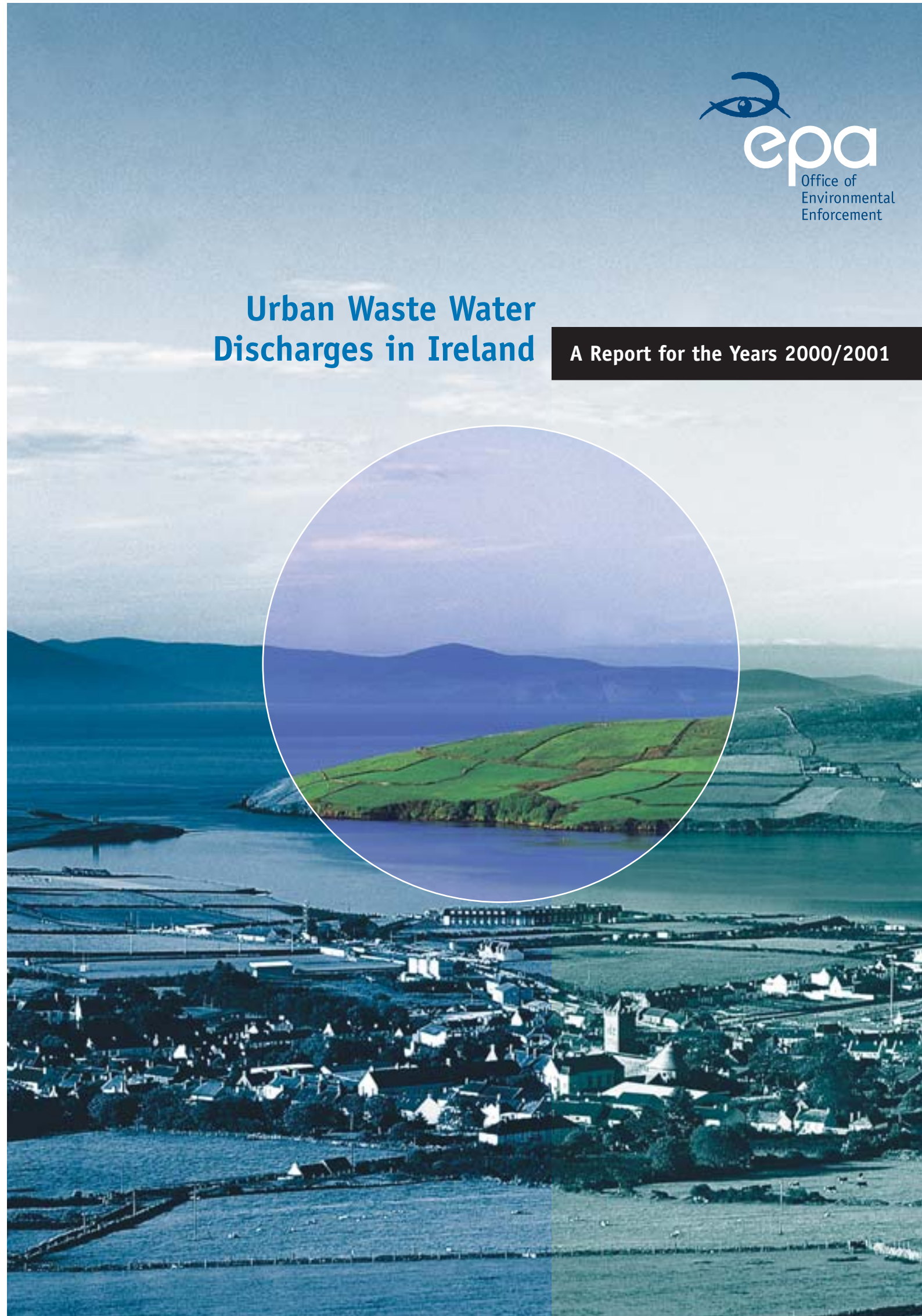


Urban Waste Water Discharges in Ireland

A Report for the Years 2000/2001



Environmental Protection Agency

Establishment

The Environmental Protection Agency Act, 1992, was enacted on 23 April, 1992, and under this legislation the Agency was formally established on 26 July, 1993.

Responsibilities

The Agency has a wide range of statutory duties and powers under the Act. The main responsibilities of the Agency include the following:

- the licensing and regulation of large/complex industrial and other processes with significant polluting potential, on the basis of integrated pollution control (IPC) and the application of best available technologies for this purpose;
- the monitoring of environmental quality, including the establishment of databases to which the public will have access, and the publication of periodic reports on the state of the environment;
- advising public authorities in respect of environmental functions and assisting local authorities in the performance of their environmental protection functions;
- the promotion of environmentally sound practices through, for example, the encouragement of the use of environmental audits, the setting of environmental quality objectives and the issuing of codes of practice on matters affecting the environment;
- the promotion and co-ordination of environmental research;
- the licensing and regulation of all significant waste disposal and recovery activities, including landfills and the preparation and periodic updating of a national hazardous waste management plan for implementation by other bodies;
- implementing a system of permitting for the control of VOC emissions resulting from the storage of significant quantities of petrol at terminals;
- implementing and enforcing the GMO Regulations for the contained use and deliberate release of GMOs into the environment;

- preparation and implementation of a national hydrometric programme for the collection, analysis and publication of information on the levels, volumes and flows of water in rivers, lakes and groundwaters; and
- generally overseeing the performance by local authorities of their statutory environmental protection functions.

Status

The Agency is an independent public body. Its sponsor in Government is the Department of the Environment and Local Government. Independence is assured through the selection procedures for the Director General and Directors and the freedom, as provided in the legislation, to act on its own initiative. The assignment, under the legislation, of direct responsibility for a wide range of functions underpins this independence. Under the legislation, it is a specific offence to attempt to influence the Agency, or anyone acting on its behalf, in an improper manner.

Organisation

The Agency's headquarters is located in Wexford and it operates five regional inspectorates, located in Dublin, Cork, Kilkenny, Castlebar and Monaghan.

Management

The Agency is managed by a full-time Executive Board consisting of a Director General and four Directors. The Executive Board is appointed by the Government following detailed procedures laid down in the Act.

Advisory Committee

The Agency is assisted by an Advisory Committee of twelve members. The members are appointed by the Minister for the Environment and Local Government and are selected mainly from those nominated by organisations with an interest in environmental and developmental matters. The Committee has been given a wide range of advisory functions under the Act, both in relation to the Agency and to the Minister.



