of channel improvement, replacement of some bridges, modification of overfalls, and the usual ancillary works of fencing and treatment of spoil. The whole of the excavation work and most of the structural work was completed.

Alledge Brook Improvement, LDW 24766. *Estimated Cost:* £19,500 (*revised*).

Work on this scheme was completed. The final cost exceeded the estimate by about £7,000 due to the high cost of tree clearance.

Chelveston Brook Improvement, LDW 24370. *Estimated Cost:* £11,500 (*revised*).

Work on this scheme was completed. The final cost exceeded the estimate by about £3,000 due to the high cost of tree clearance.

Grendon Brook (Part I) Improvement, LDW 25047. *Estimated Cost:* £26,400.

Work on this scheme, described in the Fourth Annual Report, was completed.

Grendon Brook (Part II) Improvement, LDW 26199. *Estimated Cost:* £83,580.

This scheme provides better drainage downstream of Bozeat, Yardley Hastings and Denton, and will alleviate flooding in those villages. At Yardley Hastings and Denton flood storage reservoirs will be constructed upstream of the villages. Contributions towards this scheme are to be made by Northamptonshire County Council, Wellingborough Rural District Council and Northampton Rural District Council. During the year most of the pioneering and excavation work downstream of the villages was completed.

Bugbrooke Improvement, LDW 25496. *Estimated Cost:* £8,187.

The main river work downstream of Bugbrooke village was carried out to accord with the village flood alleviation scheme financed by Northampton Rural District Council and Northamptonshire County Council with grant aid from the Ministry. The Schemes were completed with the exception of seeding down and fencing through the village, and the reconstruction of a footbridge upstream of the village.

Harpers Brook Improvement, LDW 25861. *Estimated Cost:* £118,000.

This scheme as described in the Fifth Annual Report was modified by the Ministry when approved for grant aid. Northamptonshire County Council, Corby Development Corporation and Corby Urban District Council are to contribute to the cost. By the end of the year pioneering and channel excavation works had been completed from Islip to Stanion, and from the storage reservoir to the upstream limit of the scheme. A new road bridge was constructed in Great Oakley, and various accommodation bridges along the whole length were replaced. Scour was developing at some bridges, the reconstruction of which was deleted from the grant aided scheme.

The earth dam for the flood control reservoir was almost completed, and arrangements were in hand to construct the control structure and spillways.

Little Harrowden Brook Improvement, LDW 25818. *Estimated Cost:* £1,670.

This short length of new " main " river (approximately ¾ mile) was cleared and straightened to facilitate a reclamation and drainage scheme by riparian owners. The work was completed.

(ii) Future Works agreed in principle

River Nene, Northampton—Wellingborough

Reference was made in the Third, Fourth and Fifth Annual Reports to proposals for controlling flood discharges at Northampton and Wellingborough consequent upon urban expansion. Following discussions with the technical staff of Northampton Borough and Northampton Development Corporation the requirements downstream of the town were defined. Impounding sites are to be provided for excess discharges on the tributary streams in order to reduce the extent of improvement work on the arterial channels. Two alternative schemes are being considered: a conventional river improvement extending from Nunn Mills sluices at Northampton to downstream of Wellingborough, or the provision of a washland to impound flood water downstream of Northampton and to regulate the discharge so as to reduce the extent of the improvement work downstream. It is anticipated that the technical and financial aspects will shortly be resolved.

Daventry Expansion

Following discussions with the Consulting Engineers to the Borough Council the increased rate of run off from the Overspill expansion at Daventry was assessed.

It is anticipated that British Waterways' Daventry Reservoir will be used to provide a regulated discharge of flood water. Channel improvements downstream from the reservoir are estimated at about £97,000, the apportionment of which will be resolved with the Borough's advisers. It is probable that the major part will be attributable to increased urban run off, and that the land drainage work acceptable for grant aid will be between £10,000 and £15,000.

Tributary Streams

Reference was made in the Fifth Annual Report to the flood conference held at Northampton, and the subsequent designation of an additional length of 116 miles of channel as " Main River ". Survey work and the assembly of information for grant aided schemes was in progress and pioneer work was commenced on some of the Welland sub-catchment tributaries.

(iii) Other matters relating to grant aided or other works

Capital Expenditure

Reference was made in the Fifth Annual Report to the need to satisfy the demand for higher standards of drainage by undertaking works in excess of the Capital Expenditure Ceiling and accepting a lower overall rate of grant. Work to the value of £374,577 was completed, which exceeded the Capital Expenditure Ceiling by £89,728, and reduced the rate of grant from 72 per cent to an overall 52 per cent. Apart from satisfying that demand, the effect of the increased volume of work on the " rolling average " was to raise the Capital Expenditure Ceiling from £284,000 for the year under review to £375,960 for 1971-72, and to earn a further £65,000 in grant aid.

