	125.0	09/08	149.3	85.9	156.3	189.7	143.8	156.2	150.3	148.3
Orthophosphate	mg/l P	11	0.070	0.205	08/11	0.020	04/05	0.14	0.02	0.10	0.39	0.08	0.20	0.19	0.10
Silica	mg/l SiO_2	10	2.34	4.70	04/01	0.70	05/04	2.42	0.38	2.45	4.19	3.06	1.42	2.13	3.06
Calcium	mg/l Ca	10	61.7	70.0	07/06	40.0	09/08	56.6	35.7	58.2	73.0	56.2	57.6	58.5	55.3
Magnesium	mg/l Mg	10	10.41	13.20	05/07	6.20	09/08	9.2	4.2	8.8	14.6	8.2	10.4	10.6	7.7
Potassium	mg/l K	10	2.62	4.10	08/11	1.64	01/02	2.8	1.5	2.5	4.9	2.2	3.0	3.5	2.5
Sodium	mg/l Na	9	11.4	16.2	06/09	8.6	07/06	10.2	5.2	9.0	17.4	9.8	10.7	11.7	8.2

South Tyne at Warden Bridge 1993

Harmonised monitoring station number : 02 021
Measuring authority : NRA-N NGR : 35 (NY) 910 660

Flow measurement station : 023004 - Haydon Bridge
C.A.(km²) : 751.1 NGR : 35 (NY) 856 647

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	12	9.3	15.0	21/07	4.9	07/12	9.3	1.9	8.4	19.0	4.0	11.3	15.1	6.5
pH	pH units	12	7.7	8.0	15/06	7.2	11/11	7.8	7.2	7.8	8.5	7.6	8.0	7.9	7.7
Conductivity	µS/cm	12	334	1522	07/12	120	20/04	247	119	241	405	248	263	268	208
Suspended solids	mg/l	12 (1)	4.4	14.0	07/12	1.0	24/05	11.2	1.3	4.4	27.6	11.3	11.1	13.5	9.0
Dissolved oxygen	mg/l O	12	12.07	14.70	24/05	10.30	21/07	11.30	9.02	11.41	13.68	12.35	10.94	10.02	11.66
BOD (inhibited)	mg/l O	10 (1)	1.5	2.2	11/11	1.0	16/02	1.7	0.5	1.5	3.2	1.5	1.8	1.8	1.5
Ammoniacal nitrogen	mg/l N	12 (3)	0.087	0.180	20/10	0.030	17/03	0.07	0.01	0.03	0.20	0.08	0.04	0.10	0.06
Chloride	mg/l Cl	12	14.6	18.0	16/02	11.5	16/09	13.9	7.8	12.8	24.1	16.9	14.4	12.1	12.3

Tees at Broken Scar 1993

Harmonised monitoring station number : 02 058
Measuring authority : NRA-N NGR : 45 (NZ) 265 131

Flow measurement station : 025001 - Broken Scar
C.A.(km²) : 818.4 NGR : 45 (NZ) 259 137

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	12	9.8	19.0	29/07	1.0	24/11	9.2	1.6	8.4	18.0	3.7	11.8	15.3	6.3
pH	pH units	10	7.9	8.3	24/11	7.4	17/05	7.6	6.9	7.7	8.2	7.6	7.6	7.6	7.5
Conductivity	µS/cm	4	420	1008	24/11	150	17/05	197	118	183	294	237	212	167	180
Suspended solids	mg/l	10	16.4	123.0	17/05	2.0	15/02	13.6	1.4	6.3	46.2	15.1	7.5	14.4	17.1
Dissolved oxygen	mg/l O	10	10.58	12.34	18/01	8.37	30/06	10.96	8.29	11.02	13.27	12.43	10.43	9.36	11.49
BOD (inhibited)	mg/l O	10(1)	1.7	3.6	18/01	1.0	15/02	1.8	0.9	1.7	3.2	1.9	1.8	1.9	1.7
Ammoniacal nitrogen	mg/l N	12	0.189	0.610	30/06	0.040	15/02	0.11	0.01	0.06	0.38	0.12	0.10	0.09	0.14
Nitrate	mg/l N	12(1)	2.43	12.61	24/11	0.47	30/06	1.3	0.2	1.0	3.5	1.9	1.3	0.8	1.5
Chloride	mg/l Cl	10	26.3	120.0	24/11	8.8	30/06	15.3	6.4	13.6	26.3	19.5	14.4	11.7	16.2
Total alkalinity	mg/l $CaCO_3$	10	96.3	320.0	24/11	35.5	17/05	65.8	33.2	60.9	101.3	76.4	69.4	60.5	57.7
Orthophosphate	mg/l P	10(7)	0.022	0.050	24/11	0.010	21/04	0.05	0.01	0.03	0.13	0.04	0.00	0.06	0.05

Trent at Nottingham 1993

Harmonised monitoring station number : 03 007
Measuring authority : NRA-ST NGR 43 (SK) 581 383

Flow measurement station : 028009 - Colwick
C.A.(km²) : 7486.0 NGR : 43 (SK) 620 399

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	50	11.3	20.0	30/06	3.0	24/11	12.7	5.1	12.0	21.1	7.7	15.0	18.5	10.6
pH	pH units	50	8.0	8.5	30/06	7.5	15/11	7.8	7.4	7.8	8.3	7.7	7.8	7.9	7.7
Conductivity	µS/cm	50	884	1120	08/07	470	14/12	884	611	904	1129	806	908	958	872
Suspended solids	mg/l	53	27.5	267.0	14/01	5.0	16/02	24.5	6.7	15.5	74.8	27.9	21.1	18.8	28.5
Dissolved oxygen	mg/l O	50	10.59	13.20	14/01	7.20	03/06	9.91	7.79	10.08	12.24	10.82	9.81	8.93	10.05
BOD (inhibited)	mg/l O	53	3.1	7.0	09/12	1.5	18/06	3.5	1.6	3.2	5.9	3.1	4.0	3.6	3.2
Tot. diss. org. carbon*	mg/l O	38	8.2	42.8	24/11	5.1	16/02	8.0	4.5	6.6	17.9	7.1	8.2	8.8	8.2
Ammoniacal nitrogen	mg/l N	53(4)	0.256	0.762	04/03	0.040	23/06	0.38	0.03	0.30	0.91	0.61	0.28	0.21	0.36
Nitrate	mg/l N	50	8.50	11.00	08/03	5.46	14/12	8.6	6.2	8.7	11.3	8.7	8.8	8.4	8.7
Chloride	mg/l Cl	50	103.4	157.0	03/09	44.0	14/12	98.9	54.9	99.3	149.6	86.6	100.1	117.4	95.7
Total alkalinity	mg/l $CaCO_3$	50	159.6	199.0	18/05	63.0	15/11	159.3	119.6	162.4	186.0	156.5	165.6	161.6	154.2
Orthophosphate	mg/l P	27	1.280	2.090	23/08	0.482	14/12	1.53	0.53	1.51	2.79	0.98	1.60	2.06	1.54
Silica	mg/l SiO_2	14	8.05	11.10	24/11	3.90	18/05	7.18	2.62	7.47	11.05	8.51	4.47	6.78	8.39
Sulphate	mg/l SO_4	14	145.02	198.00	03/09	64.90	14/12	169.6	110.6	170.9	223.00	155.2	177.5	174.0	163.7
Calcium	mg/l Ca	14	88.6	110.0	24/11	59.8	14/12	106.1	74.3	98.8	113.5	95.1	108.1	90.6	92.5
Magnesium	mg/l Mg	14	20.51	29.30	18/05	10.90	14/12	22.1	13.9	22.5	29.0	21.8	23.0	21.8	19.8
Potassium	mg/l K	14	9.99	13.70	03/09	6.50	14/12	9.9	6.6	9.8	15.5	7.8	10.1	11.6	10.4
Sodium	mg/l Na	14	66.4	114.0	03/09	24.7	14/12	73.8	34.0	74.8	130.1	62.0	72.8	86.4	72.5

Derwent at Wilne 1993

Harmonised monitoring station number : 03 011
Measuring authority : NRA-ST NGR : 43 (SK) 452 315

Flow measurement station : 028067 - Church Wilne
C.A.(km²) : 1177.5 NGR : 43 (SK) 438 316

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	52	11.4	21.0	07/06	4.0	22/11	12.0	4.0	11.1	21.0	6.4	14.2	17.9	9.4
pH	pH units	51	8.0	8.8	07/06	6.6	29/10	7.8	7.5	7.8	8.2	7.8	7.9	7.9	7.7
Conductivity	µS/cm	52	616	790	06/07	1	29/10	660	435	663	901	559	671	767	645
Suspended solids	mg/l	53	16.7	230.0	07/10	3.0	18/08	14.7	1.9	8.1	46.9	20.9	9.6	9.8	18.6
Dissolved oxygen	mg/l O	50	10.70	15.40	07/06	7.00	11/06	10.03	6.93	10.20	13.09	11.68	10.10	8.48	10.33
BOD (inhibited)	mg/l O	52	2.7	7.0	13/07	1.0	17/03	2.6	1.2	2.5	4.2	2.3	2.7	2.6	2.6
Tot. diss. org. carbon	mg/l O	47	4.9	11.0	26/02	2.5	27/01	4.9	2.4	4.4	9.3	3.8	5.0	5.8	5.1
Ammoniacal nitrogen	mg/l N	51	0.380	1.410	30/11	0.086	29/06	0.31	0.06	0.26	0.73	0.40	0.29	0.23	0.34
Nitrate	mg/l N	49	4.84	5.90	17/03	2.90	17/12	4.4	3.1	4.5	5.8	4.3	4.3	4.5	4.4
Chloride	mg/l Cl	50	61.0	87.0	07/01	27.0	17/12	67.6	35.3	66.7	109.8	55.8	66.8	84.6	64.7
Total alkalinity	mg/l $CaCO_3$	52	149.5	187.0	09/11	86.0	07/10	155.7	112.1	159.5	189.0	139.1	162.1	173.4	149.9
Orthophosphate	mg/l P	50	0.727	1.740	29/10	0.155	17/12	0.89	0.21	0.84	1.90	0.50	0.90	1.37	0.82
Silica	mg/l SiO_2	12	7.14	9.00	30/11	5.20	23/04	5.27	0.46	5.61	8.08	6.07	3.27	4.46	6.61
Sulphate	mg/l SO_4	16	85.89	112.00	25/06	40.50	17/12	103.2	60.6	99.5	168.50	81.1	108.0	125.9	95.5
Calcium	mg/l Ca	10	67.1	78.5	03/12	46.5	17/12	73.0	55.5	75.0	86.0	68.5	75.9	76.8	67.9
Magnesium	mg/l Mg	10	13.27	21.10	08/02	6.32	17/12	17.0	9.1	15.9	24.9	13.8	17.9	20.4	15.5
Potassium	mg/l K	15	5.93	18.00	11/06	2.70	17/12	5.2	3.0	5.1	7.7	4.5	5.1	6.3	5.0
Sodium	mg/l Na	15	38.1	67.0	25/06	5.7	03/12	50.9	21.8	47.8	83.8	37.3	49.1	68.0	44.4