Urban Waste Water Discharges in Ireland **with population equivalents greater than 500 persons**

A Report for the Years 2000 and 2001

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URBAN WASTE WATER DISCHARGES IN IRELAND
with population equivalents greater than 500 persons

A REPORT
FOR THE YEARS 2000 AND 2001

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EXECUTIVE SUMMARY	IX
1. INTRODUCTION.....	1
2. REGULATORY FRAMEWORK	3
2.1. THE URBAN WASTE WATER TREATMENT REGULATIONS, 2001	3
2.1.1. Treatment Facilities.....	4
2.1.2. Sensitive Water Bodies	5
2.1.3. Monitoring of Discharges.....	9
2.2. WATER QUALITY REPORT	12
2.3. NATIONAL DEVELOPMENT PLAN AND WATERS SERVICES PLAN.....	13
2.4. BLUE FLAG AWARDS	13
2.5. ECO-MANAGEMENT AND AUDIT SCHEME (EMAS)	14
3. SEWAGE SLUDGE.....	15
4. IMPLEMENTATION OF THE REGULATIONS BY THE EPA	17
5. FINDINGS OF THE 2000/2001 MONITORING.....	19
5.1. WASTE WATER TREATMENT	19
5.2. QUALITY OF WASTE WATER DISCHARGES	23
5.3. SAMPLING	26
5.4. SEWAGE SLUDGE.....	27
5.5. EPA AUDITS.....	30
6. ENVIRONMENTAL INDICATORS.....	33
7. CONCLUSIONS.....	37
8. RECOMMENDATIONS.....	39
8.1. TREATMENT PLANTS AND DISCHARGES	39
8.2. MONITORING AND REPORTING	40
8.3. SEWAGE SLUDGE.....	41
REFERENCE LIST	43

List of Tables

Table 2-1. Emission Limit Values for Discharges to Non-Sensitive Waters.....	9
Table 2-2. Emission Limit Values for Discharges to Sensitive Waters.....	10
Table 2-3. Relevant Directives	11
Table 2-4. Seriously polluted streams and rivers for the period 1998 to 2000 (Lucey et al., 2001).....	12
Table 5-1. Waste water treatment facilities for agglomerations greater than or equal to 500 population equivalent for the year 2000/2001 (years 1998/99 in brackets).....	20
Table 5-2. Number of Agglomerations and Population Equivalents (2001)	21
Table 5-3. Agglomerations and population equivalents categorised by receiving waters (2001)	22
Table 5-4. Secondary Waste Water Treatment Plants (2001).....	23
Table 5-5. Discharges to Sensitive Areas	23
Table 5-6. Phosphorus Monitoring	26
Table 5-7. Number of Analytical Results Reported in 2000/2001 (No. Of Results for 1999 in Brackets).....	27
Table 5-8. Sewage Sludge Reuse and Disposal routes	28
Table 5-9. Maximum Concentration of Heavy Metals in Sludges Reused in Agriculture	29
Table 5-10. Maximum Concentration of Heavy Metals in Soils where Sludge was Reused in Agriculture (2000 and 2001)	30
Table 5-11. Maximum Concentration of Heavy Metals in Soils where Ringsend Sludge was Reused in Agriculture (2000 and 2001).....	30
Table 6-1. Environmental Indicators for 1994 – 2001.....	34

List of Figures

Figure 2-1. Treatment Plant Requirements.....	4
Figure 2-2. Nutrient Sensitive Waters – Eastern RBD	6
Figure 2-3. Nutrient Sensitive Water – Southeastern RBD	6
Figure 2-4. Nutrient Sensitive Waters – Southwestern RBD	7
Figure 2-5. Nutrient Sensitive Waters – Western RBD	7
Figure 2-6. Nutrient Sensitive Waters – Cavan, Monaghan and Louth IRBD	8
Figure 2-7. Nutrient Sensitive Waters – Donegal IRBD	8
Figure 2-8. Nutrient Sensitive Waters – Shannon IRBD	9
Figure 2-9. Mandatory Sampling Frequencies	10
Figure 5-1. Waste Water Facilities for agglomerations with a Population Equivalent greater than 500	20
Figure 5-2. Sewage Sludge Reuse and Disposal routes.....	28

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Glossary

Agglomeration:	An area where the population and/or economic activities are sufficiently concentrated for urban waste water to be collected and conducted to an urban waste water treatment plant or to a final discharge point.
Agriculture:	The growing of all types of commercial food crops, including food crops for stock-rearing purposes.
Appropriate treatment:	Treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the Urban Waste Water Treatment Directive and of other Community Directives.
BOD₅:	Biochemical Oxygen Demand (BOD ₅) means the amount of dissolved oxygen taken up by bacteria while oxidising organic matter in a sample, measured after 5 days incubation in the dark at 20°C. The Regulations stipulate that this test is carried out on a homogenised, unfiltered, undecanted sample to which a nitrification inhibitor has been added. The addition of the nitrification inhibitor is important as the oxidation of ammonia to nitrate can increase the rate of oxygen use and give an increased result.
COD:	Chemical Oxygen Demand means the amount of oxidising agent potassium dichromate needed to oxidise the organic matter present in a sample. Other chemicals are also added to suppress the effects of interfering substances such as chloride. In general, the BOD ₅ will only account for some 65% of the total carbonaceous oxygen demand in urban waste waters. The COD test which achieves virtually complete oxidation returns a result in a short time (2-4 hours) and often a correlation to the BOD ₅ test can be established for municipal waste waters once a sufficient number of analyses have been carried out.
Domestic waste water:	Waste water from residential settlements and services which originates predominately from the human metabolism and from household activities.
Industrial waste water:	Any waste water which is discharged from premises used for carrying on any trade or industry, other than domestic waste water and run-off rain water.
Normal areas:	Areas which have not been specified in the third schedule of the Urban Waste Water Treatment Regulations, 2001 (S.I. 254 of 2001) and such other areas as may be identified pursuant to article 5 of the Urban Waste Water Treatment Directive.
Nutrient reduction:	Reduction of total phosphorus and/or total nitrogen by chemical and/or biological processes to levels specified in Part II of the second schedule of the Urban Waste Water Treatment Regulations, 2001 (S.I. 254 of 2001).
Primary treatment:	Treatment by a physical and/or chemical process involving settlement of suspended solids. Typically, such treatment will reduce BOD ₅ of the incoming waste water by at least 20% and total suspended solids by at least 50% (Urban Waste Water Treatment Directive, 91/271/EEC).
Total nitrogen:	The sum of kjeldahl nitrogen (organic nitrogen plus ammonia (NH ₃)), nitrate-nitrogen (NO ₃) and nitrite-nitrogen (NO ₂). In contrast to phosphorus, nitrogen

can be a limiting nutrient in marine environments subject to eutrophication. Notwithstanding the eutrophication issue, significant discharges of ammonia can be toxic to aquatic life.