Nene Outfall

The annual survey was completed. Accretion continued in the low water channel seawards from the training walls, and occurred south of the Wreck. There is a continuous flood channel from the Whiting Beacon to Big Annie Beacon.

Welland Outfall

The annual survey carried out in conjunction with the Lincolnshire River Authority was completed. The narrow but fairly deep channel along the Freiston Low shore line beyond Tabs Head has developed, and is now being used by shipping. It will be some years before the annual surveys indicate any positive trend.

2. MAINTENANCE

Weedcutting was carried out on 215 miles of main river, 70 miles being cut twice to meet local requirements. All sea banks and tidal banks were cut twice. Eight weedcutter launches and five floating elevators were used for channel works, and tractor mounted Barford and McConnel Cutters were used on the banks. A Bradshaw weedcutting bucket operated by a wheeled Mustang 90 proved very effective, and its mobility was of great value.

Maintenance dredging and shoaling was carried out on Bourne Eau and Car Dyke South, on the Welland at Deeping, on the East Glen near Toft and on the West Glen between Carlby and Careby. Dredging work proceeded on the River Ise upstream of Geddington and on the Brampton Branch as far as Brixworth, and was completed on the Wootton Brook.

New steel pointing doors were installed at Abington, Ashton, Woodford and Rush Mills locks, and all other sluice structures were maintained and repaired as necessary. New steel balance beams were fitted at Alwalton Lock.

Regular inspections were made of Sea and Barrier Banks, and repair works were carried out near Andersons and Lords Drain sluices, at Sutton Bridge, Wisbech, and Guyhirne. Warp was removed at Sutton Bridge and North Brink. The Gravel bed of the Maxey North Drain Flood channel is unstable, and toe protection was provided by stone pitching.

Fitters and carpenters responded to the ever increasing demands on their services due to the expansion of the plant and vehicle fleet, and to the formidable direct works programme.

3. WORK IN INTERNAL DRAINAGE DISTRICTS

(*a*) *Administered Boards*

Two Internal Drainage Boards are administered, namely the Nene Valley Drainage and Navigation Improvement Commissioners (First District) above Northampton, and the Nene Valley Drainage and Navigation Improvement Commissioners (Second District) between Northampton and Peterborough.

In the First District 1½ miles of main drain were roded and cleared. In the Second District 9½ miles of main drain were roded and cleared, and dykes at Hardwater, Gibbards Arm (Grendon), Orton Meadows, Nassington, Castor and Warmington amounting to 4 miles in all were dredged.

The improvement scheme on the Hog Dyke outfall near Raunds was completed.

(*b*) *Wisbech District Boards*

The supervision of the remaining sections of the main improvement scheme was carried out for the Wisbech Northside Internal Drainage Board. Arrangements were made for future work to be prepared and supervised by the North Level Commissioners.

(*c*) *North Level*

Reference was made in the Fifth Annual Report to the improvement scheme prepared for the North Level Commissioners. Technical data was being assembled for Part I of the Scheme, which covers improvements to the perimeter Districts of Newborough (First District), Postland (Fifth District), and that part of the Sixth District directly affected by the Peterborough expansion. The scheme provides for pumping 14,500 acres of the Newborough and Postland Districts to the River Welland, and for discharging the run off from the built up area of the Sixth District through a new pumping station to the Nene. Besides the direct local benefits, the scheme will reduce the run off to other parts of the North Level system, and lower the water levels.

(*d*) *South Holland Internal Drainage Board*

Reference was made in the Fifth Annual Report to the alternative land drainage improvement

schemes for this district. The South Holland Board decided to proceed with Scheme B, a series of pumping stations discharging to the River Nene via the South Holland Main Drain, which would then become a high level carrier for most of its length. The Ministry of Agriculture's decision on the application by the Internal Drainage Board is awaited.

4. FLOODS

No exceptionally high discharges occurred. The first four months of 1970 saw sustained and substantial flows, but by the end of May a typical recession was developing, which continued uninterrupted until mid-November, except for a minor flood in mid-August.

From mid-November until the end of March several floods occurred, but none were of note.

