



(above) River Welland—
Tinwell Intake for Empingham Scheme
showing river control incorporating a
gauging weir and siphons

(below) Empingham Reservoir—
auger rigs drilling sand drains

One hundred and ten Block Permits covering 7,445 anglers were issued to Angling Clubs when more than 20 anglers were fishing in the Authority's waters, a 5% discount being allowed.

4. COMMERCIAL SALMON AND TROUT FISHERIES

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

5. PROSECUTIONS

Forty persons were reported for being unable to produce a licence when required so to do, but fourteen subsequently produced licences dated before the reports were made.

In three of the twenty-one cases where anglers produced a licence obtained subsequent to the report it was felt that there were mitigating circumstances such that a warning would suffice, and the eighteen prosecutions resulted as follows:

West Elloe Magistrates

One defendant was fined £3.

Peterborough Magistrates

Three defendants were each fined £3, one being ordered to pay an advocate's fee of £1.

Three defendants were each fined £1.

Northampton Magistrates

Two defendants were each fined £10 (£5 on each of 2 charges).

One defendant was fined £5.

Thrapston Magistrates

Two defendants were each fined £5.

Two defendants were each fined £1.

Rutland Magistrates

One defendant was fined £5.

One defendant was fined £15 (£5 on each of 3 charges).

Market Harborough Magistrates

Two defendants were each fined £2.

In the remaining five cases the anglers concerned gave false details and as further investigation proved unsuccessful, no action could be taken.

6. ASSESSED FISHERIES

There are no assessed fisheries in the Area.

7. RESEARCH

The final report by the post-graduate biologist of the University of Liverpool on the number and condition of fish in the River Nene was received. He commenced his research in 1967. It enlarges on the findings in his preliminary report, a summary of which was given in the Sixth Annual Report.

The Ministry of Agriculture, Fisheries and Food were 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 were continuing their study on the Willow Brook into the relationship between water quality and the status of fish in polluted waters.

A post-graduate biologist from the University of Liverpool continued his research to find the effect of angling on fish in the North Bank Fishery. The scope of the project was enlarged in an endeavour to find out if there were any deleterious effects on fish caused by angling during the close season. Permits were granted allowing persons to fish on a specified length of the North Bank during the close season.

PREVENTION OF POLLUTION

1. QUALITY OF WATER

Nine hundred and fifty eight samples of river water were analysed in the Laboratory, of which 810 were from routine surveys, 48 for pesticide examination, and 86 were for water conservation purposes.

Examination of the principal watercourses for organochlorine residues continued, and the results were very similar to those of previous years. Only the materials alpha and gamma B.H.C. have been detected, concentrations ranging from 0.1 to 10.1 ng/l for alpha B.H.C. and 1.5 to 33.5 ng/l for gamma B.H.C.

River Welland—Non tidal

Four full surveys indicated that the river was generally in good condition, but the mean biochemical oxygen demand at Rockingham was higher than usual due to one sample of 8.4 mg/l, which was taken at a time of algal bloom.

Eye Brook

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

River Chater

Surveys in May and July confirmed the stream to be "clean/fairly clean", and samples taken at Ketton in conjunction with the Welland surveys were again satisfactory.

River Gwash

Three full surveys showed that the river was "fairly clean".

Ram Dyke (Brook Drain, South Drain)

Conditions in the Ram Dyke have deteriorated slightly during the year, as the Britains-Arborfield paper mill at Helpston produced a less satisfactory effluent than in the previous year, in consequence of part of the treatment plant being out of use for three months while remedial work was carried out.

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

	<i>* Ram Dyke</i>		<i>Brook Drain</i>		<i>South Drain</i>	
	<i>Suspended</i>		<i>Suspended</i>		<i>Suspended</i>	
	<i>Solids</i>	<i>B.O.D.</i>	<i>Solids</i>	<i>B.O.D.</i>	<i>Solids</i>	<i>B.O.D.</i>
	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>
1965/66 ..	252	160	147	108	86	74
1966/67 ..	83	91	60	39	25	17
1967/68 ..	58	91	50	43	19	25
1968/69 ..	71	33	28	12	20	6.9
1969/70 ..	41	54	20	9	15	6.5
1970/71 ..	35	32	28	17	20	7.1
1971/72 ..	48	50	51	28	32	20

* In dry weather the flow in Ram Dyke consists mainly of paper mill effluent.

Bourne Eau

Three surveys showed that the Bourne Eau was "fairly clean" over most of its length, but sewage effluent from the Bourne works had a noticeable, but localised, effect by raising the biochemical oxygen demand and lowering the dissolved oxygen content.