Total phosphorus:	The sum of ortho-phosphates, polyphosphates and organically bound phosphates. This element is one of the most meaningful parameters in the assessment of eutrophication, particularly in lakes and freshwaters where it is generally the limiting nutrient.
Total suspended solids:	The quantity of suspended solids present in the outflow from a waste water treatment plant is a good indicator of the plant's performance. The solids include both organic and inorganic matter.
Secondary treatment:	Treatment of urban waste water by a process generally involving biological treatment with a secondary settlement or other process in which the requirements established in Part 1 of the second schedule Urban Waste Water Treatment Regulations, 2001 (S.I. 254 of 2001) are respected.
Sensitive areas:	Those areas specified in the third schedule of the Urban Waste Water Treatment Regulations, 2001 (S.I. 254 of 2001) and such other areas as may be identified pursuant to article 5 of the Urban Waste Water Treatment Directive.
Sludge:	<ol style="list-style-type: none">1) Residual sludge from sewage plants treating domestic or urban waste waters and from other sewage plants treating waste waters of a composition similar to domestic and urban waste waters.2) Residual sludge from septic tanks and other similar installations for the treatment of sewage.3) Residual sludge from sewage plants other than those referred to in paragraph 1) and 2).
Urban waste water:	Domestic waste water or a mixture of domestic waste water with industrial waste water and/or run-off rain water.

Abbreviations

EPA	Environmental Protection Agency
BOD	Biochemical Oxygen Demand
BOD ₅	5-day biochemical oxygen demand
COD	Chemical Oxygen Demand
DOEHLG	Department of the Environment Heritage and Local Government
d/s	Downstream
EEC	European Economic Community
EU	European Union
IPC	Integrated Pollution Control
mg/kgDM	milligrams per kilogram of dry matter
mg/l	milligrams per litre
o-P	Ortho phosphate
p.e.	population equivalent(s)
R.B.D.	River Basin District
S.I.	Statutory Instrument
tds	tonnes of dry solids
Total P	Total phosphorous
TSS	Total suspended solids
u/s	Upstream
UWWT	Urban waste water treatment
WFD	Water Framework Directive

Executive Summary

This is the fourth biennial report by the Environmental Protection Agency (EPA) on the quality of urban waste water discharges and sewage sludges. It is prepared under section 61 of the EPA Act, 1992 and section 51 of the Waste Management Act, 1996. The report has been prepared from data submitted by local authorities, for the years 2000/2001 and audits conducted by the EPA, during 2001 and 2002.

The report establishes that there were 412 agglomerations with a population equivalent (p.e.) greater than 500 during the reporting period and collectively they represent a total population equivalent (p.e.) of 5,493,338 persons. This is an increase of 392,222 p.e. on that reported for 1999. This increase is due to improved monitoring of population equivalents at existing treatment plants and more accurate assessments of p.e. for agglomerations now connected to new treatment plants. Previously it was only possible to use best estimates for agglomerations without treatment plants.

The report concludes that 23% of waste water arisings received no treatment, 7% received preliminary treatment, 41% received primary treatment, 21% received secondary treatment, and 8% received nutrient reduction in addition to secondary treatment. Almost all of Ireland's urban waste water, irrespective of the level of treatment, is discharged to estuaries and freshwaters.

Since the previous report was published (for the years 1998 and 1999), thirty additional sensitive areas have been designated under the Urban Waste Water Treatment Regulations, 2001 (S.I. 254 of 2001), including the Liffey estuary to which the Ringsend waste water treatment plant discharges. These additional designations mean that approximately 50% of waste water produced by agglomerations greater than 500 persons now discharges into sensitive areas. Of the 412 agglomerations greater than 500 persons, 151 now discharge into waters designated as sensitive areas. Twenty seven of these 151 agglomerations received nutrient reduction in addition to secondary treatment during the reporting period. Agglomerations greater than 10,000 population equivalent discharging to these thirty additional sensitive areas require nutrient reduction in addition to secondary treatment by 31st May, 2008.

There has been a considerable increase in the level of monitoring reported to the EPA. Of particular interest is a 41% increase in the number of results for total phosphorus. The report highlights the fact that the principal sampling protocol presently favoured by local authorities, grab sampling, is not the method specified in the Regulations and a shift towards flow proportional sampling is required.

Auditing of local authorities and urban waste water treatment plants, which commenced in 1998, continued during the reporting period. During the reporting period, thirteen local authorities were audited. These audits highlighted examples of good practice as well as deficiencies that require correction. This report provides examples of both. In future years, the EPA will be focussing its auditing effort on local authorities with plants that consistently demonstrate poor performance in relation to the quality of effluent discharged.

A general finding of the report is that larger and more modern urban waste water treatment plants tend to out-perform the more numerous smaller and older plants throughout the country. Poor performance of any waste water treatment plant is a cause for concern as even smaller plants can have a significant impact on water quality in the waters to which their effluents discharge. A key recommendation of the report is therefore that all local authorities should review the operation, maintenance and management of urban waste water treatment

plants in their functional areas and prepare corrective action programmes for plants that are in breach of the standards. Priority should be given to implementing corrective action programmes at plants that are having a demonstrably negative impact on the waters to which they discharge.

During 2001 there were 33,559 tonnes (dry solids) of sewage sludge generated with 45% of this reused in agriculture; however, 54% was disposed to landfill and not put to any beneficial use. The analysis of sewage sludge disposal routes returned by the sanitary authorities indicates that disposal of sewage sludge to the marine environment has ceased in accordance with the provisions of The Dumping at Sea Act, 1981.

1. INTRODUCTION

The Environmental Protection Agency (EPA) is required under Section 61(3) of the Environmental Protection Agency Act, 1992, to report on a biennial basis on the quality of effluents being discharged from treatment plants, sewers or drainage pipes which are vested in, controlled or used by sanitary authorities. This report provides an analysis of the treatment of waste water during 2000 and 2001, and commentary on trends for the period 1998 to 2001.

The Urban Waste Water Treatment (UWWT) Regulations, 2001 (S.I. 254 of 2001), which incorporate and update the Environmental Protection Agency Act, 1992 (Urban Waste Water Treatment) Regulations, 1994 as amended in 1999, place a responsibility on local authorities to provide treatment of urban waste water, to monitor discharges from agglomerations (communities) and to transmit the results of such monitoring to the EPA. The Urban Waste Water Treatment (UWWT) Regulations, 2001 (S.I. 254 of 2001) designated 30 water bodies for protection in addition to the 10 sensitive areas designated in 1994, for the purpose of tackling eutrophication of Irish waters.