Typical maximum discharges were as follows:

Welland Sub-Catchment	1970			1971			*Previous Highest*
	Apl.	Aug.	Nov.	Jan.	Feb.	Mar.	
Site:	m³/sec.	m³/sec.	m³/sec.	m³/sec.	m³/sec.	m³/sec.	m³/sec.
Tixover	14·188	1·618	10·980	26·055	14·320	8·905	56·600 May 1967
Tallington	32·170	2·465	25·479	41·617	24·624	12·850*	62·260 May 1967
Kate's Bridge (incl. King St.)	12·905	0·872	4·242	14·440	5·855	5·435	34·520 Nov. 1968

* Estimated daily mean discharge.

Nene Sub-Catchment	1970			1971			*Previous Highest*
	Apl.	Aug.	Nov.	Jan.	Feb.	Mar.	
Site:	m³/sec.	m³/sec.	m³/sec.	m³/sec.	m³/sec.	m³/sec.	m³/sec.
Harrowden	10·018	3·651	6·990	16·357	10·018	6·990	17·772 May 1967
Harpers Brook	3·339	0·357	2·403	6·169	3·481	2·476	7·896 Mar. 1970
Willow Brook	2·674	2·137	2·187	6·333	2·389	2·091	7·981 Mar. 1969
Orton	44·955	35·032	45·923	73·423	54·727	42·354	88·721 Mar. 1969

Rainfall for the year was near average throughout the Area. On 27th June thunderstorms occurred in parts of the Area, the most intense passed in a north easterly direction over Wisbech, where the Borough Council's raingauge recorded 3.9 inches (100m.m.) in 2 hours 20 minutes. At the height of the storm 2.0 inches (51m.m.) fell in 12 minutes, which has been classified by the Meteorological Office as a "very rare" fall, and they confirm that it exceeds any intensity previously recorded in this country.

5. DRAINAGE CHARGES

The decision (referred to in the Fifth Annual Report) to prepare for raising a General Drainage Charge under section 1 of the Land Drainage Act 1961 for the year commencing

1st April 1971 was implemented at the February " Budget Meeting ". The Minister made an Order under Section 22 of the Agriculture (Miscellaneous Provisions) Act 1968 (S1 1971 No. 501) to come into operation on 1st April 1971 providing that for the following four years the number to equate the amount per acre to a general rate in the Welland and Nene Area should be 4.5. As the Precept on the County Authorities for 1971-72 is 1.20 pence the General Drainage Charge for that year will be 5.4 pence.

It is pleasing to record that the occupiers of chargeable land have generally been most co-operative in providing the information for which they were asked, and very few of the acrimonious letters such as might have been provoked by this additional burden on agriculture have been received.

It had been feared that Drainage Charges could lead to some resentment, and impair the good relations with the agricultural community which it is desired to promote. The County Branches of the National Farmers' Union were therefore informed that the Clerk and a representative of the Chief Engineer's Department would be willing to attend meetings at which the proposals could be explained, and questions and complaints answered.

6. STATUTORY SCHEMES FOR INTERNAL DRAINAGE BOARDS

As was recorded in the Fifth Annual Report, it was decided to make a 4 (i) (b) Scheme providing (i) for the amalgamation of the North Level and the Tydd, Leverington, and Wisbech Northside Districts, (ii) for the abolition of the North Level Sub Districts, (iii) for the establishment of a new Board to take over the functions of the several Boards, and (iv) for such consequential matters as may be required.

It appeared at first that the North Level Commissioners and all but one of the Sub District Boards would oppose the Scheme very strenuously, but after much deliberation it is very satisfactory to record that only the North Level (Sixth District) Board (and certain interests in that District) objected to the Scheme. The support of the North Level Commissioners is appreciated.

7. OTHER MATTERS

Extension of Main River

The Minister was asked to make an Order under Section 11(6) of the Water Resources Act 1963 to extend Main River by some 10.50 miles as follows:

Newborough (First District)	2·85 miles	From the Highland Drain Grid Ref. TF 2218 0598 to the River Welland, TF 2127 0963
Postland (Fifth District)	2·85 miles	From the east side of the culvert under the A1073 road, Grid Ref. TF 2622 1186 to the River Welland, TF 2374 1392
Sixth District	1·2 miles	From the west side of culvert under Storeys Bar road Grid Ref. TL 2179 9949 to the River Nene at Grid Ref. 2291 9827
Grendon Brook	1·4 miles	Two tributaries from the A428 road to Grid Ref. SP 8610 5554 on the western tributary and to Grid Ref. 8647 5553 on the eastern tributary
Slawston Brook	2·2 miles	From the confluence with the River Welland to the Slawston/Welham Road at Grid Ref. SP 7725 9334

FISHERIES

1. GENERAL REPORT

The quality, condition and number of fish caught generally remained fairly consistent throughout the year, and there was a slight indication that the quality in the Middle Nene was improving.