River Glen

Three surveys showed the river to be satisfactory. Only one sample was taken at Corby Glen, as when the other surveys were made, the river had dried up at the sampling point.

Blue Gowt Drain

During the summer months the Blue Gowt Drain consists almost entirely of effluent from the Pinchbeck Works, virtually forming an effluent lagoon, which develops an algal bloom and gives rise to high biochemical oxygen demands and dissolved oxygen levels.

River Welland—Tidal

During most of the year the tidal river was satisfactory, but high biochemical oxygen demands and low dissolved oxygen levels were recorded in October and November.

River Nene—Non-tidal

Five surveys indicated that the overall condition of the river was not as good as in previous years, as shown by the following table:

	1969/70		1970/71		1971/72	
	No. of Samples	Per Cent	No. of Samples	Per Cent	No. of Samples	Per Cent
Satisfactory ..	71	60.5	94	74.5	58	55
Unsatisfactory ..	47	39.5	32	25.5	47	45

(Note: A sample is regarded as satisfactory if the 5-day Biochemical Oxygen Demand does not exceed 5.0 mg/l.)

The following table shows the stretches where the deterioration occurred which accounted for this increase in unsatisfactory samples:

	Source to Billing		White Mills to Ringstead		Thrapston to Dog-in-a Doublet Sluice	
	Samples	% Satisfactory	Samples	% Satisfactory	Samples	% Satisfactory
1969/70	30	93	41	41.5	48	56
1970/71	36	97	42	45	48	77
1971/72	30	87	35	31	40	53

The upper reaches showed no substantial change in quality and were very good, the deterioration occurring in the lower reaches. This was not attributable to any increase in the polluting load, but was caused by high algal growth at the time of sampling, resulting in higher bio-chemical oxygen demand values associated with high dissolved oxygen concentration. The worst conditions coincided with the lowest river flows, but it should be remembered that river surveys are deliberately carried out at times of low flow to assess the worst river conditions.

River Ise

Two surveys made in May and August showed the stream above Kettering sewage disposal works outfall to be satisfactory. Conditions below there remain unsatisfactory, as shown by the following table:

Year	No. of Satisfactory Samples	Average B.O.D. mg/l
1968/69	2 out of 6	6.9
1969/70	2 out of 6	7.8
1970/71	3 out of 10	7.6
1971/72	2 out of 7	7.5

Harpers Brook

Three surveys showed the brook to be "clean/fairly clean" over most of its length.

Willow Brook

Three surveys showed that the character of the stream had changed slightly. The condition of the Northern stream was similar to that of the previous year in having a high biochemical oxygen demand and a relatively low dissolved oxygen saturation, but the Central stream showed a marked change in character, with low biological oxygen demands and high dissolved oxygen levels. This was associated with a relatively high pH as a result of changes in trade effluent treatment at the Corby Steel Works. The Southern stream again had a high biochemical oxygen demand, but the level of dissolved oxygen was satisfactory. The middle and lower reaches continued to have a high biochemical oxygen demand which, as in the River Nene, was due to persistent blooms of algae and caused a distinct green colour in the water for much of the summer.

Thirty-nine zinc estimations were made on the water overspilling from Deene Lake. The mean concentration was 4.6 mg/l, the range varying from 0.38 to 18.1 mg/l. These values were higher than those of the previous year, but in January, the British Steel Corporation introduced treatment for the precipitation of zinc before the effluent was discharged to the stream, and for the last three months of the year there was a substantial improvement when the concentration was reduced to a range of 0.38 to 0.63 mg/l at the Deene Lake outlet.

South Holland Main Drain

Three surveys showed conditions to be similar to those of the previous years, although the biochemical oxygen demand was slightly higher.

River Nene—Tidal

Four surveys showed the tidal river to be in a reasonable condition, although low dissolved oxygen levels were recorded at Guyhirne and Wisbech during the August survey.

2. STANDARDS APPLIED TO EFFLUENTS

Royal Commission's recommendations are usually prescribed for fully treated discharges of sewage and trade effluent, but more stringent standards are being increasingly applied where circumstances warrant. Lower standards were prescribed for some Section 1 discharges, but in these cases those responsible were reminded that when the Conditions are reviewed, the requirements will be raised. Greatly increased discharges of sewage effluent from "New Town" and "Overspill" development in the Nene Valley will make it necessary to prescribe higher standards if the wholesomeness of the river is to be maintained—let alone improved. Sewage authorities have been advised of the higher standards which in future may be required from some sewage disposal works.