The legislation (Urban Waste Water Regulations, 1994) required agglomerations with a population equivalent greater than 10,000 discharging into sensitive waters or into the catchment of sensitive waters to have nutrient reduction facilities in addition to secondary treatment by 31 December 1998. Nutrient reduction is also required by 31 May 2008 for discharges to sensitive waters defined in the Urban Waste Water Regulations 2001, from waste water treatment plants over 10,000 population equivalent. However, as noted in previous reports the discharges from the majority of agglomerations (i.e. population equivalents between 2,000 and 15,000) are required under the Regulations to have the necessary treatment facilities in place by 31 December 2005. Agglomerations with population equivalents greater than 15,000 were required to have secondary treatment in place by 31 December 2000. Existing treatment plants that fall within the scope of Regulations are also obliged to comply with the standards set by the Regulations.

The use of sewage sludge in agriculture is regulated by the Waste Management Act, 1996, Waste Management (Use of Sewage Sludge in Agriculture) Regulations, S.I. No. 148 of 1998 and Waste Management (Use of Sewage Sludge in Agriculture) (Amendment) Regulations, S.I. No. 267 of 2001. The Act and the Regulations place a responsibility on local authorities to plan and control the disposal and/or reuse of sewage sludge within their functional area. The quantity of sewage sludge generated at treatment plants is reported, along with the main recovery or disposal routes used. The Regulations [Waste Management (Use of Sewage Sludge in Agriculture) (Amendment) Regulations, S.I. No. 267 of 2001 and Waste Management (Use of Sewage Sludge in Agriculture) Regulations, S.I. No. 148 of 1998] require that sludge is managed in accordance with a nutrient management plan and these Regulations also set limit values for the amounts of specified heavy metals which may be added annually to land used in agriculture, based on a ten year average. This report provides an overview of quantities of sewage sludge produced along with the main recovery or disposal routes used. Heavy metal concentrations in sludges used in agriculture are also examined.

Urban Waste Water Discharges in Ireland:
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2. Regulatory Framework

2.1. THE URBAN WASTE WATER TREATMENT REGULATIONS, 2001

The Urban Waste Water Treatment Regulations, 2001 (S.I. No. 254 of 2001), were made by the Minister for the Environment on 14 June 2001. The Regulations give further effect to the provisions of EU Council Directive 91/271/EEC of 21 May 1991, as amended concerning urban waste water treatment, and Directive 2000/60/EC of 23 October 2000 – The Water Framework Directive. The Regulations designate an additional 30 water bodies as sensitive to eutrophication based on reports by the Environmental Protection Agency. The schedules of the Regulations, which include the parameters to be monitored, and the frequency of monitoring are reproduced in Appendix A of this report.

The main requirements of the Regulations are summarised below:

- scheduled provision of waste water collecting systems - depending on the size of the agglomeration and on the type of water body to which the waste water is discharged;
- scheduled provision of waste water treatment plants - depending on the size of the agglomeration and on the type of water body to which the waste water is discharged;
- provision for industrial waste water which enters collecting systems and urban waste water treatment plants to receive any pre-treatment that is required to protect the health of staff, the environment and the fabric and integrity of plant; and
- monitoring by sanitary authorities of discharges from waste water treatment plants and the transmission of results to the EPA.

The type of treatment facilities required (by the Regulations) for individual agglomerations depend on:

- the size of the agglomeration;
- the type of receiving water body (freshwater, estuarine or coastal water); and
- whether the receiving water body is sensitive (or not), as defined by the Regulations.

The requirements of the Regulations in respect of treatment plants are summarised in Figure 2-1

The Urban Waste Water Treatment (UWWT) Regulations, 2001 (S.I. 254 of 2001) revoke the Environmental Protection Agency Act, 1992 (Urban Waste Water Treatment) Regulations, 1994 (S.I. No. 419 of 1994) as amended by S.I. 208 of 1999. The consolidated Regulations in addition to the designation of 30 additional water bodies as sensitive areas also include new provisions in article 4(4)(b). The new provisions allow discretion to a local authority not to provide nutrient reduction in discharges to estuaries, bays or coastal waters where it is satisfied that such reduction will have no effect on the level of eutrophication in the receiving water.