Large shoals of fry were seen in both the Nene and the Welland.

The 1970/71 fishing season was the first full season in which the increased price of permits for the Authority's own waters had operated, and it was gratifying that every angler fishing in those waters was in possession of a Permit when checked by a bailiff.

Following complaints of poor fishing and the absence of roach in the past two years, a survey was carried out on the Vernatt's Drain at Spalding. Netting was made difficult by heavy weed growth and the number of fish revealed was not high, but numerous good quality roach were revealed.

Experimental fish trapping was carried out at Pitsford Reservoir when single traps were placed in and around the road culvert at the upper end of the reservoir to ascertain whether fish moved through the culvert prior to spawning. A permanent fish trap will be installed if the experiment shows it to be justified.

The reservoir is known to contain roach, rudd and perch, but of 3,934 fish caught, two were rudd, and the remainder were perch. Only 350 fish (9.8%) were caught in the traps suspended directly in the culvert. The results were disappointing, as it had been hoped to catch a larger number of roach and rudd. The experiment is being continued, but the present indication is that the experience will be similar.

The Ladies " All England " Angling Championship was held on the River Nene at Alwalton in July, and was won with a weight of 4 lbs. 10 ozs.

In July an 8 lbs barbel was caught in the River Welland at West Deeping. There are occasional reports of barbel being seen or caught in that vicinity, where they were first introduced in 1955 and 1956.

In September 248 anglers competed in the St. Dunstan's Charity Angling Match held on the South Holland Main Drain near Sutton St. James, and caught over 1,500 lbs of fish, the top weight being 67½ lbs. This section of the South Holland Main Drain suffered a heavy fish mortality following pollution by the chemical " Thionazin " in 1968 and 1969. (See Fourth and Fifth Annual Reports).

River Nene—North Bank Fishery

Two hundred and forty two matches were held in which 12,223 pegs were reserved, and returns were received from 116 matches fished by 5,275 anglers.

The highest winning weight of 18 lbs. 4 ozs. (8.30 kg.) was 11 ozs. (312 g.) greater than that of the previous season. The total weight of 1 ton 6 cwts. 48 lbs. (1,342.8 kg.) for the top ten anglers in each match gave an average weight per rod of 2 lbs. 8 ozs. 13 drams (1.14 kg.) and compares with 2 lbs. 12 ozs. 3 drams (1.25 kg.) in 1969/70, 2 lbs. 11 ozs. 15 drams (1.22 kg.) in 1968/69 and 2 lbs. 5 ozs. 3 drams (1.05 kg.) in 1967/68.

Monthly totals for the first ten anglers in all matches were as follows:

June	378 lbs. (171·5 kg.)	November ..	82 lbs. (37·2 kg.)	
July	973 lbs. (441·4 kg.)	December ..	13 lbs. (5·9 kg.) (One match)	
August ..	578 lbs. (262·2 kg.)	January ..	No matches	
September ..	571 lbs. (259·0 kg.)	February ..	20 lbs. (9·1 kg.) (One match)	
October ..	278 lbs. (126·1 kg.)	March ..	67 lbs. (30·4 kg.)	

The Nene Championship was held in October, when conditions were poor with a nearly gale force wind blowing. The winner had a weight of 7 lbs. 1 oz. (3.20 kg.), compared with 17 lbs. 8½ ozs. (7.95 kg.) the previous year.

River Welland—Crowland (Kennulph's Stone) to Spalding (Locks Mill)

Two hundred and ninety two matches were held in which 20,670 pegs were reserved and returns were received from 132 matches fished by 9,036 anglers.

The highest winning weight of 40 lbs. 5 ozs. (18.28 kg.) was 2 lbs. 12 ozs. (1.25 kg.) greater than that of the previous season.

The total weight of 2 tons (2,032 kg.) for the top ten anglers in each match gave an average weight per rod of 3 lbs. 6 ozs. 5 drams (1.53 kg.), and compares with 3 lbs. 1 oz. 7 drams (1.40 kg.) in 1969/70, 3 lbs. 0 ozs. 11 drams (1.36 kg.) in 1968/69, and 2lbs. 2 ozs. 3 drams (0.96 kg.) in 1967/68.

Monthly results were as follows:

June	558 lbs. (253·1 kg.)	November ..	No matches	
July	1,547 lbs. (701·8 kg.)	December ..	No matches	
August ..	1,295 lbs. (587·5 kg.)	January ..	No matches	
September ..	814 lbs. (369·3 kg.)	February ..	No matches	
October ..	266 lbs. (120·7 kg.)	March ..	No matches	

The Welland Championship was fished in July, when the winning weight was 29 lbs. 1 oz. (13.21 kg.), compared with 24 lbs. 3½ ozs. (11.0 kg.) the previous year.