Sixty-seven applications under the Rivers (Prevention of Pollution) Acts, and the Water Resources Act were dealt with, the classification being as follows:

Sewage effluent (treated)	..	..	..	..	10
Storm sewage effluent	..	..	..	..	7
Emergency overflows	..	..	..	..	23
Surface water discharges	..	..	..	..	3
Trade effluents	..	..	..	..	2
Discharges to underground strata	..	..	..	..	22

One Consent was varied under Section 5(i) of the Rivers (Prevention of Pollution) Act, 1961. The practice of previous years was generally followed.

3. SAMPLES AND ANALYSES OF EFFLUENTS

During the year 1,284 samples of effluent were analysed, of which 1,138 were from sewerage and sewage disposal works, the remainder being from trade premises. Miscellaneous analyses accounted for 88, the majority being spring or pond waters. A further 51 bacteriological analyses were made, and 254 samples were analysed for the Lincolnshire Ground Water Study.

Seven statutory samples of farm effluent were analysed.

			Number	Per cent
Sewage Works generally producing a satisfactory effluent	..	..	150	55
Sewage Works generally producing unsatisfactory effluent	..	..	124	45
Trade Premises generally producing a satisfactory effluent	..	..	11	35
Trade Premises generally producing unsatisfactory effluent	..	..	20	65

4. SEWAGE AND TRADE EFFLUENTS

Of the numerous minor pollutions, once again the most frequent have been due to discharges of oil, usually via surface water sewerage systems. The need for bund walls around oil storage tanks has been continually emphasised, and if such precautions are not taken, those with oil storage tanks must accept full responsibility for spillages and overflows.

Following experience of a major oil pollution from a trunk oil pipeline, emergency oil pollution equipment is held in readiness at the Central Depot, and comprises a 200 ft. oil boom, a "Slurp" skimmer pump with 40 metres of hose, and portable lighting equipment. Staff dealing with emergencies are to have radio telephones fitted to their cars.

Four serious silage pollutions occurred, all on the same day, and in each case from a silage bunker that had been in use in the same position for many years without trouble. It is probable that the four incidents were due to the exceptionally heavy rain in June, and farmers were asked to take more effective precautions against adverse weather conditions.

Although discharges of crude sewage resulted from power cuts during the Electricity Strike, the period coincided with relatively high river flows and no significant pollution occurred. At the outset of the strike, all local authorities were asked to take every possible measure to minimise polluting discharges, and (where necessary) to hire generators for sewage pumping stations. It was also suggested that all pumps on sewage pumping stations should be manually controlled shortly before scheduled power cuts so that the maximum possible capacity was available before any overflow occurred. Radio and television were of great value in publicising these precautionary measures, and complete co-operation was received from all local authorities in dealing with a difficult situation.

The practice continued of considering at each meeting, and in rotation, a Special Report on each sewage authority, the progress that has been made, and the extent to which various discharges may be falling short of prescribed conditions. The first series of Reports was completed, and the second series provides a comparison showing the trend in the last two or three years. Although many sewage works were overloaded and producing consistently unsatisfactory effluent, the position has been further aggravated by new development.

In these circumstances it was decided to inform all sewage authorities that further development in those districts where sewage disposal facilities were inadequate, should be suspended. The County Planning Authorities were advised accordingly, and their co-operation in this respect has been greatly appreciated. This procedure was adopted in the case of twenty two sewage authorities and sixty sewage disposal plants, and it seems that a moratorium on housing development may be a most effective way of ensuring that local authorities provide sewage disposal facilities in advance of the development instead of subsequently, as has so often been the case in the past.

The Department was consulted on 347 planning applications, and in 65 cases the County Planning Officer was advised that development was undesirable.

Boston Rural District

The new sewage disposal works for Sutterton and Wigtoft was almost completed, and should be in operation during the coming year.

Bourne Urban District

Bourne Council were informed that a higher than Royal Commission standard effluent will be required when their sewage disposal works is extended. Although a vegetable washing company has provided preliminary treatment plant, the Council refused an application to increase the discharge of trade effluent to the public sewer on the grounds of inadequate sewage disposal facilities.

Brixworth Rural District

Brixworth Rural District Council are preparing proposals for improving and modernising eighteen of the sewage disposal works.

Burton Latimer Urban District

A lorry, while reversing, knocked down a protective bund wall around two oil fuel storage tanks, causing the rupture of a valve and the leakage of about one thousand gallons of oil, much of which reached the River Ise.