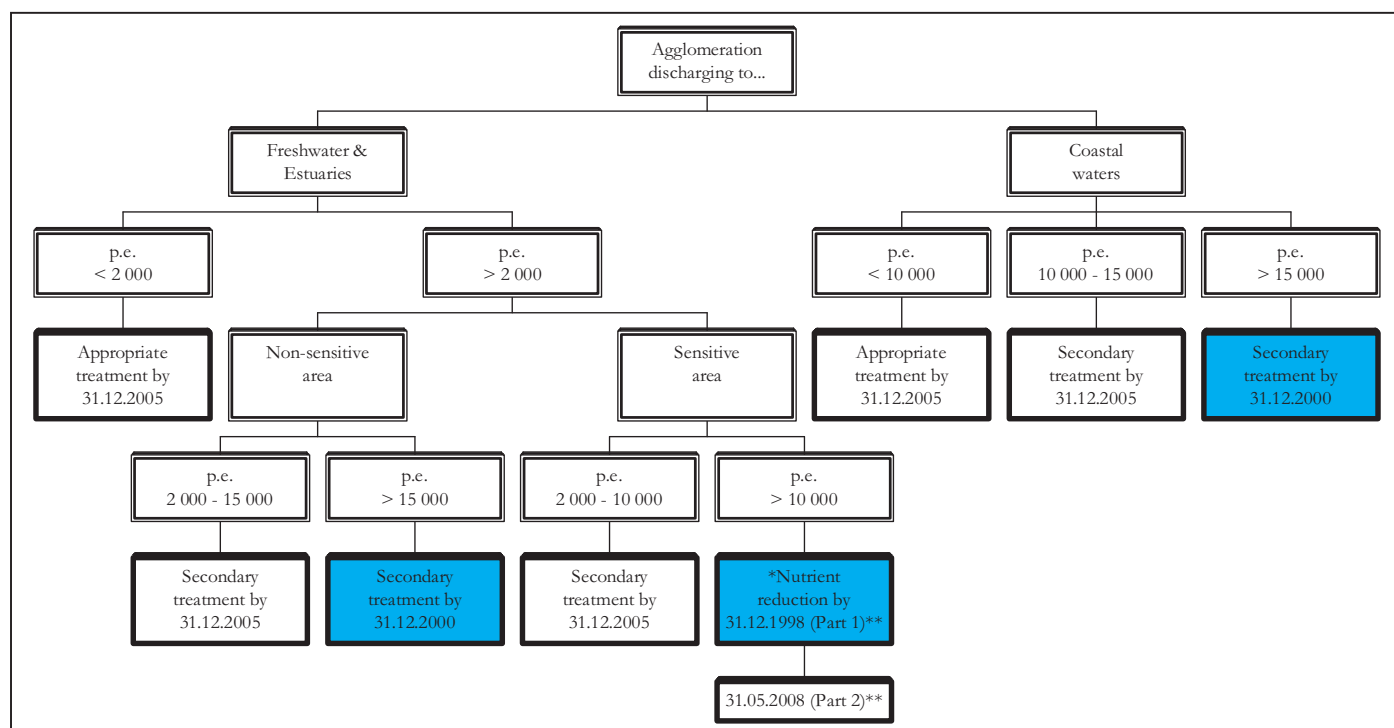


Figure 2-1. Treatment Plant Requirements

* In addition to secondary treatment

** See Appendix A For Part 1 and Part 2 of Third Schedule

2.1.1. Treatment Facilities

The Urban Waste Water Treatment (UWWT) Regulations 2001, in general, prescribe secondary treatment for all waste water discharges. Secondary treatment is defined in the Regulations as “*generally involving biological treatment with secondary settlement or other process*” in which the requirements listed in Figure 2-1 above are satisfied. Biological processes include conventional aeration, extended aeration, biological filtration, rotating biological contactors and comparable systems.

Appropriate treatment is required by the end of 2005 for discharges of population equivalent less than 2,000 discharging to freshwaters and estuaries and less than 10,000 discharging to coastal waters. Such treatment is defined in the Regulations as “*treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the Directive and of other Community Directives*”. This will depend on local circumstances and will vary from simple physical processes to physical/biological or physical/chemical processes with varying performance standards depending on the quality objectives of the receiving waters. More stringent treatment is required for agglomerations discharging to sensitive waters.

By December 2001, the latest date covered by this report, specified treatment was required for the following:

- discharges to freshwaters and estuaries (non-sensitive) for population equivalents greater than 15,000 p.e.,
- discharges to coastal waters for population equivalents greater than 15,000 p.e., and
- discharges to sensitive areas for population equivalents greater than 10,000 p.e. as defined in Part 1 of the Third Schedule (Urban Waste Water Treatment Regulation 2001).

2.1.2. Sensitive Water Bodies

The designation of “sensitive areas” is a requirement of Article 5 of the Directive by reference to the identification criteria given in Annex II of the Directive. These criteria refer to three groups of sensitive areas:

- freshwater bodies, estuaries and coastal waters which are eutrophic or which may become eutrophic if protective action is not taken;
- surface waters intended for the abstraction of drinking water which contain more than 50 mg/l of nitrates; and
- areas where further treatment is required, to comply with other Council Directives

Member states are required by the Directive to ensure that the identification of sensitive areas is reviewed at intervals of not more than four years.

The ten water bodies which were originally designated as ‘sensitive’ by the Minister for the Environment and Local Government are listed in Part 1 of the Third Schedule of the Regulations and a further 30 were designated in the 2001 Regulations and they are set out in Part 2 of the Regulations. Maps identifying these areas and the relevant catchment area are set out in Figure 2-2 to Figure 2-8 below. Nutrient reduction in respect of all discharges from agglomerations with a population equivalent of more than 10,000 was required on commencement of the 2001 Regulations (S.I. 254 of 2001) in the case of sensitive areas specified in Part 1 of the Third Schedule and by 31 May 2008 for those areas specified in Part 2. Where discharges to sensitive water bodies occur, the Regulations specify emission limit values for total phosphorus and/or total nitrogen in addition to values for BOD, COD and TSS, which apply to discharges generally.