The proceeds from this match are given to various charitable organisations, and the sum of £1,370 has been raised in the 11 years it has been held.

Coronation Channel, Spalding

One hundred and thirty matches were held in which 5,182 pegs were reserved and returns were received from 60 matches fished by 1,695 anglers.

The highest winning weight of 13 lbs. 11 ozs. (8.19 kg.) was 9 lbs. 12 ozs., (4.42 k.g.) less than that of the previous season. The total weight of 9 cwts. 95 lbs. (500.3 kg.) for the top ten anglers in each match gave an average weight per rod of 1 lb. 13 ozs. 7 drams (0.83 kg.) and compares with 2 lbs. 8 ozs. 10 drams (1.15 kg.) in 1969/70, 2 lbs. 1 oz. 14 drams (0.94 kg.) in 1968/69 and 2 lbs. 0 oz. 1 dram (0.91 kg.) in 1967/68.

It is noticeable that more roach are being caught, which could account for the reduced weights.

Monthly results were as follows:

June	132 lbs. (59·9 kg.)	November ..	16 lbs. (7·3 kg.) (One match)	
July	241 lbs. (109·3 kg.)	December ..	No matches	
August ..	390 lbs. (176·9 kg.)	January ..	No matches	
September ..	246 lbs. (111·6 kg.)	February ..	No matches	
October ..	78 lbs. (35·4 kg.)	March ..	No matches	

Bugbrooke Trout Water

The Bugbrooke Trout Water on three miles of the upper Nene between Upper Heyford and Kislingbury is the only public trout stream in the Area. It was restocked with 1,300 10/11 inch brown trout between May and March.

Unfortunately, the number of Day Tickets sold was the lowest for four years. The reason for this decline is not clear, but it may be in part due to the popularity of recently opened trout waters near Coventry and Rugby, and in part due to land drainage work which was being carried out on the fishery.

	1962	1963	1964	1965	1966	1967	1968	1969	1970
No. of Day Tickets sold	348	189	161	135	375	514	453	501	225
No. of completed Day Tickets returned ..	304	170	136	112	270	308	309	305	151
No. of anglers catching one or more trout ..	172	94	60	33	138	208	192	142	68
No. of anglers catching bag limit (six trout) ..	48	23	12	7	7	13	13	12	3

A brown trout weighing 2 lbs. 4 ozs. was the heaviest fish caught.

Eye Brook Reservoir

Eye Brook Reservoir was visited by 2,028 anglers (12,565 rod days), compared with 2,494 anglers (11,999 rod days) in the previous year. Some 16,021 fish were caught, with an average weight of 1.14 lbs., the best being a brown and a rainbow trout, each weighing 4 lbs.

River Gwash

The Guash Fishing Club controls the trout water on the River Gwash. Fishing was considered to be about average. The water was again restocked with brown trout, and the number of naturally bred trout continues to increase.

Pitsford and Ravensthorpe Reservoirs

The Mid-Northamptonshire Water Board control trout fishing on Pitsford and Ravensthorpe Reservoirs, but returns of catches have been few. Results for both reservoirs are believed to have been average.

Willow Brook

Willow Brook fished better than it has done for several years. It was restocked with rainbow trout.

Restocking

Restocking was carried out throughout the year, but there was great difficulty in obtaining sufficient fish.

Details of restocking are as follows:

Release Point	*Source*	*Number*	*Species*
RIVER NENE:			
Peterborough (North Bank) ..	Eye Brook Reservoir	58	Tench
Peterborough (North Bank) ..	New Wryde Drain	1,811	Bream, roach, perch, tench
Peterborough (North Bank) ..	Moreton's Leam	822	Bream, carp, roach, rudd
Whiston ..	Bugbrooke Trout Water	211	Bream, carp, chub, dace, pike, roach

RIVER WELLAND:				
Spalding	.. ..	Folly River	1,059	Bream, roach
Spalding	.. ..	Maxey Cut	2,444	Bream, chub, dace, perch, roach
Seaton	.. ..	Private lake at Glaston	100	Carp, perch, tench
Crowland	.. ..	Eye Brook Reservoir	58	Tench
Crowland	.. ..	Moreton's Leam	1,525	Bream, roach, rudd, tench
Market Deeping	..	Greatford Cut	226	Bream, roach, chub, dace
Stamford	.. ..	River Gwash	627	Bream, carp, chub, dace, perch, pike, roach
OTHER WATERS:				
River Ise, Kettering	..	River Ise, Boughton Hall	59	Roach, perch, pike
		Total	9,010	

Length range in inches of fish used for restocking:

Bream ..	10/15	Dace ..	5/7	Roach ..	6/12
Carp ..	5/12	Perch ..	4/10	Rudd ..	6/7
Chub ..	8/10	Pike ..	10/26	Tench ..	5/12

Fish Mortalities

In April 100 fish, mainly small roach, died in the Grand Union Canal at Northampton when a discharge of plating effluent reached the Canal via a surface water sewer. (See page 51 of the Prevention of Pollution section of this Report.)