Teme at Powick 1993

Harmonised monitoring station number : 03 029
Measuring authority : NRA-ST NGR : 32 (SO) 836 525

Flow measurement station : 054029 - Knightsford Br.
C.A.(km²) : 1480.0 NGR : 32 (SO) 735 557

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	26	11.3	19.0	10/06	2.0	24/11	10.5	3.0	9.9	19.1	5.2	12.5	16.4	7.9
pH	pH units	25	8.2	8.7	16/03	7.8	16/01	8.0	7.5	8.0	8.5	7.9	8.1	8.2	7.8
Conductivity	µS/cm	26	419	480	10/03	260	16/01	424	270	409	521	368	422	441	399
Suspended solids	mg/l	26(1)	19.8	228.0	16/01	2.0	10/03	40.4	1.9	11.8	189.4	67.9	34.2	12.6	48.3
Dissolved oxygen	mg/l O	26	10.90	13.80	24/11	8.80	10/06	10.67	8.29	11.03	13.37	12.02	10.83	9.85	11.14
BOD (inhibited)	mg/l O	24(3)	1.6	2.5	16/06	0.7	19/01	1.9	0.8	1.6	4.2	1.7	2.2	1.9	1.9
Tot. diss. org. carbon	mg/l O	22	3.0	7.4	22/01	0.7	11/08	4.9	1.9	3.5	13.1	4.5	5.1	4.8	5.2
Ammoniacal nitrogen	mg/l N	26(15)	0.077	0.545	22/01	0.040	16/01	0.11	0.01	0.08	0.23	0.10	0.22	0.06	0.08
Nitrate	mg/l N	25	5.16	6.48	12/02	4.20	16/06	4.3	2.3	4.2	6.5	5.4	4.4	3.3	4.2
Chloride	mg/l Cl	26	25.5	33.0	30/11	17.5	16/06	23.3	15.2	22.9	31.4	23.0	22.6	25.4	22.3
Total alkalinity	mg/l $CaCO_3$	26	145.7	176.0	10/03	86.0	16/01	138.0	76.3	141.0	190.0	117.8	149.3	164.1	122.9
Orthophosphate	mg/l P	25	0.137	0.289	16/01	0.030	16/03	0.19	0.03	0.15	0.40	0.13	0.10	0.25	0.27

Avon at Evesham Road Bridge — 1993

Harmonised monitoring station number : 03 416
Measuring authority : NRA-ST NGR : 42 (SP) 034 431

Flow measurement station : 054002 - Evesham
C.A.(km²) : 2210.0 NGR : 42 (SP) 040 438

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1977 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	48	10.6	20.0	10/06	2.0	04/01	11.3	3.5	11.0	20.0	5.4	13.4	17.1	8.7
pH	pH units	49	8.1	8.9	12/05	7.7	14/10	8.0	7.6	7.9	8.6	7.9	8.2	8.0	7.8
Conductivity	µS/cm	49	850	1030	22/03	530	14/12	932	608	950	1203	845	918	1030	934
Suspended solids	mg/l	49	25.0	166.0	14/10	4.0	04/03	27.7	5.1	15.9	86.7	41.7	26.4	16.9	24.4
Dissolved oxygen	mg/l O	48	11.02	13.90	04/01	7.60	09/07	10.56	7.91	10.85	13.26	11.86	10.77	8.94	10.74
BOD (inhibited)	mg/l O	48	3.1	7.5	07/04	1.5	03/02	3.2	1.5	2.8	6.6	2.8	4.6	2.9	2.4
Tot. diss. org. carbon	mg/l O	27	6.6	10.6	14/12	3.0	07/04	8.9	5.4	7.2	18.7	8.7	8.9	9.0	9.1
Ammoniacal nitrogen	mg/l N	49 (8)	0.182	0.515	28/01	0.040	22/03	0.25	0.02	0.16	0.70	0.46	0.14	0.13	0.27
Nitrate	mg/l N	49	10.18	12.90	08/03	6.66	16/08	10.6	7.8	10.5	14.7	11.6	9.9	9.9	11.0
Chloride	mg/l Cl	49	59.8	89.0	08/03	37.0	14/10	78.6	39.3	77.2	138.9	68.7	72.2	94.1	79.8
Total alkalinity	mg/l $CaCO_3$	49	194.4	235.0	17/02	127.0	14/12	195.6	149.1	198.6	229.0	191.7	201.8	196.1	191.9
Orthophosphate	mg/l P	14	1.415	2.440	27/07	0.535	19/01	1.80	0.52	1.62	3.92	1.11	1.60	2.57	1.98
Silica	mg/l SiO_2	10	11.45	15.90	28/10	2.30	07/04	10.74	3.90	11.31	15.45	10.13	6.60	11.63	12.95
Sulphate	mg/l SO_4	10	180.10	221.00	07/04	102.00	17/11	196.0	99.4	198.2	266.00	171.1	199.1	218.1	189.4
Calcium	mg/l Ca	8	112.8	133.0	28/10	99.2	28/05	119.9	87.1	123.6	140.4	119.6	117.7	121.7	118.4
Magnesium	mg/l Mg	8	28.42	32.00	29/09	17.10	17/11	28.4	15.7	27.2	39.3	24.5	30.0	31.2	27.8
Potassium	mg/l K	10	9.65	11.60	02/08	7.00	03/02	9.9	6.3	9.1	14.7	7.5	10.2	12.1	10.3
Sodium	mg/l Na	9	45.9	60.0	27/07	24.5	17/11	57.9	21.7	56.9	99.8	44.7	57.3	72.2	59.7

Aire at Fleet Weir — 1993

Harmonised monitoring station number : 04 005
Measuring authority : NRA-Y NGR : 44 (SE) 381 285

Flow measurement station : 027080 - Fleet Weir
C.A.(km²) : 865.0 NGR : 44 (SE) 381 295

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Flow	m^3s^{-1}	365	18.47	161.1	13/09	5.63	05/09								
Temperature	°C	33	10.0	16.7	07/06	3.3	18/03	12.6	4.9	12.1	20.6	7.3	14.2	17.6	10.2
pH	pH units	50	7.5	7.8	07/06	7.1	29/07	7.5	7.2	7.5	7.8	7.6	7.5	7.4	7.5
Conductivity	µS/cm	50	737	1122	02/03	333	14/09	706	396	677	1076	668	712	790	639
Suspended solids	mg/l	50	20.1	125.0	05/08	4.0	18/03	27.0	3.4	17.7	78.2	30.8	24.8	22.7	31.5
Dissolved oxygen	mg/l O	33	9.27	12.80	25/11	5.10	29/07	7.56	2.64	7.87	11.63	10.25	6.86	5.20	8.50
BOD (inhibited)	mg/l O	50	7.1	15.0	05/04	3.9	25/01	8.0	3.5	7.1	13.8	7.8	8.3	8.3	7.6
Ammoniacal nitrogen	mg/l N	50	1.188	2.540	23/03	0.290	14/09	2.22	0.42	1.59	4.90	1.95	2.24	2.44	1.80
Nitrite	mg/l N	50 (1)	0.138	0.370	16/06	0.010	25/01	0.34	0.05	0.26	0.86	0.15	0.40	0.52	0.25
Nitrate	mg/l N	50	5.41	9.10	03/09	1.51	14/09	5.2	2.6	4.8	8.7	4.3	5.6	5.9	4.8
Chloride	mg/l Cl	50	90.7	199.0	05/01	29.5	14/09	82.9	36.5	76.3	152.4	82.5	84.4	92.1	71.8
Total alkalinity	mg/l $CaCO_3$	50	128.5	154.0	23/03	77.0	14/09	123.1	76.6	125.4	165.4	114.1	124.1	134.6	118.7
Orthophosphate	mg/l P	50	0.817	1.670	23/03	0.060	25/01	1.35	0.16	1.16	3.37	0.83	1.50	1.96	1.03
Calcium	mg/l Ca	49	59.1	71.0	23/11	37.2	05/08	60.8	45.8	60.3	74.0	59.3	60.9	60.8	60.9
Magnesium	mg/l Mg	49	11.69	16.00	24/02	6.26	14/09	12.7	4.8	11.7	20.5	12.1	13.1	14.4	11.2

Derwent at Loftsome Bridge — 1993

Harmonised monitoring station number : 04 014
Measuring authority : NRA-Y NGR : 44 (SE) 707 302

Flow measurement station : 027041 - Buttercrambe
C.A.(km²) : 1586.0 NGR : 44 (SE) 731 587

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	49	10.0	18.5	06/07	3.0	14/01	10.5	3.1	10.1	19.5	5.3	13.0	16.8	7.8
pH	pH units	51	7.7	8.1	08/02	6.4	16/12	7.9	7.4	7.9	8.3	7.8	8.0	7.9	7.8
Conductivity	µS/cm	44	593	749	14/01	436	16/08	532	370	531	654	535	525	538	527
Suspended solids	mg/l	51	15.3	107.0	26/04	2.0	06/07	24.8	2.1	11.7	78.9	32.1	18.2	10.1	29.0
Dissolved oxygen	mg/l O	46	10.66	16.00	11/01	7.50	22/09	10.63	8.22	10.66	12.62	11.80	10.55	9.23	10.57
BOD (inhibited)	mg/l O	50 (2)	1.5	3.8	11/10	0.5	04/08	1.7	0.7	1.5	3.1	1.8	2.0	1.4	1.7
Ammoniacal nitrogen	mg/l N	51 (13)	0.121	0.850	16/12	0.030	04/06	0.11	0.01	0.09	0.26	0.14	0.09	0.08	0.11
Nitrate	mg/l N	44	4.34	10.49	11/01	1.30	25/06	4.2	2.3	4.0	7.0	5.3	4.4	3.2	4.2
Chloride	mg/l Cl	51	38.6	68.0	14/01	17.2	11/01	32.1	22.9	30.9	42.2	35.3	30.5	31.0	32.1
Total alkalinity	mg/l $CaCO_3$	44	156.1	179.0	02/03	112.0	16/08	148.8	100.3	153.8	182.0	146.3	153.9	152.6	141.5
Orthophosphate	mg/l P	51 (20)	0.067	0.350	19/05	0.030	22/01	0.10	0.02	0.08	0.24	0.07	0.10	0.13	0.11
Silica	mg/l SiO_2	18	7.25	9.20	02/11	4.70	06/07	6.20	2.47	6.27	8.99	7.05	4.78	6.14	6.94
Sulphate	mg/l SO_4	19	86.47	106.00	22/01	18.90	22/10	80.9	45.0	80.7	105.80	77.9	81.8	82.4	80.3
Calcium	mg/l Ca	42	96.6	123.0	11/01	67.2	16/08	91.8	65.8	92.0	109.5	99.9	90.7	87.1	90.0
Magnesium	mg/l Mg	42	9.26	12.70	11/01	6.13	16/08	9.7	3.8	8.8	18.9	11.5	9.3	9.2	9.4