As the river was in spate, oil booms failed to arrest the oil, and users of water downstream were warned of the pollution.

Corby Urban District

Although all sewage had been treated on the extended 1956 section of the Corby sewage works satisfactorily for five months, the bringing into use unnecessarily of two old sections of the plant produced an inferior effluent. When the Council reverted to the use of the 1956 section, a satisfactory effluent was again discharged.

A dramatic reduction in the zinc content of effluent from the Corby Steel Works was achieved by precipitation as a result of passing lime slurry to an effluent lagoon to raise the pH value.

Daventry Municipal Borough

Daventry Borough Council brought additional land into use for effluent treatment. Work on the new sewage disposal works is scheduled to start early next year.

Daventry Rural District

Daventry Rural District Council were requested to carry out immediate remedial work at

the Newnham and Badby sewage disposal works to ensure adequate treatment in advance of new housing. It is intended to close the works within two to three years when the sewage will be pumped for treatment to an extended sewage works at Weedon, but in the interim period, the treatment will be supplemented by land irrigation.

Desborough Urban District

The Department of the Environment gave approval for the construction of a new sewage disposal works for Desborough.

East Elloe Rural District

A heavy fish mortality in a fen drain was caused by highly polluting drainage from a surplus potato crop, disposed of by filling in an old drain. The firm responsible was prosecuted before the West Elloe Justices, when each of the four partners was fined £15.

The Potato Marketing Board has agreed to draw the attention of all farmers who have to dispose of surplus potatoes, to the risk of gross pollution and the importance of taking adequate precautions.

The Department of the Environment approved the sewerage and sewage disposal scheme for the Long Sutton and Sutton Bridge area.

A vegetable processing factory at Holbeach ceased production, which will eliminate a source of occasional pollution.

Higham Ferrers Municipal Borough

Higham Ferrers Council are to construct an additional effluent lagoon at their sewage disposal works. Consistently satisfactory effluent is now produced at this works.

A local tannery was advised to take steps to discharge its trade effluent to the foul sewer as soon as possible and they have submitted a Trade Effluent Notice under the Drainage of Trade Premises Act, 1937.

Irthlingborough Urban District

An improvement in the Irthlingborough effluent continued until mid-August, when severe deterioration occurred and lasted until the end of November, when it again became satisfactory. The deterioration coincided with peak production at a local food processing factory, and the Council were requested to exercise more stringent control over trade effluent discharged to sewer.

The County Planning Officer was asked to refuse planning permission to use premises "for the storage of chemicals and other obnoxious products" on a site adjacent to the River Nene.

Most of the liquid trade waste produced at a tannery is pumped to the Council's sewer.

Kettering Municipal Borough

Proposals for extending Kettering sewage disposal works were submitted to the Department of the Environment, and temporary remedial measures are to be introduced to improve the River Isle, which has deteriorated as a result of the Kettering sewage.

Some slight improvement was noticed, although the effluent is still unsatisfactory.

Kettering Rural District

Kettering Rural District Council was informed that the unsatisfactory effluent discharged from its sewage works, most of which were overloaded or working to full capacity, was giving cause for considerable concern.

Northampton County Borough

The Bedford Road Relief Channel at Northampton was polluted from time to time by a storm sewage overflow at the head of the channel. It is hoped that a proposed sewerage scheme will make the storm sewage overflow redundant.

During large scale extensions at the Northampton sewage disposal works it was necessary to take out of use the channel conveying storm sewage to the land irrigation area, which now receives normal settlement only before discharge.

Northampton Rural District

The Billing Brook was polluted following the collapse of a manhole on a sewer crossing the Brook. Sewage from above the manhole had to be diverted to a new sewer before the repair could be carried out.

A heavy oil pollution of the River Nene was caused by the failure of a flange joint on a trunk oil pipeline near Northampton. A large oil boom was placed across the River in Northampton, and some 1,500 gallons of oil were removed, and disposed of at a local steel works.

At the time when irresponsible cyanide tipping was making the headlines, a report of unauthorised tipping at Gayton was investigated. Samples of drainage from the tip proved negative, and it was decided that there may be more risk in seeking to unearth any buried drums than in leaving the tip undisturbed.

Satisfactory progress was made on extensions to the Heyford and Bugbrooke sewage disposal works.

Land irrigation is being provided at Kislingbury to supplement treatment until sewage can be discharged to the Northampton County Borough works at Billing.