In May ten trout died in the Willow Brook at Woodnewton. Herbicide spraying had been carried out upstream, but no herbicide was found when samples of stream water were analysed.

In June 80 large bream died in Thrapston Large Gravel Pit. Chemical analysis of the water and bacteriological examination of the fish failed to reveal the cause.

Six hundred fish, mainly gudgeon, died in the Bedford Road Flood Relief Channel at Northampton, when a storm overflow at the head of the Channel operated at a time when there was no flow in the Channel.

In July 200 small bream and roach died in a pond at Quadring. The fish were heavily infested with the parasite *Argulus Foliaceus*, and it was presumed that they had become weakened by the parasite and died of natural causes.

In August 500 roach and chub died in the River Nene at Whiston. The mortality was probably due to the low dissolved oxygen concentration at the time, caused by a discharge of storm sewage from Northampton sewage disposal works when 1.2 inches of rain fell in twenty-four hours.

In September 120 fish, mainly fry, died in the River Chater and the River Welland near Ketton when a toxic effluent was discharged from the premises of a cement manufacturer. (See Page 50 of the Prevention of Pollution section of this Report.)

In November several thousand small bleak, chub, bream, pike and roach died in the Electricity Cut at Peterborough when the water became deoxygenated by the premature operation of a storm sewage overflow. (See Page 51 of the Prevention of Pollution section of this Report.)

Some 200 bream died in the South Holland Main Drain near Clifton's Bridge when the water became contaminated with Thionazin. (See Page 44 of the Prevention of Pollution section of this Report.

2. SALMON AND MIGRATORY TROUT

Salmon and Sea trout in the Nene and the Welland are extremely rare.

3. LICENCES ISSUED

Licences issued in the year ending 31st December, 1970 were as follows:

Instruments other than rod and line	Eel baskets, dead lines and nets at 50p	137	(111)
Rod and Line	Trout and Freshwater fish, or eels or elvers Annual at 37½p	4,034	(3,920)
	Freshwater fish, or eels or elvers Annual at 25p	33,651	(32,165)
	Seven Day at 10p	20,604	(25,297)
General Licences (for Charity Competitions)	at £1.05 each	4	(3)
River Authority Permits	Annual at 40 p	4,122	
	Seven Day at 15p	9,748	

(The figures for the previous year are shown in parentheses)

One hundred and eighty-seven Block Permits covering 8,612 anglers were also issued. Block Permits are issued to Angling Clubs when more than 20 anglers are fishing in the Authority's waters. A 5% discount is allowed on such Permits.

4. COMMERCIAL SALMON AND TROUT FISHERIES

There are no commercial salmon or trout fisheries in the Area.

5. PROSECUTIONS

Fifty anglers were reported by the bailiffs for being without a licence, but 14 of these subsequently produced licences which appeared to be in order. In 4 cases there were mitigating circumstances, and it was felt that a warning would suffice, and in a further 9 cases no action was taken.

The 23 prosecutions resulted as follows:

Bourne Magistrates:

One defendant fined £1.

Market Harborough Magistrates:

One defendant fined £2.

Northampton Magistrates:

One defendant fined £8 (2 charges of £4 each)

Northampton County Magistrates:

One defendant fined £5 and ordered to pay an advocates fee of £1.
Two defendants each fined 50p.

Oakham Magistrates:

One defendant fined £2.

Oundle Magistrates:

One defendant fined £2.

Peterborough Magistrates:

One defendant fined £2.
Seven defendants each fined £1.

Thrapston Magistrates:

Two defendants each fined £1.

Wellingborough Magistrates:

Four defendants each fined £6 (2 charges of £3 each) and ordered to pay an advocates fee of £2.10.

West Elloe Magistrates:

One defendant fined £3.

6. ASSESSED FISHERIES

There are no assessed fisheries in the Area.

7. RESEARCH

A preliminary report has been received from the post-graduate biologist from the University of Liverpool who commenced his research in 1967 on the number and condition of the fish in the River Nene.