Nene at Wansford — 1993

Harmonised monitoring station number : 05 511
Measuring authority : NRA-A NGR : 52 (TL) 082 996

Flow measurement station : 032001 - Orton
C.A.(km²) : 1634.3 NGR : 52 (TL) 166 972

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	48	11.8	21.6	10/06	2.5	22/11	11.5	2.9	11.0	20.4	5.4	13.8	17.8	8.3
pH	pH units	48	8.2	8.8	11/05	7.8	04/10	8.1	7.7	8.0	8.8	8.0	8.3	8.2	7.9
Conductivity	µS/cm	48	980	1120	09/03	636	14/06	956	723	952	1198	929	936	988	976
Suspended solids	mg/l	26 (2)	17.8	76.0	12/01	5.0	21/07	23.2	4.3	13.9	67.1	29.9	22.2	16.5	20.5
Dissolved oxygen	mg/l O	48	9.83	14.20	24/03	5.66	14/06	10.58	7.75	10.55	13.07	11.87	10.74	9.02	10.83
BOD (inhibited)	mg/l O	48 (5)	2.8	12.4	11/05	1.0	02/08	3.6	1.2	2.9	8.4	3.1	5.8	3.1	2.5
Ammoniacal nitrogen	mg/l N	48 (8)	0.115	0.412	22/11	0.023	15/03	0.33	0.02	0.15	1.01	0.63	0.17	0.11	0.48
Nitrite	mg/l N	24	0.108	0.269	13/09	0.045	05/07	0.10	0.03	0.10	0.20	0.09	0.12	0.08	0.13
Nitrate	mg/l N	48	10.15	13.90	06/01	6.75	21/07	9.6	5.4	9.3	15.1	12.2	9.2	6.9	10.1
Chloride	mg/l Cl	48	74.9	98.4	13/09	37.8	14/06	75.5	43.6	75.3	112.0	69.3	71.5	84.9	77.1
Total alkalinity	mg/l $CaCO_3$	24	203.5	229.0	09/02	173.0	13/09	204.2	165.5	209.6	235.0	202.2	206.7	205.5	202.4
Silica	mg/l SiO_2	24	5.85	9.42	09/02	0.27	11/05	5.79	0.22	6.20	9.54	6.89	2.60	5.06	8.13
Calcium	mg/l Ca	12	11.0	12.1	11/05	8.7	12/01	10.9	92.6	138.4	154.9	10.5	11.1	11.7	10.6
Magnesium	mg/l Mg	24	161.15	202.00	24/05	97.70	12/01	167.9	7.7	11.3	13.2	157.9	167.2	190.5	176.4
Sulphate	mg/l SO_4	12	134.60	151.00	09/03	118.00	31/08	128.2	105.4	168.1	229.00	128.6	139.3	129.5	129.8
Potassium	mg/l K	12	9.55	11.50	31/08	5.50	12/01	10.5	5.4	9.9	19.0	7.9	10.5	12.8	11.0
Sodium	mg/l Na	12	52.1	66.0	05/04	29.3	12/01	53.8	22.8	50.3	94.1	43.3	51.9	65.8	58.5

Bure at Horstead Mill 1993

Harmonised monitoring station number : 05 722
Measuring authority : NRA-A NGR : 63 (TG) 267 198
Flow measurement station : 034003 - Ingworth
C.A.(km²) : 164.7 NGR : 63 (TG) 192 296

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	48	11.3	20.0	05/07	3.0	05/01	10.7	4.0	10.0	19.9	6.1	12.8	16.9	8.3
pH	pH units	48	8.0	8.5	12/07	7.7	15/11	7.8	7.4	7.9	8.3	7.7	7.9	7.9	7.7
Conductivity	µS/cm	48	799	883	18/01	585	15/11	744	656	751	877	763	716	729	764
BOD (inhibited)	mg/l O	48(11)	1.5	3.0	04/05	1.0	18/01	1.7	0.9	1.6	3.0	1.8	2.2	1.6	1.3
Ammoniacal nitrogen	mg/l N	48(14)	0.072	0.270	18/10	0.023	15/03	0.13	0.01	0.07	0.40	0.21	0.09	0.08	0.13
Nitrite	mg/l N	24	0.054	0.112	15/11	0.018	29/03	0.07	0.02	0.05	0.11	0.06	0.05	0.07	0.07
Nitrate	mg/l N	48	5.95	8.90	18/01	3.88	19/07	5.8	3.5	5.5	8.7	7.5	5.7	4.5	5.8
Chloride	mg/l Cl	48	62.0	75.8	01/03	53.3	15/11	58.6	48.5	58.4	71.8	61.1	56.3	56.7	60.8
Total alkalinity	mg/l $CaCO_3$	24	202.0	223.0	29/11	93.0	15/11	217.8	179.8	213.1	253.0	218.7	206.2	215.2	233.1
Silica	mg/l SiO_2	24	9.12	13.60	04/10	2.84	04/05	7.39	2.92	8.03	12.38	8.90	4.73	6.33	10.53
Sulphate	mg/l SO_4	24	100.37	122.00	01/02	76.20	15/11	90.7	57.8	82.1	129.30	90.0	85.2	84.4	92.2
Calcium	mg/l Ca	12	126.8	141.0	18/01	110.0	12/07	119.0	98.4	117.8	142.7	122.3	117.2	114.7	123.3
Magnesium	mg/l Mg	12	8.01	8.27	01/11	7.63	12/07	7.6	5.0	7.6	9.3	7.7	7.7	7.2	7.3
Potassium	mg/l K	12	3.79	4.41	04/10	3.21	14/06	4.0	2.5	4.0	5.6	4.1	3.6	4.0	4.5
Sodium	mg/l Na	12	28.1	29.1	29/11	26.2	04/10	30.6	20.3	27.8	47.1	29.6	29.2	29.3	29.2

Stour at Langham 1993

Harmonised monitoring station number : 05 810
Measuring authority : NRA-A NGR : 62 (TM) 026 345
Flow measurement station : 036006 - Langham
C.A.(km²) : 578.0 NGR : 62 (TM) 020 344

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	45	11.9	18.0	25/05	1.0	04/01	11.3	2.9	11.1	20.0	5.2	13.7	17.2	8.3
pH	pH units	47	8.3	8.7	22/03	8.0	06/09	8.2	7.8	8.2	8.9	8.1	8.5	8.3	8.1
Conductivity	µS/cm	47	956	1290	26/01	659	15/11	916	729	908	1079	931	877	887	982
Suspended solids	mg/l	25(5)	12.9	62.0	15/11	5.0	03/02	16.4	2.5	10.0	48.0	16.6	20.9	10.9	17.1
Dissolved oxygen	mg/l O	47	10.46	15.70	29/03	6.11	28/06	10.79	7.59	10.79	13.92	12.27	11.34	9.22	10.47
BOD (inhibited)	mg/l O	47(6)	2.1	9.2	25/08	1.0	18/01	3.2	1.1	2.2	9.4	2.3	5.5	2.5	2.1
Tot. diss. org. carbon	mg/l O	23(1)	8.1	48.5	01/02	0.2	01/06	6.3	4.3	6.3	10.1	5.8	7.6	6.5	6.2
Ammoniacal nitrogen	mg/l N	47(14)	0.051	0.192	27/04	0.023	01/03	0.12	0.02	0.08	0.37	0.18	0.08	0.07	0.13
Nitrite	mg/l N	23	0.050	0.091	04/01	0.028	07/07	0.07	0.02	0.06	0.15	0.07	0.09	0.04	0.08
Nitrate	mg/l N	47	7.90	16.20	27/04	2.45	25/08	7.8	2.3	7.1	15.8	11.9	7.4	4.2	8.5
Chloride	mg/l Cl	47	80.1	156.0	26/01	32.5	15/11	69.4	39.5	66.9	100.7	60.5	64.3	76.8	75.0
Total alkalinity	mg/l $CaCO_3$	23	256.7	287.0	04/05	193.0	15/11	246.0	195.2	250.1	280.0	244.0	242.5	250.0	250.8
Silica	mg/l SiO_2	23	7.59	13.00	20/10	0.97	22/03	7.76	0.27	8.02	13.28	7.83	4.19	8.40	10.22
Sulphate	mg/l SO_4	23	91.86	128.00	03/03	45.70	15/11	104.1	70.1	96.5	140.10	111.9	110.6	94.6	102.6
Calcium	mg/l Ca	12	135.6	156.0	04/01	107.0	23/08	134.5	95.1	136.4	166.2	147.2	133.6	120.1	139.1
Magnesium	mg/l Mg	12	7.57	9.31	29/03	4.10	15/11	8.8	5.3	8.3	19.7	7.8	8.6	9.6	8.6
Potassium	mg/l K	12	6.91	9.89	21/09	4.51	01/02	7.6	3.6	7.5	12.1	6.1	7.2	8.0	9.1
Sodium	mg/l Na	12	40.9	56.0	21/09	15.6	15/11	43.7	20.7	43.7	69.9	34.2	40.5	50.4	49.0

Thames at Teddington Weir 1993

Harmonised monitoring station number : 06 010
Measuring authority : NRA-T NGR : 51 (TQ) 171 714
Flow measurement station : 039001 - Kingston
C.A.(km²) : 9948.0 NGR : 51 (TQ) 177 698