Oakham Rural District

The working area for the Empingham Reservoir contract was regularly inspected to ensure that all possible precautions were being taken by the Contractors to prevent any oil pollution of the River Gwash. Oil booms were placed across the river below the dam, and arrangements made for any oil so retained to be regularly removed.

The sewerage of Stretton to the Cottesmore and Greetham sewage disposal works was progressing satisfactorily.

Old Fletton Urban District

The British Sugar Corporation increased the volume of trade waste discharged to the sewer from 30,000 to 150,000 gallons per day.

An earth barrier alongside the dam separating the Corporation's water and effluent installations from the river seemed to be effective in preventing seepage of nutrient-free liquor suspected in previous years of encouraging fungus growths.

Oundle and Thrapston Rural District

Following considerable improvement in the effluent from Brigstock, Easton-on-the-Hill, Kingscliffe and Woodford sewage disposal works, it was decided in November to advise the County Planning Authority that the objection to further housing development in those districts was withdrawn.

The sewerage of Glapthorn to an extended Oundle sewage disposal works was completed, and work on the Apethorpe and Woodnewton and the Barnwell and Polebrook sewerage and sewage disposal schemes was proceeding satisfactorily.

Oundle Urban District

Three pumps at New Road sewage pumping station were replaced by two larger pumps. Following extensions to Oundle sewage disposal works there was an improvement in the effluent.

Peterborough Rural District

The trade effluent plant at a paper mill in Helpston worked reasonably satisfactorily in the early part of the year, although there was some deterioration whilst repairs were carried out.

Rushden Urban District

A micro-strainer was being installed at Rushden sewage works to achieve immediate improvement pending large scale extensions, and it should be in operation early in the coming year.

Raunds Urban District

The Department of the Environment approved a new sewage disposal works for Raunds and Stanwick, and construction is expected to start early in the coming year.

South Kesteven Rural District

Little Bytham sewage disposal works, also serving Swayfield, Swinstead, Creeton and Castle Bytham, was brought into operation in July.

Extensions to Deeping St. James sewage disposal works were almost completed. South Kesteven Rural Council were keeping strict control over new development pending completion of the works.

Plans for a new disposal works to serve Witham-on-the-Hill, Toft, Lound and Manthorpe were submitted to the Department of the Environment. The septic tank serving Manthorpe will be emptied more frequently until the new works are completed in order to reduce pollution of the East Glen in times of low flow.

Spalding Rural District

The Department of the Environment approved extensions at Crowland sewage works and a new sewage works for Surfleet.

Satisfactory progress was made in extending Gosberton sewage works to take sewage from Quadring.

Stamford Municipal Borough

The Department of the Environment approved a new sewage disposal works for Stamford following a Public Inquiry. Clarifiers were installed on the humus tanks to provide improvement pending completion of the new works.

A persistent oil pollution of the River Welland at Stamford resulted from oil contaminated spring water passing to the river. Some 300 gallons of diesel were recovered over a period of about three weeks. Despite diligent enquiries and publicity through the local press, radio and television, the source of contamination was never discovered.

The pollution finally ceased, but it was not known whether someone had in fact discovered and repaired an oil leakage or whether further discharges might occur if and when an oil storage tank is refilled to above a point of leakage.

Towcester Rural District

Following discussions with Towcester Rural District Council on the inadequacy of Blisworth sewage disposal works, remedial works were to be initiated pending completion of large scale extensions.

Uppingham Rural District

A regional sewerage and sewage disposal scheme for Uppingham, Bisbrooke, Glaston, Preston, Seaton and Ayston to replace the Uppingham sewage plant by a works to be constructed further down the valley was in preparation.

Wellingborough Rural District

Grendon Brook at Wollaston was polluted by a discharge of pig slurry pumped to a straw manure bed on the assumption that it would be absorbed. Unfortunately, the slurry was released during the normal annual clearance of straw manure.

The farmer was prosecuted before the Wellingborough Justices and fined £25.

The Department of the Environment investigated a proposal to enlarge Earls Barton sewage disposal works to take sewage from Mears Ashby.

It is intended to abandon Sywell sewage works and pump the sewage via the Mears Ashby pumping station to Earls Barton.

Wisbech Municipal Borough

The Department of the Environment approved proposals for a disposal works for Wisbech which should be completed by 1975.

The stranding of a tanker across the river whilst trying to turn at Wisbech illustrated the risk of a major oil pollution and a meeting was called to consider the arrangement which should be made to meet any emergency.

The Oil Company are to lay a pipeline from their Depot to the swinging berth, so that oil can easily be off-loaded from a stranded tanker direct to the Depot.