Sampling was carried out by electro-fishing. It had been hoped to seine-net lengths of the river, but despite numerous attempts comprehensive results could not be obtained, and five sampling stations were chosen to cover the various conditions found in the River Nene at Kislingbury, Cogenhoe Backwater, White Mills Backwater, Wollaston Backwater and Yarwell Millstream.

An assessment was made of the roach, dace, chub, pike and perch at each site as regards numbers and densities, growth rates and other growth characteristics, mortality rates and fecundity.

It was found that roach density varied, the greatest being found at Cogenhoe, White Mills and Wollaston. The data was similar to that for other British waters.

The density of dace was slightly lower than that in other British rivers.

Dace at Yarwell had the poorest growth rate, although the general growth rate was found to be greater than that of dace in the Thames at Reading.

The density of chub was lowest at Yarwell and then at Kislingbury. The densities at Cogenhoe and White Mills were similar, but no estimate was made for Wollaston as insufficient chub were caught. As there are no known density estimates for other British waters no comparisons could be made. Chub showed little difference in growth at all five sites.

The highest density of pike was at Wollaston, the lengths below the sluice at Cogenhoe, White Mills and Yarwell being similar. Above the sluice at Cogenhoe and at Kislingbury the density was low for the Nene, but normal compared with that of other British waters.

Nene pike grow slower than those found in Lake Windermere, but at a favourable rate when compared with growth rates in other waters. There was no direct evidence from this survey that roach form the major constituent of pike diet.

At all sites the number of perch caught was very small, and it appears that density is lower in the Nene than in the Thames, although growth rates are better.

Until the data has been completely analysed no definite hypothesis can be put forward to explain the facts.

It would appear that in general the density of roach, dace and perch is lower in the River Nene than in other British waters for which estimates are available. The difference is not significant, and some of the sampling stations were comparable with those elsewhere. On the other hand, in some places the density of pike on the Nene was much greater than in other waters for which there is data.

It was suggested that the good growth rate of Nene roach may be due in part to the large number of pike, which thin out the younger fish, and permit the remaining fish to grow better. This situation appears in time to produce considerable competition between pike, which leads to a slightly reduced growth rate.

With a lower fish population the chances of an angler catching a fish are reduced. However, if the population was greater, then growth rates would decline, leading to poorer quality fish.

The detailed analysis yet to be carried out might provide more evidence for the above hypothesis, which, for the present, should be regarded as a very tentative explanation of what might be happening in the River Nene.

The Ministry of Agriculture, Fisheries and Food are continuing their research into the feeding habits of Grass Carp at the Borrow Pits at Crowland, and at a private pond near Kettering.

The Water Pollution Research Laboratory are carrying out a study on the Willow Brook into the relationship between water quality and the status of the fish population in polluted waters.

A post-graduate biologist from the University of Liverpool has commenced research to find the effect of angling on fish in the North Bank Fishery. Assistance with netting and electro-fishing will be provided and a grant of £100 is to be made.

PREVENTION OF POLLUTION

1. QUALITY OF WATER

Nine hundred and thirty one samples of river water were analysed in the Laboratory, of which 733 were from routine surveys, 112 for pesticide examination, and 86 were for water conservation requirements.

All the principal watercourses have now been examined for organochlorine residues, and a limited number for organophosphorous residues. Except for the South Holland Main Drain, only the materials alpha and gamma B.H.C. have been detected, their concentrations ranging from 0·5-11·3 ng/l for alpha B.H.C. and 3·2-67·7 ng/l for gamma B.H.C. After a fish mortality the South Holland Main Drain was found to contain the organophosphorous insecticide Thionazin, the maximum concentration detected being a fifteen thousandth of a milligram per litre.

River Welland—Non tidal

Four full surveys showed that the river was generally in good condition, but average biochemical oxygen demands for the lowland reaches were higher than in previous years. This was attributable to one survey in June when there was an algal bloom.

Conditions at Welham appeared to be slightly better, which no doubt reflected the improvement in the Market Harborough sewage effluent in the last quarter of the year.

Eye Brook

Surveys in July and October confirmed that the stream was " clean ", and samples taken at Caldecott in conjunction with the Welland surveys were all satisfactory.

River Chater

Surveys in May and September showed the stream to be " clean/fairly clean ", and samples taken at Ketton in conjunction with the Welland Survey were all satisfactory.

River Gwash

Surveys in May and August confirmed that the lower reaches were " fairly clean ", but higher biochemical oxygen demands in the upper reaches indicate the low dilution available for sewage effluent and eutrophication.