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	29	13.1	21.1	29/06	3.0	04/01	12.2	3.9	12.1	21.0	6.2	14.1	18.4	9.7
pH	pH units	29	7.9	8.7	17/05	7.3	15/04	8.0	7.5	7.9	8.7	7.9	8.3	7.9	7.8
Conductivity	ms/cm	12	652	980	15/04	391	04/10	614	484	585	716	622	588	631	620
Suspended solids	mg/l	13	13.4	48.0	04/10	3.6	01/11	19.9	4.1	13.2	66.6	26.2	21.3	12.0	21.5
Dissolved oxygen	mg/l O	21	9.71	12.70	19/04	6.60	23/08	9.99	6.69	9.99	13.05	11.29	10.51	8.56	9.83
BOD (inhibited)	mg/l O	28(17)	2.4	5.5	24/05	2.0	04/01	2.9	1.1	2.3	6.4	2.2	4.3	2.8	2.2
Ammoniacal nitrogen	mg/l N	29(2)	0.402	1.080	26/07	0.050	16/03	0.33	0.03	0.22	1.00	0.36	0.21	0.35	0.41
Nitrite	mg/l N	12	0.093	0.140	01/11	0.050	16/03	0.12	0.04	0.10	0.26	0.13	0.11	0.12	0.13
Nitrate	mg/l N	12	7.19	8.80	15/02	4.50	04/10	7.4	5.5	7.1	10.0	8.4	6.6	6.5	7.9
Chloride	mg/l Cl	29	47.4	63.0	24/05	30.0	15/04	44.9	30.0	42.2	65.8	42.8	41.3	48.3	46.1
Total alkalinity	mg/l $CaCO_3$	13	209.1	227.0	01/11	177.0	15/04	186.1	146.2	189.0	213.0	183.6	196.7	189.8	179.3
Orthophosphate	mg/l P	29	0.964	1.740	16/08	0.400	20/01	1.49	0.38	1.22	3.78	0.89	1.20	2.15	1.65
Sulphate	mg/l SO_2	13	72.08	105.00	04/10	64.00	15/02	70.2	49.0	64.4	82.00	68.2	66.0	65.3	71.1
Calcium	mg/l Ca	13	105.1	118.0	20/01	55.0	04/10	98.7	77.7	99.7	116.2	102.8	102.7	95.4	96.7
Potassium	mg/l K	13	7.01	17.60	12/07	5.00	15/04	7.2	4.3	6.6	10.5	6.3	6.3	8.1	7.5
Sodium	mg/l Na	13	32.8	42.5	09/08	20.2	04/10	34.7	19.8	30.5	55.7	28.7	30.8	41.6	36.2

Lee at Waterhall 1993

Harmonised monitoring station number : 06 101
Measuring authority : NRA-T NGR : 52 (TL) 299 099
Flow measurement station : 038018 - Water Hall
C.A.(km²) : 150.0 NGR : 52 (TL) 299 099

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	25	12.3	20.2	23/07	5.0	03/03	12.0	4.5	11.9	20.0	6.9	13.7	17.0	9.3
pH	pH units	25	7.9	8.2	25/06	7.5	30/04	8.0	7.5	8.0	8.4	8.0	8.1	8.1	7.8
Conductivity	µS/cm	13	781	884	03/03	612	17/09	823	629	818	1116	880	814	782	859
Suspended solids	mg/l	13	16.4	70.8	11/10	4.0	23/07	14.3	2.8	9.9	45.4	15.9	13.1	16.7	13.4
Dissolved oxygen	mg/l O	25	9.83	12.00	23/11	5.00	07/07	10.27	7.93	10.27	12.81	11.31	10.36	9.29	10.18
BOD (inhibited)	mg/l O	24(19)	2.3	4.4	11/10	2.0	11/01	2.6	1.3	2.4	4.3	2.6	3.0	2.2	2.5
Tot. diss. org. carbon	mg/l O	13	12.4	20.3	11/01	10.1	30/04	18.4	3.3	14.1	53.1	17.6	17.5	10.5	20.7
Nitrite	mg/l N	13(5)	0.081	0.250	11/01	0.050	03/03	0.17	0.05	0.11	0.28	0.11	0.12	0.29	0.18
Nitrate	mg/l N	13	9.83	12.50	20/08	4.40	10/12	12.2	7.4	11.1	16.2	12.6	11.8	11.4	13.4
Chloride	mg/l Cl	25	84.6	102.0	28/05	63.0	17/09	80.1	47.0	71.6	121.7	90.3	71.3	79.6	81.3
Total alkalinity	mg/l $CaCO_3$	13	211.3	250.0	03/03	138.0	28/05	212.2	138.9	224.3	255.0	206.8	219.8	212.9	204.6
Orthophosphate	mg/l P	25	2.335	6.400	11/10	1.350	21/01	2.60	1.16	2.50	4.64	2.42	2.50	2.73	2.78
Sulphate	mg/l SO_4	13	89.62	100.00	28/05	70.00	17/09	83.4	58.8	83.8	127.30	84.6	84.2	78.5	88.2
Calcium	mg/l Ca	13	124.2	141.0	03/03	95.0	17/09	119.1	93.3	118.0	139.7	122.5	120.4	114.1	116.0
Magnesium	mg/l Mg	13	3.93	4.40	10/12	3.10	17/09	4.2	3.1	4.0	5.0	4.6	4.0	4.2	3.9
Potassium	mg/l K	13	8.74	10.60	23/07	6.60	17/09	9.3	5.9	9.0	15.8	8.6	8.4	9.4	10.7
Sodium	mg/l Na	13	63.8	80.0	28/05	44.9	17/09	69.2	37.1	68.3	125.1	70.8	70.3	69.7	68.1

Great Stour at Bretts Bailey Bridge 1993

Harmonised monitoring station number : 07 003
Measuring authority : NRA-S NGR : 61 (TR) 187 603

Flow measurement station : 040011 - Horton
C.A.(km²) : 345.0 NGR : 61 (TR) 116 554

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	52	11.6	19.6	01/07	4.0	24/11	12.0	4.1	12.1	18.7	7.1	13.5	16.8	9.9
pH	pH units	52	8.0	8.3	29/06	7.8	27/04	7.9	7.4	7.9	8.3	7.8	8.0	7.9	7.8
Suspended solids	mg/l	51(3)	11.7	72.0	07/01	3.0	06/05	13.1	1.0	7.1	46.3	22.2	7.8	6.8	16.1
BOD (inhibited)	mg/l O	50(3)	2.0	3.7	05/03	1.0	21/01	2.6	1.2	2.4	4.9	2.9	2.8	2.1	2.4
Tot. diss. org. carbon	mg/l O	44	15.1	26.6	16/11	9.1	15/02	10.4	2.9	5.3	20.9	7.0	14.0	7.2	9.9
Ammoniacal nitrogen	mg/l N	51(10)	0.124	0.400	06/05	0.050	15/03	0.30	0.02	0.13	1.15	0.47	0.30	0.11	0.36
Nitrite	mg/l N	51	0.079	0.183	24/11	0.037	27/09	0.12	0.03	0.08	0.28	0.10	0.11	0.11	0.13
Nitrate	mg/l N	50	8.13	10.20	20/08	5.94	27/09	6.1	3.9	5.9	9.6	7.2	5.7	5.1	6.7
Chloride	mg/l Cl	51	70.4	99.0	20/08	48.0	14/10	54.4	36.9	51.6	83.7	56.9	52.1	52.9	57.6
Total alkalinity	mg/l $CaCO_3$	51	218.8	256.0	28/06	122.0	14/10	215.4	154.8	223.2	244.0	199.6	221.7	224.2	210.4
Orthophosphate	mg/l P	51	0.883	1.550	02/08	0.450	14/10	1.06	0.34	0.98	2.00	0.77	1.00	1.30	1.13

Itchen at Gatersmill 1993

Harmonised monitoring station number : 07 013
Measuring authority : NRA-S NGR : 41 (SU) 434 156

Flow measurement station : 042010 - Highbridge
C.A.(km²) : 360.0 NGR : 41 (SU) 467 213

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1980 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	56	11.0	17.5	02/07	5.0	01/03	11.4	5.1	11.1	18.0	7.7	13.0	16.0	9.9
pH	pH units	65	8.1	8.4	02/07	7.8	06/10	8.1	7.8	8.1	8.4	8.0	8.1	8.2	8.0
Suspended solids	mg/l	56(3)	14.0	48.0	06/10	3.0	02/07	11.2	2.2	7.0	31.2	26.4	9.6	4.7	9.9
BOD (inhibited)	mg/l O	56(1)	2.1	3.9	30/11	1.0	09/08	1.9	0.9	1.8	3.2	2.1	2.2	1.5	1.8
Tot. diss. org. carbon	mg/l O	47	8.8	25.8	11/10	3.1	10/03	7.2	4.1	6.7	13.2	6.9	6.8	7.0	7.7
Ammoniacal nitrogen	mg/l N	65(12)	0.096	0.280	02/08	0.050	10/03	0.11	0.01	0.09	0.25	0.15	0.08	0.06	0.12
Nitrite	mg/l N	65	0.049	0.086	03/09	0.030	10/03	0.06	0.03	0.05	0.10	0.05	0.05	0.06	0.07
Nitrate	mg/l N	61	5.32	6.40	25/01	3.03	06/10	5.1	3.9	5.2	6.2	5.5	5.2	4.6	5.1
Chloride	mg/l Cl	65	23.0	32.0	30/11	19.5	06/10	21.7	17.8	21.3	26.8	22.4	21.0	21.0	22.4
Total alkalinity	mg/l $CaCO_3$	56	237.0	254.0	02/07	160.0	06/10	235.3	199.9	235.5	255.0	239.5	231.1	233.7	233.0
Orthophosphate	mg/l P	65	0.276	0.440	19/07	0.160	10/03	0.40	0.15	0.39	0.72	0.36	0.40	0.44	0.48
Silica	mg/l SiO_2	55	10.55	12.50	12/01	6.30	06/05	10.26	5.48	10.75	12.46	10.33	7.55	11.00	11.69

Stour at Bridge at Iford 1993

Harmonised monitoring station number : 08 200
Measuring authority : NRA-W NGR : 40 (SZ) 122 955

Flow measurement station : 043007 - Throop Mill
C.A.(km²) : 1073.0 NGR : 40 (SZ) 113 958

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	51	12.3	19.4	30/06	3.6	23/11	11.1	4.4	10.6	19.0	6.8	12.8	16.8	8.6
pH	pH units	54	7.9	8.3	29/03	7.5	15/01	7.9	7.5	8.0	8.4	7.9	8.1	8.0	7.8
Suspended solids	mg/l	53	17.6	83.0	15/01	3.0	27/08	15.7	3.2	8.8	45.8	18.1	10.6	9.2	20.4
Dissolved oxygen	mg/l O	51	9.34	12.23	23/11	7.02	13/09	10.41	7.62	10.18	13.11	10.79	11.09	9.16	10.49
BOD (inhibited)	mg/l O	54	2.7	6.1	22/03	1.0	16/08	2.8	1.2	2.2	6.2	2.4	3.9	1.9	2.6
Ammoniacal nitrogen	mg/l N	54(1)	0.182	0.850	12/05	0.020	29/03	0.17	0.01	0.11	0.38	0.21	0.15	0.11	0.19
Nitrite	mg/l N	54	0.082	0.350	12/05	0.030	03/03	0.09	0.03	0.07	0.18	0.06	0.10	0.10	0.09
Nitrate	mg/l N	54	6.40	8.46	08/02	3.65	12/05	5.6	3.3	5.7	8.9	6.6	5.3	4.5	6.2
Chloride	mg/l Cl	54	31.7	72.0	06/08	19.0	15/01	27.7	20.9	30.0	39.1	26.7	26.5	29.5	30.2
Orthophosphate	mg/l P	54	0.525	1.300	15/07	0.050	12/05	0.41	0.11	0.37	0.97	0.25	0.30	0.69	0.51
Magnesium	mg/l Mg	24	3.37	4.20	13/04	3.00	17/02	4.0	2.6	3.6	5.7	4.0	3.9	3.4	4.1
Potassium	mg/l K	24	4.41	6.70	29/09	3.20	03/03	5.3	3.0	4.8	8.2	4.7	4.2	5.1	6.8