5. REMEDIAL ACTION

Remedial action which has been taken in various cases is referred to in paragraph 4.

6. STATISTICS RELATING TO POLLUTION CONTROL

DISCHARGES INTO STREAMS REQUIRING CONSENT UNDER SECTION 7 OF THE 1951 ACT

	<i>Consents and notices issued during year</i>	<i>Refusals during year</i>
(a) Effluents from local authority sewage disposal works and other domestic sewage effluents ..	13	nil
(b) Effluents from storm sewage overflows and storm sewage tanks	30	nil
(c) Effluents from trade premises	2	nil
(d) Farm effluents	nil	nil
Totals	45	nil

DISCHARGES INTO TIDAL WATER REQUIRING CONSENT UNDER
SECTION 7 OF THE 1951 ACT AS EXTENDED BY
SECTION 1 OF THE 1960 ACT

	<i>Consents and notices issued during year</i>	<i>Refusals during year</i>
(a) Effluents from local authority sewage disposal works and other domestic sewage effluents ..	nil	nil
(b) Effluents from storm sewage overflows and storm sewage tanks	nil	nil
(c) Effluents from trade premises	nil	nil
(d) Farm effluents	nil	nil
Totals	nil	nil

REVIEWS OF CONDITIONS OF CONSENT UNDER
SECTION 5 OF THE 1961 ACT

	<i>Consents reviewed during year</i>	<i>Consents varied during year</i>
(a) Effluents from local authority sewage disposal works and other domestic sewage effluents ..	nil	1
(b) Effluents from storm sewage overflows and storm sewage tanks	nil	nil
(c) Effluents from trade premises	nil	nil
(d) Farm effluents	nil	nil
Totals	nil	1

DISCHARGES INTO UNDERGROUND STRATA REQUIRING CONSENT UNDER
SECTION 72 OF THE 1963 ACT

	<i>Consents issued during year</i>	<i>Refusals during year</i>
(a) Effluents from local authority sewage disposal works and other domestic sewage effluents ..	22	nil
(b) Effluents from storm sewage overflows and storm sewage tanks	nil	nil
(c) Effluents from trade premises	nil	nil
(d) Farm effluents	nil	nil
(e) Other miscellaneous discharges	nil	nil
Totals	22	nil

EXISTING DISCHARGES INTO STREAMS UNDER SECTION 1
OF THE 1961 ACT

	<i>Consents and notices issued during year</i>	<i>Refusals during year</i>
(a) Effluents from local authority sewage disposal works and other domestic sewage effluents ..	nil	nil
(b) Effluents from storm sewage overflows and storm sewage tanks	nil	nil
(c) Effluents from trade premises	nil	nil
(d) Farm effluents	nil	nil
Totals	nil	nil

7. RESEARCH

The Water Pollution Research Laboratory have been monitoring chemically and biologically the state of the Willow Brook at seven sampling stations in an attempt to establish relationships between the status of the fish population and water quality. This work commenced in October, 1970 and is continuing.