Ram Dyke (Brook Drain, South Drain)

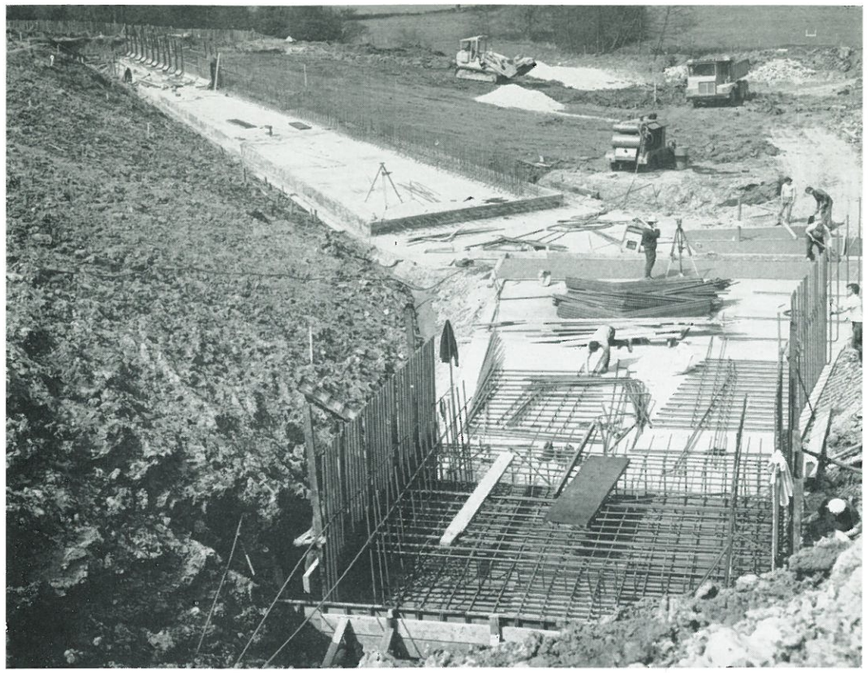
Conditions in the Ram Dyke continued to improve as a result of the better trade effluent from Helpston Paper Mills.

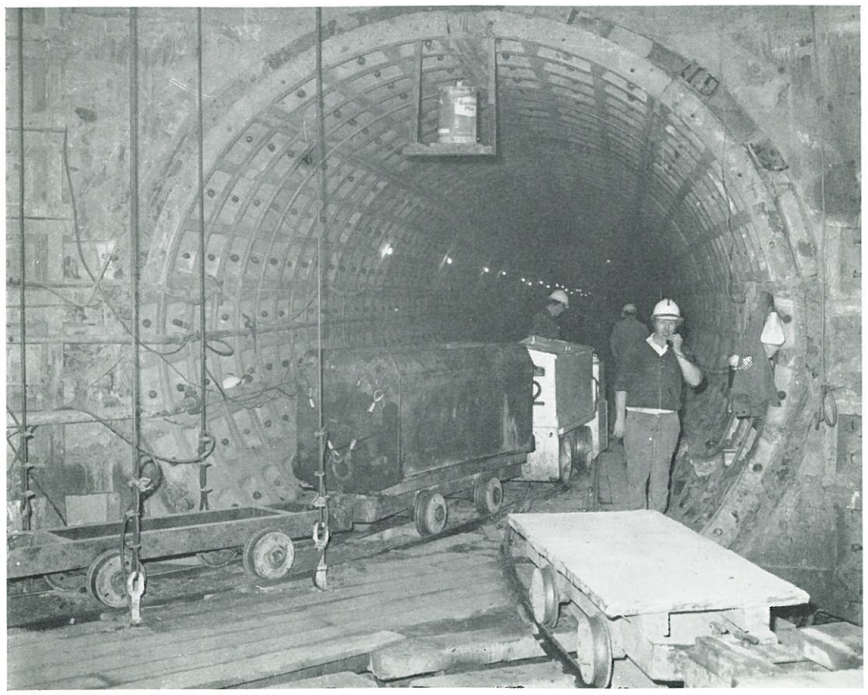
The following table shows the improvement in the drains since they came under the control of the Authority in 1965:

Empingham Reservoir

(*above*) **View of tailbay during construction**

(*below*) **Face of the forebay tunnel portal The final shutter is being stripped from the portal face**





Empingham Reservoir

(*above*) **View of area showing in foreground, forebay portal-base slab steel being erected**

(*below*) **View taken from bottom of valve shaft showing entrance to 4.420 metre tunnel**

(*above*) **River Nene**
Piling at Dog in a Doublet Sluice

(*below*) **River Nene—Horseshoe Corner**
Laying fascines