Axe at Whitford Road Bridge 1993

Harmonised monitoring station number : 09 001
Measuring authority : NRA-SW NGR : 30 (SY) 262 953

Flow measurement station : 045004 - Whitford
C.A.(km²) : 288.5 NGR : 30 (SY) 262 953

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	26	10.2	18.3	23/07	5.2	05/03	10.8	3.9	10.2	18.1	5.9	12.2	16.0	8.8
pH	pH units	26	8.0	8.4	05/03	7.7	06/01	7.9	7.4	8.0	8.5	7.8	8.1	8.0	7.8
Conductivity	µS/cm	26	387	456	03/08	281	22/12	385	304	394	453	374	388	412	376
Suspended solids	mg/l	26(2)	18.2	145.0	30/09	2.0	10/08	14.5	1.6	5.6	51.2	16.8	10.0	5.6	24.5
Dissolved oxygen	mg/l O	25	10.99	14.70	05/03	7.10	21/06	10.94	8.30	10.89	13.57	12.05	11.24	9.79	10.72
BOD (inhibited)	mg/l O	26(3)	2.0	6.8	30/09	1.0	06/01	2.1	0.9	1.7	4.2	2.1	2.2	1.7	2.2
Tot. diss. org. carbon	mg/l O	26	12.1	39.7	30/09	5.9	05/03	12.8	3.7	11.1	25.3	11.0	12.3	11.4	15.7
Ammoniacal nitrogen	mg/l N	26(4)	0.089	0.330	30/09	0.020	16/02	0.10	0.01	0.06	0.30	0.16	0.08	0.05	0.12
Nitrite	mg/l N	26	0.040	0.097	30/09	0.010	10/08	0.05	0.02	0.04	0.10	0.04	0.05	0.03	0.06
Nitrate	mg/l N	26	4.19	5.15	28/01	3.28	19/08	3.9	2.2	3.5	5.9	4.4	3.4	3.1	4.6
Chloride	mg/l Cl	26	26.7	33.0	06/01	22.0	22/12	24.1	19.2	22.9	31.9	25.2	21.9	24.0	24.9
Total alkalinity	mg/l $CaCO_3$	26	139.0	170.0	03/08	90.0	22/12	135.7	89.3	139.6	167.8	120.9	143.5	154.1	126.6
Orthophosphate	mg/l P	26	0.282	0.520	06/09	0.140	19/11	0.26	0.12	0.23	0.46	0.22	0.30	0.34	0.24
Silica	mg/l SiO_2	26	9.41	11.60	27/10	4.50	12/03	9.49	4.49	9.95	12.73	9.19	7.54	10.25	10.88
Sulphate	mg/l SO_4	26	31.85	39.00	03/08	19.00	22/12	33.7	23.1	34.3	43.10	32.8	32.5	35.2	34.4
Calcium	mg/l Ca	25	63.6	78.0	06/09	39.0	22/12	62.5	44.3	63.4	77.5	57.8	63.8	70.2	59.4
Magnesium	mg/l Mg	26	6.65	7.30	03/08	5.50	06/04	6.1	4.8	6.0	7.5	6.1	6.1	6.2	6.2
Potassium	mg/l K	26	3.83	6.10	03/06	2.60	12/03	4.2	3.0	3.8	6.6	4.1	3.7	4.2	4.7
Sodium	mg/l Na	26	15.7	20.0	03/08	12.0	22/12	13.4	10.4	12.9	18.1	13.5	13.0	14.2	13.2

Tamar at Gunnislake Newbridge 1993

Harmonised monitoring station number : 09 017
Measuring authority : NRA-SW NGR : 20 (SX) 433 722

Flow measurement station : 047001 - Gunnislake
C.A.(km²) : 916.9 NGR : 20 (SX) 426 725

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	25	10.5	15.8	30/07	3.9	05/03	11.3	4.9	10.9	18.7	7.0	12.6	16.3	9.4
pH	pH units	25	7.6	8.3	16/03	7.3	27/05	7.4	6.8	7.4	8.1	7.2	7.5	7.5	7.2
Conductivity	µS/cm	25	174	197	17/12	132	27/05	183	141	180	231	171	186	198	179
Suspended solids	mg/l	25 (1)	32.1	211.0	30/09	2.0	17/08	23.9	1.1	7.5	110.5	30.7	11.7	12.1	39.1
Dissolved oxygen	mg/l O	25	10.74	12.70	22/10	9.29	30/07	10.66	8.68	10.70	12.47	11.74	10.49	9.53	10.85
BOD (inhibited)	mg/l O	25 (5)	2.1	6.2	30/09	1.0	28/01	2.1	0.8	1.9	4.6	2.1	2.1	1.8	2.4
Tot. diss. org. carbon	mg/l O	25	11.1	29.3	16/07	4.0	16/03	10.5	3.0	8.5	23.7	8.4	9.8	10.4	12.4
Ammoniacal nitrogen	mg/l N	25 (7)	0.079	0.410	16/07	0.020	08/02	0.08	0.01	0.05	0.23	0.10	0.05	0.05	0.09
Nitrite	mg/l N	25 (1)	0.030	0.080	16/07	0.006	29/10	0.03	0.01	0.02	0.06	0.03	0.02	0.02	0.03
Nitrate	mg/l N	25	2.78	3.88	28/01	1.77	10/11	2.7	1.5	2.5	4.1	3.2	2.6	2.1	2.9
Chloride	mg/l Cl	25	22.3	27.0	17/12	16.0	27/05	22.9	18.0	22.2	28.9	23.7	22.0	22.9	23.7
Total alkalinity	mg/l $CaCO_3$	25	36.7	44.0	16/03	27.0	28/01	36.3	23.0	35.1	51.9	30.4	39.4	42.5	33.6
Orthophosphate	mg/l P	25 (6)	0.062	0.120	16/07	0.030	22/10	0.09	0.03	0.07	0.15	0.06	0.10	0.11	0.08
Silica	mg/l SiO_2	25	4.80	6.50	10/11	2.20	31/08	4.79	1.57	5.11	6.56	5.09	3.92	4.53	5.57
Sulphate	mg/l SO_4	25	13.28	17.00	08/04	7.00	12/01	15.6	11.2	15.5	21.00	14.8	16.5	16.9	15.2
Calcium	mg/l Ca	25	16.4	19.0	30/06	12.0	16/07	17.3	14.0	17.4	21.9	16.7	17.4	18.3	17.0
Magnesium	mg/l Mg	25	4.51	5.50	31/08	3.20	16/07	4.8	3.4	4.8	6.6	4.3	5.0	5.4	4.6
Potassium	mg/l K	25	3.00	5.90	16/07	1.00	08/02	3.2	1.9	3.0	5.3	2.7	2.9	3.9	3.4
Sodium	mg/l Na	25	12.2	16.0	24/02	9.0	27/05	12.6	9.7	12.3	15.8	12.3	12.5	13.4	12.5

Exe at Thorverton Road Bridge 1993

Harmonised monitoring station number : 09 036
Measuring authority : NRA-SW NGR : 21 (SS) 936 016

Flow measurement station : 045001 - Thorverton
C.A.(km²) : 600.9 NGR : 21 (SS) 936 016

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	26	10.9	17.2	23/07	4.5	03/03	10.9	4.3	10.3	19.0	6.1	12.5	16.4	9.0
pH	pH units	26	7.8	9.0	22/03	7.4	12/01	7.5	7.0	7.5	8.1	7.4	7.7	7.6	7.4
Conductivity	µS/cm	26	168	216	26/03	111	07/12	171	124	163	241	161	184	186	160
Suspended solids	mg/l	26 (2)	13.3	162.0	07/12	2.0	06/09	12.6	1.4	5.1	46.1	16.4	7.9	7.3	13.5
Dissolved oxygen	mg/l O	26	11.01	13.80	16/02	9.21	23/07	11.05	8.66	11.19	13.21	12.31	10.86	9.69	11.31
BOD (inhibited)	mg/l O	26 (1)	1.8	4.4	07/12	1.0	02/02	1.8	0.8	1.6	3.4	1.8	2.0	1.6	1.6
Tot. diss. org. carbon	mg/l O	26	5.8	12.0	07/12	2.9	14/07	7.1	2.6	6.6	13.9	5.5	7.3	8.0	7.1
Ammoniacal nitrogen	mg/l N	26 (5)	0.056	0.430	22/03	0.020	26/03	0.06	0.01	0.05	0.16	0.08	0.07	0.05	0.05
Nitrite	mg/l N	26	0.025	0.046	07/12	0.010	04/08	0.03	0.01	0.02	0.05	0.02	0.04	0.03	0.02
Nitrate	mg/l N	26	2.39	3.18	03/03	1.45	07/12	2.5	1.4	2.3	3.7	2.9	2.5	2.0	2.5
Chloride	mg/l Cl	26	16.8	26.0	09/02	13.0	15/11	17.8	13.2	17.1	26.6	17.8	18.1	19.0	16.7
Total alkalinity	mg/l $CaCO_3$	26	45.1	69.0	01/10	27.0	12/01	40.0	23.3	37.7	64.1	33.7	45.5	46.7	35.6
Orthophosphate	mg/l P	26 (1)	0.090	0.180	22/03	0.040	13/10	0.11	0.03	0.08	0.29	0.06	0.10	0.18	0.08
Silica	mg/l SiO_2	26 (1)	4.01	5.50	14/04	1.00	26/03	3.99	1.71	4.18	5.28	4.51	3.13	3.52	4.62
Sulphate	mg/l SO_4	26	13.25	22.00	14/07	6.00	12/01	13.8	8.8	12.8	24.96	12.5	15.1	15.1	13.1
Calcium	mg/l Ca	26	17.2	23.0	26/03	12.0	12/01	16.6	11.8	16.1	23.9	16.0	18.4	17.6	15.0
Magnesium	mg/l Mg	26	4.19	5.30	26/03	3.20	12/01	4.1	2.9	4.0	5.4	3.9	4.4	4.3	3.8
Potassium	mg/l K	26	1.95	2.80	14/07	1.30	04/08	2.0	1.3	1.9	3.5	1.9	2.0	2.4	1.9
Sodium	mg/l Na	26	11.8	18.0	06/09	7.0	13/10	10.8	7.2	9.8	19.1	9.7	11.5	13.1	9.9