RIVER NENE—ANALYTICAL RESULTS

Sampling Point	Miles from Source		pH	Sus-pended Solids	Chloride (Cl.)	F & S Ammonia (N.)	Nitrates (N.)	4 hrs. P.V.	5 day B.O.D.	D.O. % Saturation	Water Temp. °C	Flow cumec
1. Non-Tidal Sampling Points												
Dodford Road Bridge	5	Average Values	—	16	19	0.13	3.1	2.1	3.5	112	11.5	
		Maximum Values	8.4	41	22	0.28	4.5	2.6	6.4	133	16	
		Minimum Values	7.9	6	16	0.05	2.1	1.4	2.2	97	8	
Weedon A45 Road Bridge	—	Average Values	—	13	37	0.17	4.6	2.1	4.1	128	12.5	0.46
		Maximum Values	8.55	17	49	0.24	6.1	3.2	7.4	147	17	0.71
		Minimum Values	8.0	9	24	0.09	3.8	1.0	2.5	100	9	0.23
Kislingbury	12	Average Values	—	10	32	0.51	4.1	2.5	4.3	105	12.5	1.06
		Maximum Values	8.6	11	38	0.92	5.7	3.4	5.6	120	17	1.55
		Minimum Values	7.85	6	22	0.24	2.7	2.0	2.9	79	9	0.69
Boughton Crossing	—	Average Values	—	11	41	0.15	9.1	2.5	2.7	98	12	0.78
		Maximum Values	7.9	14	53	0.22	10.9	3.6	2.9	112	17	1.19
		Minimum Values	7.4	9	29	0.10	6.8	1.2	2.2	82	7.5	0.53
Nunn Mills	17½	Average Values	—	8	38	0.28	6.1	2.5	3.3	93	13	
		Maximum Values	8.35	10	46	0.69	8.2	3.4	3.6	109	17.5	
		Minimum Values	7.7	7	29	0.05	4.4	2.0	2.8	71	9.5	
Billing Bridge	22	Average Values	—	9	38	0.18	5.8	2.7	2.8	100	14.5	2.30
		Maximum Values	8.4	11	47	0.34	8.2	3.6	3.8	112	19	2.88
		Minimum Values	8.0	7	30	0.05	3.2	1.6	2.2	89	10.5	1.52
White Mills	25	Average Values	—	9	49	2.6	6.4	3.9	5.0	86	15	
		Maximum Values	8.2	11	61	4.9	8.0	5.4	7.2	100	19	
		Minimum Values	7.6	6	37	0.75	4.4	2.8	2.6	56	11.5	
Hardwater Mill	27	Average Values	—	10	56	3.1	7.3	4.9	7.3	86	15	
		Maximum Values	8.05	19	69	5.9	11.2	8.4	18.0	124	20.5	
		Minimum Values	7.4	6	42	0.4	5.6	3.0	2.6	55	11	
Wollaston Mill	28	Average Values	—	9	55	2.7	7.5	4.7	6.5	91	15	
		Maximum Values	8.05	13	72	5.9	11.2	6.4	12.9	120	20	
		Minimum Values	7.7	6	42	0.46	6.2	2.8	2.5	71	11	
Wellingborough Road Bridge	30	Average Values	—	9	53	2.5	8.0	4.5	7.0	92	14.5	
		Maximum Values	8.1	12	67	4.4	12.5	6.2	13.0	102	19	
		Minimum Values	7.6	7	39	0.28	5.0	2.4	2.4	79	11.5	
River Ise, Wellingborough	—	Average Values	—	20	55	0.53	7.1	5.5	8.3	103	14	0.79
		Maximum Values	8.4	55	68	0.99	8.7	12.0	<17.0	136	18.5	1.14
		Minimum Values	7.5	11	35	0.28	5.0	3.0	4.9	55	11	0.42
Ditchford Mill	32	Average Values	—	12	53	1.7	8.1	4.7	7.0	79	14	
		Maximum Values	8.0	20	69	3.4	10.6	6.4	9.6	95	19	
		Minimum Values	7.6	8	38	0.34	6.8	2.8	2.4	60	11	
Irthlingborough Old A6 Bridge	34½	Average Values	—	10	63	1.6	7.9	5.0	7.7	83	14.5	
		Maximum Values	8.1	13	89	2.7	9.2	6.2	10.8	100	19	
		Minimum Values	7.5	7	41	0.34	6.2	3.8	3.0	54	11.5	
Ringstead Lower Lock	38	Average Values	—	11	70	1.5	8.0	4.8	7.1	86	14.5	
		Maximum Values	8.0	15	103	2.7	9.2	5.8	11.2	132	20	
		Minimum Values	7.4	7	45	0.46	5.0	2.2	2.7	23	11	
Thrapston	42	Average Values	—	11	66	0.88	8.2	4.5	7.2	100	12	
		Maximum Values	8.1	18	98	1.8	9.8	5.2	10.5	138	19	
		Minimum Values	7.55	6	45	0.22	5.0	3.4	2.2	64	11	
Oundle New Bridge	55	Average Values	—	12	61	0.52	7.1	4.1	5.9	103	14.5	
		Maximum Values	8.4	17	90	0.96	9.8	5.6	7.8	131	20	
		Minimum Values	7.8	5	44	0.17	4.4	3.0	2.2	87	10	