Dee at Overton 1993

Harmonised monitoring station number : 10 002
Measuring authority : NRA-WEL NGR : 33 (SJ) 354 427

Flow measurement station : 067015 - Manley Hall
C.A.(km²) : 1019.3 NGR : 33 (SJ) 348 415

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	17	10.0	18.0	30/07	4.0	04/03	10.1	3.1	9.9	17.5	5.1	11.6	15.4	8.1
pH	pH units	17	7.5	7.8	15/02	6.8	05/11	7.2	6.5	7.2	7.8	7.2	7.3	7.3	7.2
Conductivity	µS/cm	17	162	231	04/03	102	05/11	172	98	165	271	158	209	178	146
Suspended solids	mg/l	17 (6)	6.6	31.0	16/12	1.2	04/03	9.4	0.5	3.5	37.3	11.2	7.4	6.2	13.3
Dissolved oxygen	mg/l O	17	11.03	13.10	04/03	9.30	30/07	11.11	9.12	11.11	13.20	12.39	10.72	9.75	11.58
BOD (inhibited)	mg/l O	17 (2)	0.9	1.6	16/04	0.5	30/07	1.3	0.5	1.1	2.5	1.2	1.5	1.2	1.2
Ammoniacal nitrogen	mg/l N	17 (4)	0.041	0.160	04/03	0.010	30/07	0.05	0.01	0.03	0.14	0.06	0.05	0.05	0.05
Nitrite	mg/l N	17 (2)	0.016	0.075	22/09	0.002	05/11	0.02	0.01	0.01	0.04	0.02	0.02	0.02	0.01

Taf at Clog-y-fran Bridge 1993

Harmonised monitoring station number : 10 027
Measuring authority : NRA-WEL NGR : 22 (SN) 238 161

Flow measurement station : 060003 - Clog-y-fran
C.A.(km²) : 217.3 NGR : 22 (SN) 238 160

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	23	10.6	16.0	14/07	5.0	03/12	10.4	4.0	10.0	17.4	6.5	11.9	14.9	8.5
pH	pH units	24	7.5	7.8	30/03	6.6	03/11	7.4	6.9	7.4	7.9	7.3	7.5	7.5	7.2
Conductivity	µS/cm	13	168	206	24/08	129	16/06	169	116	160	248	147	179	198	152
Suspended solids	mg/l	24 (1)	23.8	206.0	03/11	3.0	21/08	16.1	1.6	7.5	57.1	25.0	8.4	10.3	21.0
Dissolved oxygen	mg/l O	24	10.30	11.70	16/02	8.40	16/06	10.35	7.94	10.50	12.51	10.89	10.61	9.32	10.50
BOD (inhibited)	mg/l O	24 (1)	2.0	11.0	03/11	0.5	24/08	1.8	0.7	1.5	3.4	1.9	1.9	1.6	1.6
Ammoniacal nitrogen	mg/l N	24 (4)	0.073	0.330	25/09	0.010	11/03	0.11	0.01	0.08	0.33	0.17	0.12	0.08	0.11
Nitrite	mg/l N	24	0.019	0.039	16/06	0.009	21/08	0.03	0.01	0.03	0.06	0.03	0.03	0.04	0.03
Orthophosphate	mg/l P	13	0.120	0.390	15/09	0.040	15/01	0.13	0.03	0.08	0.41	0.07	0.20	0.24	0.07

Carron at A890 Road Bridge 1993

Harmonised monitoring station number : 11 009
Measuring authority : HRPB NGR : 18 (NG) 938 425

Flow measurement station : 093001 - New Kelso
C.A.(km²) : 137.8 NGR : 18 (NG) 942 429

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1979 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	12	8.2	15.6	11/06	2.4	19/01	8.3	2.3	7.7	15.3	3.8	10.8	12.9	6.8
pH	pH units	12	6.5	7.0	27/09	6.1	19/01	6.6	5.9	6.6	7.3	6.6	6.7	6.6	6.5
Conductivity	µS/cm	12	46	72	22/02	35	16/12	44	28	42	64	49	46	40	40
Suspended solids	mg/l	12 (3)	2.3	15.8	25/03	0.5	19/01	1.4	0.3	1.0	4.5	1.6	1.4	1.3	1.4
Dissolved oxygen	mg/l O	12	11.42	13.26	22/02	9.75	11/06	11.25	9.40	11.30	13.08	12.49	10.91	10.04	11.39
BOD (inhibited)	mg/l O	12	1.0	2.1	16/12	0.1	30/08	0.9	0.3	0.9	1.5	1.0	0.7	0.8	1.0
Ammoniacal nitrogen	mg/l N	12 (3)	0.008	0.022	08/11	0.002	19/01	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.01
Nitrite	mg/l N	12 (5)	0.002	0.006	19/01	0.001	25/03	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.01
Nitrate	mg/l N	12	0.06	0.25	16/12	0.02	08/07	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Chloride	mg/l Cl	12	10.5	18.7	22/02	7.2	08/11	10.3	5.7	9.5	18.1	13.4	10.3	8.0	9.5
Total alkalinity	mg/l $CaCO_3$	12	3.6	6.2	30/08	1.5	22/02	5.5	1.4	4.9	12.4	4.9	6.4	5.8	5.0

Spey at Fochabers 1993

Harmonised monitoring station number : 12 002
Measuring authority : NERPB NGR : 38 (NJ) 341 596

Flow measurement station : 008006 - Boat o Brig
C.A.(km²) : 2861.2 NGR : 38 (NJ) 318 518

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	39	10.1	17.0	13/06	1.5	29/11	10.0	2.4	11.5	18.5	3.6	10.5	15.0	6.2
pH	pH units	12	6.2	6.6	23/06	5.6	16/12	7.1	6.1	7.1	7.8	6.8	7.1	7.3	6.9
Conductivity	µS/cm	12	95	116	29/11	67	12/10	77	49	77	109	81	73	86	72
Suspended solids	mg/l	12 (6)	1.8	9.0	27/01	0.4	17/02	3.8	0.2	1.8	14.1	3.1	3.9	3.6	3.6
Dissolved oxygen	mg/l O	12	12.05	13.84	29/11	10.76	11/08	11.42	9.26	11.31	13.59	12.78	11.11	10.05	11.79
BOD (inhibited)	mg/l O	12 (1)	0.6	1.4	12/10	0.2	16/12	0.9	0.4	0.9	1.5	0.8	1.0	0.9	0.9
Ammoniacal nitrogen	mg/l N	12 (2)	0.016	0.044	11/08	0.006	29/04	0.04	0.00	0.02	0.11	0.02	0.04	0.04	0.03
Nitrite	mg/l N	12 (3)	0.008	0.013	16/12	0.005	27/01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Nitrate	mg/l N	12	0.35	0.63	29/11	0.22	23/06	0.3	0.2	0.3	0.6	0.4	0.3	0.3	0.3
Chloride	mg/l Cl	12	11.9	18.0	27/01	9.0	29/04	10.3	6.0	9.9	15.1	11.9	9.9	10.3	9.2
Total alkalinity	mg/l $CaCO_3$	12	21.0	30.0	29/11	11.0	27/01	24.5	11.9	25.0	35.2	22.1	23.6	28.6	24.4
Orthophosphate	mg/l P	12 (4)	0.007	0.016	29/11	0.003	27/01	0.02	0.00	0.01	0.08	0.02	0.00	0.03	0.02
Silica	mg/l SiO_2	12	6.21	8.99	29/11	4.90	12/10	5.75	3.68	5.61	7.58	5.74	4.72	5.50	5.99

Almond at Craigiehall 1993

Harmonised monitoring station number : 14 008
Measuring authority : FRPB NGR : 36 (NT) 165 752

Flow measurement station : 019001 - Craigiehall
C.A.(km²) : 369.0 NGR : 36 (NT) 165 752

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
pH	pH units	12	7.5	8.1	09/06	6.9	06/10	7.6	7.1	7.6	8.0	7.5	7.8	7.6	7.5
Conductivity	µS/cm	12	382	1220	03/03	68	04/08	608	317	602	890	521	693	662	522
Suspended solids	mg/l	12	8.7	24.0	02/12	2.0	07/09	20.4	2.2	10.2	61.5	32.4	10.4	13.0	27.0
Dissolved oxygen	mg/l O	11	9.28	11.50	02/12	5.71	04/08	9.23	5.33	9.58	12.20	11.23	9.13	7.37	9.69
BOD (inhibited)	mg/l O	12	2.2	5.6	03/03	1.2	07/09	3.5	1.5	3.0	7.2	3.3	3.8	3.2	3.9
Ammoniacal nitrogen	mg/l N	12 (1)	0.764	4.800	03/03	0.020	07/09	1.25	0.26	0.98	3.08	1.22	1.57	1.13	0.95
Nitrite	mg/l N	12 (3)	0.084	0.570	09/06	0.010	06/07	0.27	0.04	0.15	0.85	0.13	0.35	0.46	0.15
Nitrate	mg/l N	12	4.40	6.80	07/09	2.85	02/12	3.8	2.2	3.7	5.9	3.5	4.0	3.9	3.8
Total alkalinity	mg/l $CaCO_3$	12	75.6	166.0	03/03	19.0	06/10	121.2	59.3	123.9	179.9	98.9	140.9	130.4	105.9
Orthophosphate	mg/l P	12	0.269	1.110	09/06	0.017	07/09	0.77	0.09	0.50	2.08	0.27	1.00	1.31	0.44
Sulphate	mg/l SO_4	12 (2)	79.50	210.00	03/03	10.00	06/07	125.7	54.0	128.8	198.70	103.2	140.4	142.5	117.7

Tweed at Norham 1993

Harmonised monitoring station number : 15 001
Measuring authority : TWRPB NGR : 36 (NT) 898 477

Flow measurement station : 021009 - Norham
C.A.(km²) : 4390.0 NGR : 36 (NT) 898 477

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	12	9.3	18.0	21/07	1.0	14/12	10.1	2.6	9.1	19.9	4.5	13.3	16.1	6.3
pH	pH units	12	7.9	9.8	24/08	7.2	20/01	8.0	7.1	7.9	9.3	7.6	8.3	8.5	7.7
Conductivity	µS/cm	12	226	269	16/03	147	20/01	234	165	226	292	234	234	225	228
Suspended solids	mg/l	10	3.8	9.0	22/04	1.0	10/02	9.6	1.4	4.6	32.1	15.7	5.1	7.2	9.5
Dissolved oxygen	mg/l O	12	12.28	21.30	24/08	10.20	20/05	11.57	9.09	11.39	14.63	11.92	11.54	11.42	11.47
BOD (inhibited)	mg/l O	12	2.6	4.5	24/08	1.4	15/06	2.3	1.0	2.2	4.0	2.2	2.5	2.6	2.0
Ammoniacal nitrogen	mg/l N	12	0.057	0.250	14/12	0.010	28/09	0.09	0.03	0.08	0.16	0.10	0.07	0.08	0.09
Nitrite	mg/l N	12	0.013	0.020	10/02	0.010	20/01	0.02	0.01	0.01	0.04	0.02	0.02	0.02	0.02
Nitrate	mg/l N	12	1.87	3.05	14/12	0.65	24/08	1.8	0.8	1.7	3.4	2.5	1.7	1.1	1.8
Chloride	mg/l Cl	12	15.9	20.5	16/03	13.0	28/09	16.1	10.4	15.5	22.1	17.4	16.2	15.7	15.0
Orthophosphate	mg/l P	12	0.043	0.070	20/01	0.010	16/03	0.14	0.02	0.07	0.40	0.14	0.10	0.15	0.14

Dee at Glenlochar 1993

Harmonised monitoring station number : 16 005
Measuring authority : SRPB NGR : 25 (NX) 733 642

Flow measurement station : 080002 - Glenlochar
C.A.(km²) : 809.0 NGR : 25 (NX) 733 641

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	11	10.0	20.0	01/07	2.0	01/02	10.0	1.9	9.1	20.0	3.7	11.4	16.8	8.2
pH	pH units	12	6.8	7.7	01/02	6.3	01/10	6.7	6.2	6.7	7.3	6.6	6.7	6.9	6.6
Conductivity	µS/cm	12	57	73	01/02	46	02/08	61	40	54	78	56	58	65	60
Suspended solids	mg/l	12	1.6	5.0	01/04	1.0	01/02	3.4	1.1	1.9	6.9	4.8	3.4	2.5	2.7
Dissolved oxygen	mg/l O	12	10.40	12.70	01/03	8.70	01/07	10.87	8.68	10.83	13.10	12.40	11.10	9.46	10.66
BOD (inhibited)	mg/l O	12	1.7	2.5	01/10	0.8	02/08	2.0	1.0	1.9	3.1	2.1	2.0	1.7	1.9
Ammoniacal nitrogen	mg/l N	12 (1)	0.057	0.120	01/12	0.010	01/09	0.06	0.01	0.04	0.14	0.06	0.05	0.07	0.05
Nitrate	mg/l N	12	0.20	0.38	01/04	0.07	01/09	0.3	0.1	0.3	0.7	0.5	0.3	0.2	0.3
Chloride	mg/l Cl	12	8.6	13.5	01/02	6.3	01/06	9.1	5.1	8.8	13.7	9.9	9.4	8.7	8.5
Orthophosphate	mg/l P	12	0.004	0.008	01/12	0.002	01/03	0.01	0.00	0.01	0.03	0.01	0.00	0.02	0.01
Silica	mg/l SiO_2	12	1.72	2.90	05/01	0.10	01/09	2.25	0.32	2.30	4.31	3.24	1.66	1.22	2.91
Sulphate	mg/l SO_4	12	4.59	5.79	01/12	3.61	01/09	5.5	3.5	5.1	9.32	5.4	5.2	5.7	6.2
Calcium	mg/l Ca	12	3.0	3.5	01/04	2.2	01/09	3.9	2.3	3.3	5.8	3.4	3.4	4.6	3.8
Magnesium	mg/l Mg	12	1.39	1.78	01/04	1.19	02/08	1.5	0.7	1.4	2.2	1.4	1.4	1.5	1.5
Potassium	mg/l K	12	0.51	0.81	01/04	0.32	01/09	0.6	0.3	0.5	0.8	0.6	0.5	0.5	0.6
Sodium	mg/l Na	12	5.2	7.0	01/02	3.9	01/06	5.1	3.4	5.1	7.0	5.5	5.2	4.8	4.9

Leven at Renton Footbridge 1993

Harmonised monitoring station number : 17 005
Measuring authority : CRPB NGR : 26 (NS) 389 783

Flow measurement station : 085001 - Linnbrane
C.A.(km²) : 784.3 NGR : 26 (NS) 394 803

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1975 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	16	8.3	15.0	09/06	0.0	28/01	9.6	3.0	9.0	17.0	4.1	10.9	14.9	8.2
pH	pH units	11	6.9	7.3	10/09	6.5	17/03	7.1	6.7	7.1	7.5	7.0	7.2	7.1	7.0
Conductivity	µS/cm	11	65	93	10/11	54	07/05	71	58	69	95	72	73	70	70
Suspended solids	mg/l	17 (3)	3.8	21.0	15/01	1.0	18/02	4.6	1.1	3.2	12.0	6.4	3.7	3.7	4.3
Dissolved oxygen	mg/l O	12	11.14	12.50	18/02	9.00	10/09	10.94	9.29	10.99	12.61	12.26	11.28	9.67	10.68
BOD (inhibited)	mg/l O	12	2.1	3.4	17/03	1.1	10/09	1.8	0.9	1.8	3.2	2.2	2.2	1.5	1.7
Ammoniacal nitrogen	mg/l N	12 (3)	0.036	0.130	24/04	0.010	26/01	0.05	0.01	0.02	0.19	0.05	0.04	0.06	0.04
Nitrate	mg/l N	11 (4)	0.15	0.26	10/11	0.10	18/02	0.3	0.1	0.3	0.5	0.3	0.3	0.3	0.3
Total alkalinity	mg/l $CaCO_3$	11	11.1	17.0	10/11	1.7	24/04	16.0	10.1	15.7	22.1	14.7	16.3	16.3	16.2
Orthophosphate	mg/l P	15 (7)	0.008	0.030	15/01	0.002	17/08	0.02	0.00	0.01	0.04	0.01	0.00	0.03	0.02

Ballinderry at Ballinderry Bridge 1993

DOE Northern Ireland station number : 03/07/Q100
Measuring authority : DOEN NGR : *23 (IH) 927 798*

Flow measurement station : 203012 - Ballinderry Br.
C.A.(km²) : 419.5 NGR : *23 (IH) 926 799*

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1974 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	24	9.5	17.0	28/06	2.5	22/11	9.9	3.0	10.0	17.0	5.2	11.9	14.8	8.0
pH	pH units	24	7.9	8.2	26/08	7.4	10/09	7.8	7.3	7.8	8.3	7.7	7.9	7.8	7.7
Conductivity	µS/cm	24	321	368	26/08	185	10/09	307	216	305	375	282	326	335	293
Suspended solids	mg/l	24	18.4	208.0	10/09	3.0	09/02	10.0	2.0	6.0	31.0	12.9	6.9	7.4	10.5
Dissolved oxygen	mg/l O	24	11.04	23.60	27/05	7.80	10/09	10.11	6.80	10.20	12.70	11.20	9.90	8.70	10.40
BOD (inhibited)	mg/l O	24	3.2	13.0	10/09	1.4	26/08	2.5	1.0	2.0	4.8	2.6	2.6	2.2	2.2
Ammoniacal nitrogen	mg/l N	24	0.263	0.730	14/05	0.080	28/07	0.25	0.04	0.20	0.53	0.35	0.25	0.16	0.24
Nitrite	mg/l N	24 (1)	0.055	0.150	14/07	0.020	09/11	0.05	0.02	0.04	0.13	0.04	0.05	0.06	0.05
Chloride	mg/l Cl	24	19.2	32.0	25/01	12.0	23/09	18.9	12.0	19.0	26.0	19.3	18.9	19.5	18.0
Orthophosphate	mg/l P	24	0.141	0.280	10/09	0.070	11/01	0.22	0.07	0.19	0.47	0.14	0.17	0.33	0.18

Lagan at Shaws Bridge 1993

DOE Northern Ireland station number : 05/01/Q200
Measuring authority : DOEN NGR : *33 (IJ) 325 690*

Flow measurement station : 205004 - Newforge
C.A.(km²) : 490.4 NGR : *33 (IJ) 329 693*

Determinand	Units	1993 Samples	Mean	Max.	Date	Min.	Date	Period of record: 1973 - 1992 Mean	Percentiles 5%	50%	95%	Quarterly averages J-M	A-J	J-S	O-D
Temperature	°C	23	9.0	16.0	07/07	3.0	01/12	10.2	4.0	9.5	16.5	5.3	12.0	15.0	8.1
pH	pH units	23	7.9	78.3	07/05	7.8	21/07	7.7	7.2	7.7	8.0	7.6	7.6	7.5	7.6
Conductivity	µS/cm	23	406	549	03/09	303	22/04	428	282	410	601	381	446	520	389
Suspended solids	mg/l	23	7.0	17.0	04/01	3.0	24/03	11.7	2.0	6.0	36.0	14.9	8.3	6.9	15.9
Dissolved oxygen	mg/l O	23	15.69	28.40	04/01	9.90	21/05	11.39	3.90	11.00	21.90	12.80	10.20	6.90	11.50
BOD (inhibited)	mg/l O	23	2.6	4.6	01/12	1.7	03/09	3.2	1.3	3.0	6.4	2.9	4.1	3.3	3.0
Ammoniacal nitrogen	mg/l N	23	0.194	0.490	01/12	0.080	18/01	0.75	0.08	0.48	2.03	0.66	0.91	1.47	0.84
Nitrite	mg/l N	23	0.049	0.150	07/07	0.030	18/01	0.16	0.03	0.08	0.45	0.09	0.22	0.31	0.10
Chloride	mg/l Cl	23	37.2	61.0	07/07	22.0	04/10	41.1	21.0	37.0	70.0	36.3	42.1	45.1	34.3
Orthophosphate	mg/l P	23	0.494	1.180	03/09	0.130	22/04	0.87	0.16	0.62	2.30	0.35	1.05	1.29	0.62

DIRECTORY OF MEASURING AUTHORITIES

	Address	Code
National Rivers Authority	Rivers House, Waterside Drive, Aztec West, Almondsbury, Bristol BS12 4UD	NRA

NRA Regional Headquarters

Anglian	Kingfisher House, Goldhay Way, Orton Goldhay, Peterborough PE2 5ZR	NRA-A
Northumbria and Yorkshire*	Rivers House, 21 Park Square South, Leeds LS1 2QG	NRA-NY
North West	Richard Fairclough House, PO Box 12, Knutsford Road, Warrington WA4 1HG	NRA-NW
Severn-Trent	Sapphire East, 550 Streetsbrook Road, Solihull B91 1QT	NRA-ST
Southern	Guildbourne House, Chatsworth Road, Worthing, West Sussex BN11 1LD	NRA-S
South Western*	Manley House, Kestrel Way, Sowton Industrial Estate, Exeter EX2 7LQ	NRA-SW
Thames	Kings Meadow House, Kings Meadow Road, Reading RG1 8DQ	NRA-T
Welsh	Rivers House/Plas-yr-Afon, St Mellons Business Park, St Mellons, Cardiff CF3 0LT	NRA-WEL

River Purification Boards

Clyde River Purification Board	Rivers House, Murray Road, East Kilbride, Glasgow G75 0LA	CRPB
Forth River Purification Board	Clearwater House, Heriot Watt Research Park, Avenue North, Riccarton, Edinburgh EH14 4AP	FRPB
Highland River Purification Board	Graesser House, Fodderty Way, Dingwall IV15 9XB	HRPB
North East River Purification Board	Greyhope House, Greyhope Road, Torry, Aberdeen AB1 3RD	NERPB
Solway River Purification Board	Rivers House, Irongray Road, Dumfries DG2 0JE	SRPB

* In 1993, the Northumbria and Yorkshire and South-West and Wessex regions of the National Rivers Authority were amalgamated.