Sampling Point	Miles from Source		pH	Sus-pended Solids	Chloride (Cl.)	F & S Ammonia (N.)	Nitrates (N.)	4 hrs. P.V.	5 day B.O.D.	D.O. % Saturation	Water Temp. °C	Flow cumec
Fotheringhay	59	Average Values	—	11	61	0.55	7.0	4.1	4.8	105	14.5	
		Maximum Values	8.4	16	85	1.10	11.0	5.0	6.8	124	20	
		Minimum Values	7.8	6	47	0.17	4.4	3.0	2.1	91	10	
Elton Lock	61	Average Values	—	11	62	0.50	7.0	3.7	4.2	102	14.5	
		Maximum Values	8.4	15	86	0.87	11.0	5.2	6.6	123	20	
		Minimum Values	7.85	7	49	0.17	5.0	2.6	2.1	87	10	
Willow Brook, Fotheringhay	—	Average Values	—	19	117	0.40	8.8	3.6	6.5	119	14	0.68
		Maximum Values	8.5	32	151	1.0	11.0	4.6	13.8	130	20	0.80
		Minimum Values	7.75	11	96	0.11	7.4	2.4	2.8	104	9	0.63
Elton/Nassington Road Bridge	61½	Average Values	—	12	68	0.42	7.4	3.5	4.8	107	14.5	
		Maximum Values	8.4	17	98	0.87	9.8	4.8	7.5	122	20	
		Minimum Values	7.95	8	52	0.11	5.6	2.8	2.1	96	10	
Wansford Old A1 Bridge	66	Average Values	—	13	68	0.39	7.3	2.8	5.0	108	14.5	
		Maximum Values	8.55	17	101	0.62	9.8	5.0	7.2	129	20	
		Minimum Values	7.95	8	53	0.11	5.0	1.0	2.3	95	10	
Peterborough Bridge	77	Average Values	—	18	64	0.35	6.5	3.8	5.3	103	14.5	5.25
		Maximum Values	8.7	25	93	0.62	9.8	5.6	8.9	150	20	8.15
		Minimum Values	7.85	11	52	0.11	3.8	2.8	2.4	84	10	2.90
Dog-in-a-Doulet Upstream of Sluice	82	Average Values	—	19	64	0.34	6.7	3.6	5.0	111	14.5	
		Maximum Values	8.9	32	97	0.58	9.8	4.4	10.9	183	20	
		Minimum Values	7.9	11	49	0.11	4.4	2.4	2.6	82	10	
1. Tidal Sampling Points												
Dog-in-a-Doulet Road Bridge	82	Average Values	—	31	164	1.8	7.4	5.4	6.7	86	13.5	
		Maximum Values	8.4	42	411	1.6	9.8	7.0	12.2	116	17	
		Minimum Values	7.9	26	64	0.62	6.2	4.4	2.7	68	6	
Guyhirn Road Bridge	91	Average Values	—	157	221	0.44	7.8	7.7	6.7	73	13.5	
		Maximum Values	8.45	265	630	0.58	9.8	10.4	10.4	91	17	
		Minimum Values	8.1	48	67	0.22	6.6	4.2	4.0	43	6	
Wisbech Town Bridge	97	Average Values	—	293	741	0.36	7.3	8.5	6.3	62	13	
		Maximum Values	8.25	763	2,600	0.78	9.8	14.0	8.5	89	17	
		Minimum Values	7.8	56	104	0.04	5.0	5.0	4.8	26	6	
Sutton Bridge	105	Average Values	—	80	7,459	0.33	3.7	5.0	3.9	73	13	
		Maximum Values	8.0	123	18,000	0.68	8.7	6.6	6.0	87	17	
		Minimum Values	7.8	22	242	0.17	Nil	4.0	1.1	66	6	

RIVER WELLAND—ANALYTICAL RESULTS

Sampling Point	Miles from Source		pH	Sus-pended Solids	Chloride (Cl.)	F & S Ammonia (N.)	Nitrates (N.)	4 hrs. P.V.	5 day B.O.D.	D.O. % Saturation	Water Temp. °C	Flow cumec
Lubenham/Marston Trussel Road Bridge	4	Average Values	—	8	27	0.29	2.9	3.5	3.4	102	8	
		Maximum Values	8.2	13	30	0.53	6.1	5.0	3.8	117	14	
		Minimum Values	7.85	5	22	0.20	trace	2.8	2.2	95	7	
A427 Road Bridge downstream of Market Harborough	7½	Average Values	—	6	34	0.25	4.0	3.3	4.6	117	11	
		Maximum Values	8.45	7	40	0.28	6.1	3.8	5.6	136	15	
		Minimum Values	8.1	5	28	0.20	2.1	2.8	3.7	102	8	
Welham	12	Average Values	—	11	44	0.69	5.2	4.8	5.0	117	11	
		Maximum Values	8.25	16	56	0.99	7.1	6.8	6.0	133	17	
		Minimum Values	7.8	6	36	0.39	2.1	3.4	4.0	92	8	
Ashley	15	Average Values	—	6	42	0.37	4.5	4.8	4.1	139	11	
		Maximum Values	8.85	7	50	0.40	6.6	7.0	4.3	168	17	
		Minimum Values	8.4	4	34	0.29	1.1	3.4	4.0	123	8	