Tay River Purification Board	1, South Street, Perth PH2 8NJ	TRPB
Tweed River Purification Board	Burnbrae, Mossilee Road, Galashiels TD1 1NF	TWRP

Other measuring authorities

Borders Regional Council (Directorate of Water and Drainage Services)	West Grove, Waverley Road, Melrose TD6 9SJ	BRWD
Corby (Northants) and District Water Company	Geddington Road, Corby, Northants NN18 8ES	CDWC
Department of the Environment for Northern Ireland	Water Executive, Northland House, 3 Frederick Street, Belfast BT1 2NS	DOEN
(Environmental Protection Division)	Calvert House, 23 Castle Place, Belfast BT1 1FY	
Dumfries and Galloway Regional Council (Department of Water and Sewerage)	Marchmount House, Marchmount, Dumfries DG1 1PW	DGRW
Essex Water Company	Hall Street, Chelmsford, Essex CM2 0HH	EWC
Geological Survey of Northern Ireland	20 College Gardens, Belfast BT9 6BS	GSNI
Grampian Regional Council (Water Services Department)	Woodhill House, Westburn Road, Aberdeen AB9 2LU	GRWD
Highland Regional Council (Water Department)	Regional Buildings, Glenurquhart Road, Inverness IV3 5NX	HRCW
Institute of Hydrology	Maclean Building, Crowmarsh Gifford, Wallingford OX10 8BB	IH
Lothian Regional Council (Department of Water and Drainage)	55 Buckstone Crescent, Edinburgh EH10 6XH	LRWD
North East Water Plc	PO Box 10, Allendale Road, Newcastle-upon-Tyne NE6 2SW	NGWC
North West Water Plc	Dawson House, Liverpool Road, Great Sankey, Warrington WA5 3LW	NWW
Scottish Hydro-Electric Plc	16 Rothesay Terrace, Edinburgh EH3 7SE	SE
Southern Water	Southern House, Yeoman Road, Worthing, West Sussex BN13 3NX	SW
Strathclyde Regional Council (Water Department)	419 Balmore Road, Glasgow G22 6NU	SRCW
Tayside Regional Council (Water Services Department)	Bullion House, Invergowrie, Dundee DD2 5BB	TRWS
Yorkshire Water Services Ltd	West Riding House, 67 Albion House, Leeds LS1 5AA	YW

Note: The measuring authorities listed in this directory provide (or have provided) daily flow data to the national archive for primary flow measurement stations. In recent years a number of valuable long records for additional sites have been identified. Most of these will be incorporated into the National River Flow Archive when appraisals of the gauging stations and flow records are complete. Further lengthy records, whether of springs, runoff, river levels, well levels or bourne flow occurrences, would be welcomed and holders of such data are invited to contact the Institute of Hydrology.

PUBLICATIONS - in the Hydrological data UK series

Title	*Published*	*Price* (inclusive of second class postage within the UK)	
Yearbooks:		*Loose-Leaf**	*Bound*
Yearbook 1981	1985	£10	£12
Yearbook 1982	1985	£10	£12
Yearbook 1983	1986	out of print	
Yearbook 1984	1986	out of print	
Yearbook 1985	1987	£12	£15
Yearbook 1986	1988	£12	£15
Yearbook 1987	1989	£12	£15
Yearbook 1988	1989	£12	£15
Yearbook 1989	1990	£15	£18
Yearbook 1990	1991	£15	£18
Yearbook 1991	1992	*	£20
Yearbook 1992	1993	*	£20
Yearbook 1993	1994		£20
Reports:			
Hydrometric Register and Statistics 1981–5	1988	£12	£15
Hydrometric Register and Statistics 1986–90[1]	1992		£20
The 1984 Drought[2]	1985		£12
The 1988–92 Drought[3]	1993		£20

Concessionary rates apply to the purchase of two or more of the pre-1989 Yearbooks.

All the Hydrological data UK publications may be obtained from:–

Institute of Hydrology
Maclean Building
WALLINGFORD
OXFORDSHIRE OX10 8BB

Telephone: Wallingford (01491) 838800

Facsimile: (01491) 832256

Enquiries or comments regarding the series, or individual publications are welcomed and should be directed to the National Water Archive Office at the above address.

1. Hydrometric Register and Statistics 1986–90

This reference volume includes maps, tables and statistics for over 1000 river basins and 150 representative observation boreholes throughout the United Kingdom. The principal objective of the publication is to assist data users in the selection of monitoring sites for particular investigations and to allow more effective interpretation of analyses based upon the raw data. To this end, concise gauging station and catchment descriptions are given for the featured flow measurement stations – particular emphasis is placed on hydrometric performance, especially in the high and low flow ranges, and on the net effect of artificial influences on the natural flow regime.

Summary hydrometric statistics, for each of the years 1986–90, are provided alongside the corresponding long term averages, or extremes, to allow the recent variability in surface and groundwater resources to be considered in a suitable historical context.

*Loose-leaf versions of the Hydrological data UK publications have been discontinued.

2. The 1984 Drought

This first, occasional report in the Hydrological data UK series concerns the 1984 drought. The structure of the report follows the hydrological cycle with chapters devoted to rainfall, evaporation, runoff and water storage in surface reservoirs and aquifers. The report documents the drought in a water resources framework and its development, duration and severity are examined with particular reference to regional variations in intensity.

3. The 1988–92 Drought Report

The objective of this report is to provide comprehensive documentation of the 1988–92 drought within a hydrological framework and to establish a benchmark against which future periods of severe rainfall deficiency may be compared. The spatial and temporal variations in the drought's intensity are examined and its severity assessed within the perspective provided by long-term rainfall and hydrometric records. An introductory hydrological overview of the United Kingdom is given to help place the volatile climatic conditions experienced in 1988–92 in a suitable context. The synoptic backcloth to the drought's development is also reviewed and the European perspective is examined using selected rainfall and river flow records to index drought severity. Additionally, a short review of water resource variability in Great Britain over the featured five years – and the water industry's response to the actual and protracted deficiencies – is included to help appreciate the, often complex, linkages between hydrological stress and water supply impacts on the community.

Associated Publications

Hydrological Summaries for Great Britain

Since the winter of 1988/89 these monthly reports have been prepared jointly by the Institute of Hydrology and the British Geological Survey on behalf of the Department of the Environment and the National Rivers Authority. Each report includes areal rainfall data - both recent and, where significant, longer term accumulations for the major administrative divisions in the water industry. Also featured are representative hydrographs of river flow and groundwater levels with supporting summary statistics and a tabulation of current stocks for a selection of major reservoirs. A commentary is provided on the cover page detailing notable hydrological events and summarising both the national hydrological status and the water resources outlook. Probability values are estimated for many of the events covered.

Subscription to the Hydrological Summaries - £48 per year - may be arranged through the National Water Archive Office. The summaries are normally published within ten working days of the close of the month to which they refer.

Representative Basin Catalogue

Data collection for the National Flood Event Archive, sponsored by the Ministry of Agriculture, Fisheries and Food and maintained by the Institute of Hydrology, concentrates on a selection of basins that form a representative sample of UK catchments. A catalogue providing comprehensive hydrological and reference information for 200 representative basins has been prepared and is available as national (five volumes) or regional sets; user-selected groups of catchments can be provided for particular investigations. Enquiries concerning the cost and availability of the catalogue should be directed to the above address.

Groundwater Level Hydrographs

In 1990 the British Geological Survey launched a series of wallcharts depicting long term variations in groundwater levels. The following are currently available:

i. Long term hydrograph of groundwater levels in the Chilgrove House well in the Chalk of southern England
ii. Long term hydrograph of groundwater levels in the Dalton Holme estate well in the Chalk of Yorkshire

Copies may be obtained from:

British Geological Survey
WALLINGFORD
OXFORDSHIRE
OX10 8BB

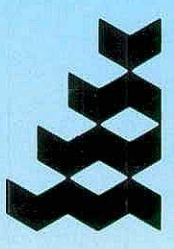
Telephone Wallingford (01491) 838800

Facsimile: (01491) 825338

ABBREVIATIONS

Note: The following abbreviations do not purport to represent any standardised usage; they have been developed for use in the Hydrological data UK series of publications only. Where space constraints have required alternative forms of these conventional abbreviations to be used, the meaning should be evident from the context.

AOD	Above Ordnance Datum
Bk	Beck
Blk	Black
Br	Bridge
Brk or B	Brook
Brn	Burn
Ch	Channel
C/m	Current meter(ing)
Com	Common
Dk	Dike
Dr or D	Drain
D/s	Downstream
DWF	Dry weather flow
E	East
Frm	Farm
G/s	Gauging station
Gw	Groundwater
HEP	Hydro-electric power
Ho	House
Hosp	Hospital
L	Loch or lake
Lb	Left hand river bank (looking downstream)
Ln	Lane
Lst	Limestone
Ltl	Little
MAF	Mean annual flood
Mkt	Market
Ml/d	Megalitres per day
Mnr	Manor
N	North
Ntch	Notch
NW	North-West
O/f	Outfall or outflow
ORS	Old Red Sandstone
Pk	Park
Pop	Population
POR	Period of record
PS	Pumping station
Pt	Point
PWS	Public water supply
Rb	Right hand river bank (looking downstream)
R/c	Racecourse
RCS	Regional communications system
Rd	Road
Res	Reservoir
Rh	Right hand
S	South
SAGS	Stour Augmentation Groundwater Scheme
Sch	School
S-D	Stage-discharge relation
SE	South-East
Sl	Sluice
SOE	The Scottish Office Environment Department (previously SDD)
Sp	Spring
St	Stream
STW	Sewage treatment works
SW	South-West
TS	Transfer scheme
US	Ultrasonic gauging station
U/s	Upstream
W	West
W'course	Watercourse
Wd	Wood
Wht	White
Wr	Weir
WRW	Water reclamation works
Wtr	Water
WTW	Water treatment works



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