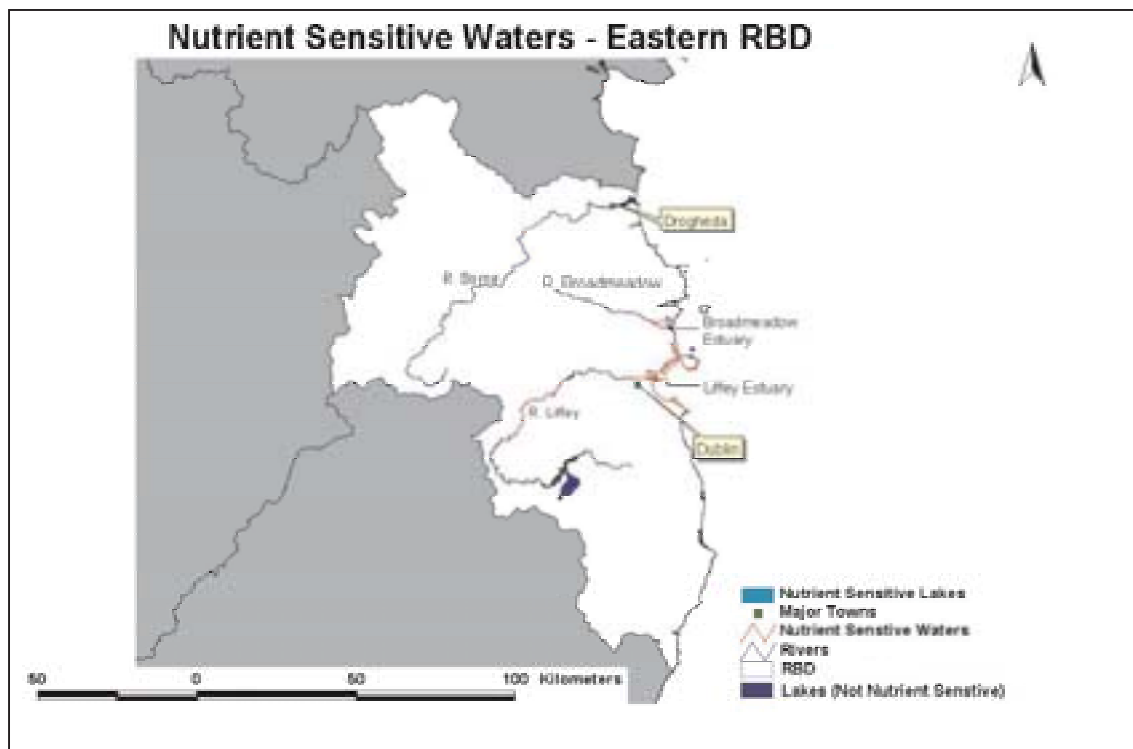


Figure 2-2. Nutrient Sensitive Waters – Eastern RBD

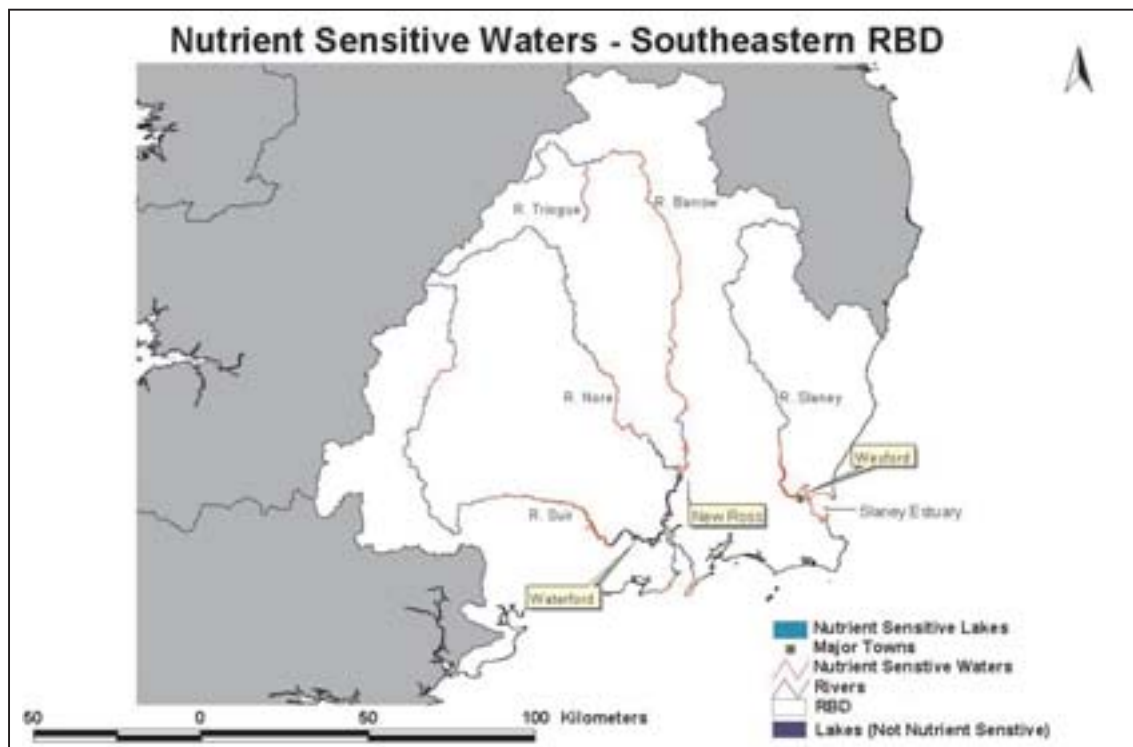


Figure 2-3. Nutrient Sensitive Water – Southeastern RBD

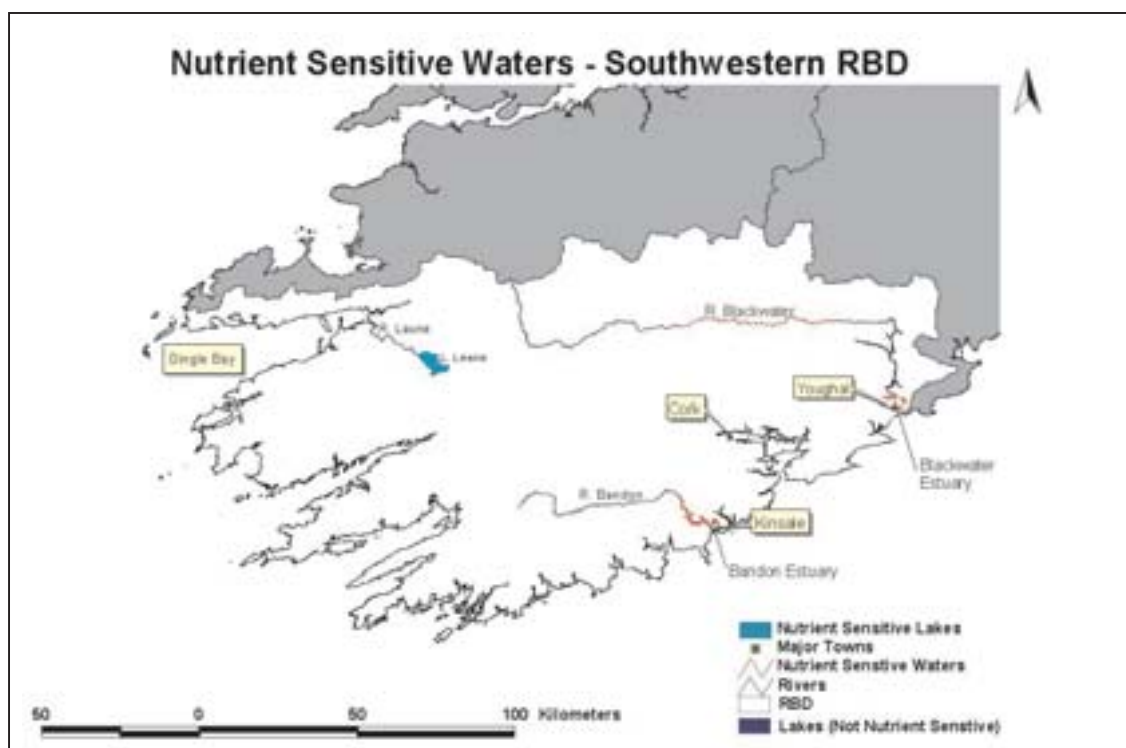


Figure 2-4. Nutrient Sensitive Waters – Southwestern RBD

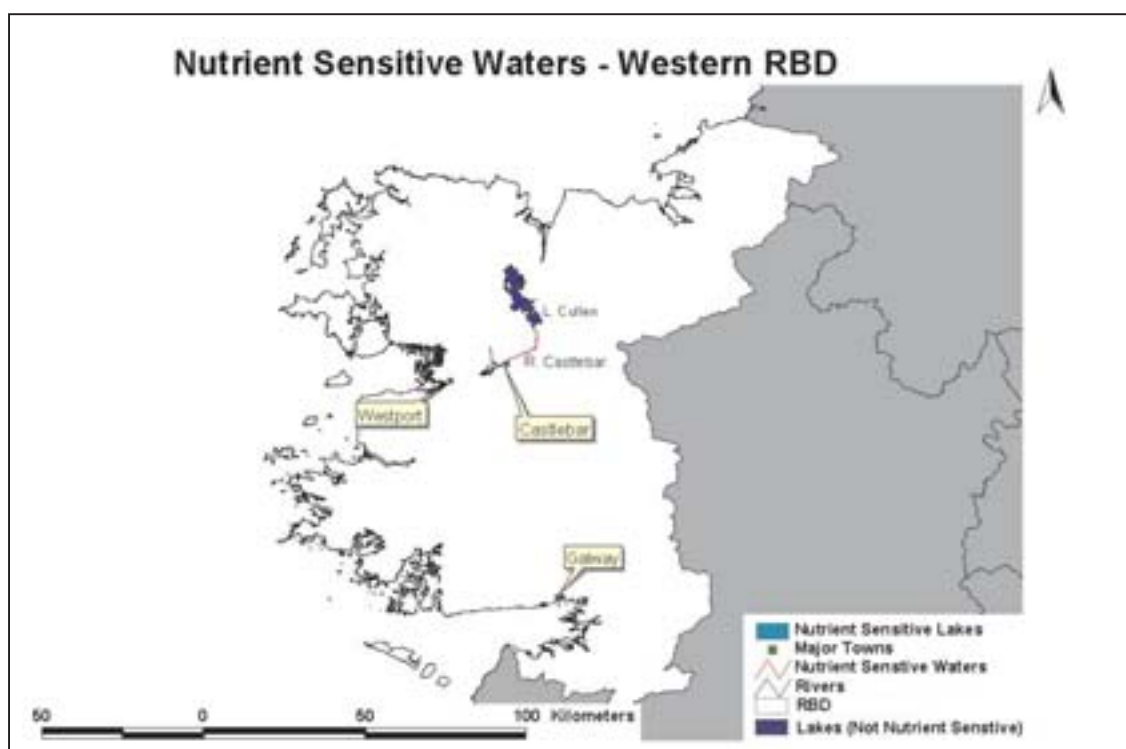


Figure 2-5. Nutrient Sensitive Waters – Western RBD

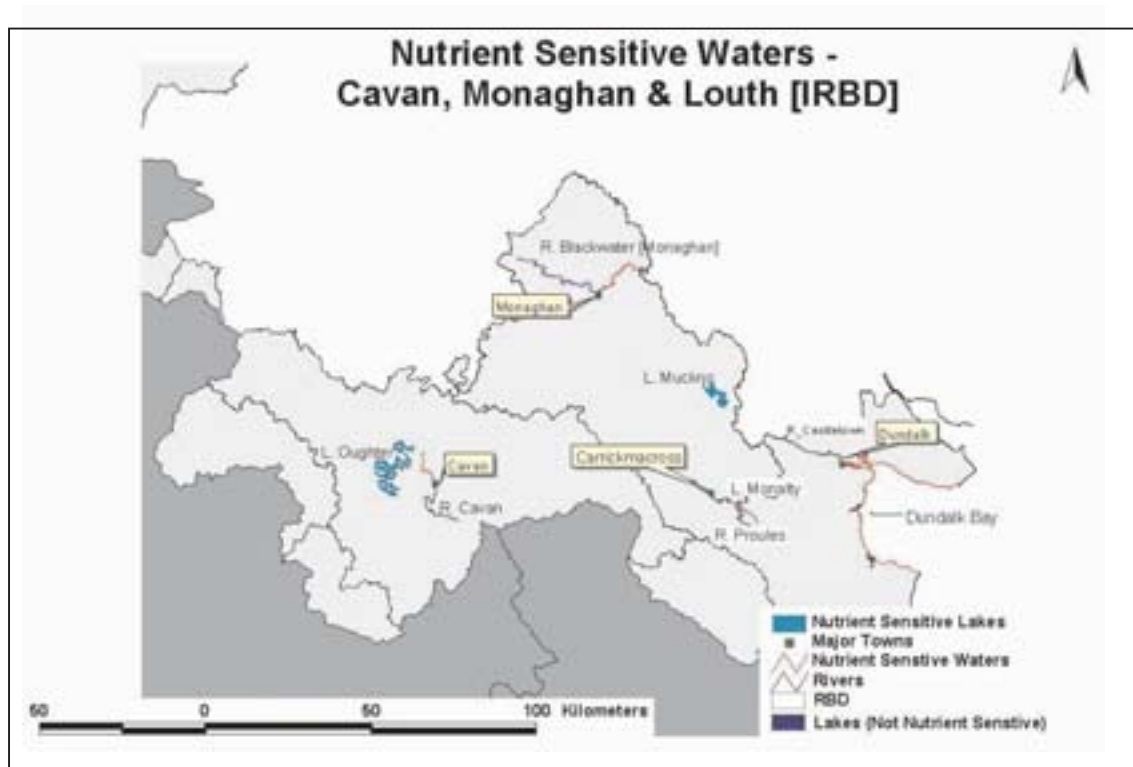


Figure 2-6. Nutrient Sensitive Waters – Cavan, Monaghan and Louth IRBD

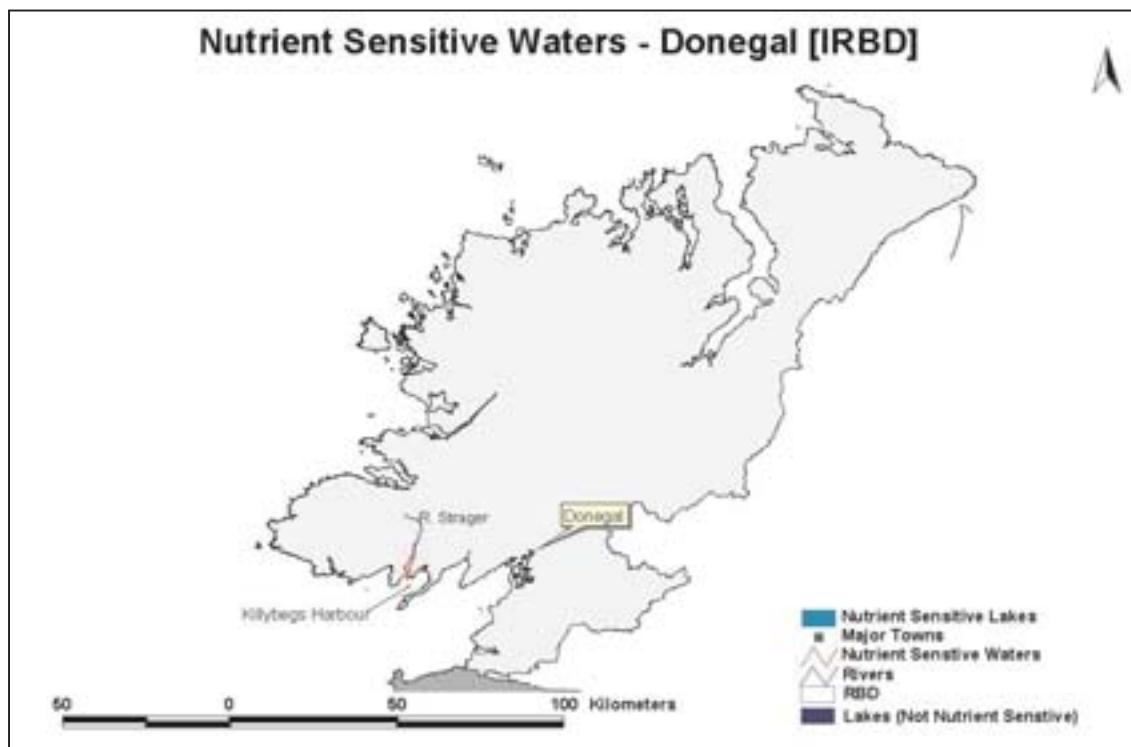


Figure 2-7. Nutrient Sensitive Waters – Donegal IRBD

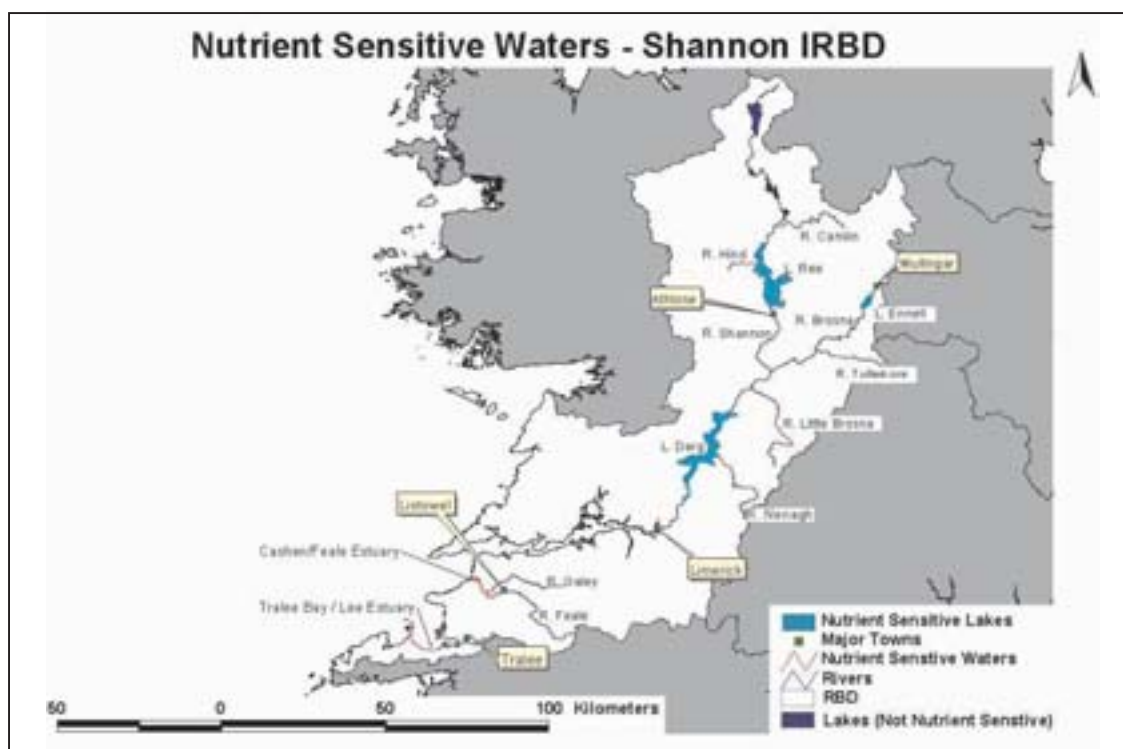


Figure 2-8. Nutrient Sensitive Waters – Shannon IRBD

2.1.3. Monitoring of Discharges

One of the principal requirements of the 2001 Urban Waste Water Regulations is to monitor the outflow from treatment plants. For most treatment plants, BOD₅, COD and TSS require monitoring. In addition, where the discharge occurs to sensitive waters (which are specified in the Third Schedule of the Regulations) total phosphorus and total nitrogen monitoring are also required. Table 2-1 lists the parameters and concentration limits with which waste water treatment plant discharges are required to comply. Although concentration limits are the recommended method to be used for calculating compliance, minimum percentage reductions in parametric values are also permitted as an alternative. The approach adopted in Ireland has been based on the use of the concentration limits for determination of compliance.

Table 2-1. Emission Limit Values for Discharges to Non-Sensitive Waters.

<i>Parameter</i>	<i>Concentration limit</i>	<i>Minimum percentage reduction</i>
<i>BOD₅</i>	25 mg/l O ₂	70-90%
<i>COD</i>	125 mg/l O ₂	75%
<i>Total suspended solids</i>	35 mg/l	90%

For discharges to sensitive waters a further two parameters are introduced, one or both of which may apply depending on conditions locally. These are outlined in Table 2-2, giving a value for concentration or for the percentage of reduction which applies.

Table 2-2. Emission Limit Values for Discharges to Sensitive Waters.

<i>Parameter</i>	<i>Concentration limit (annual mean)</i>	<i>Minimum percentage reduction</i>
Total phosphorus	2 mg/l P (10,000 - 100,000 p.e.)	80%
	1 mg/l P (more than 100,000 p.e.)	
Total nitrogen	15 mg/l N (10,000 - 100,000 p.e.)	70-80%
	10 mg/l N (more than 100,000 p.e.)	

The sampling frequency specified in the Regulations is set out in Figure 2-9. In summary, the frequency is dependent on the size of the agglomeration and on the historical compliance record of the treatment plant. In the 1998/99 report the Agency recommended that a minimum of 6 samples per year should be taken at all treatment plants whose population equivalent exceeded 1,000 and this recommendation is now being extended to include all plants whose population equivalent exceed 500.

The Regulations are specific about the type of sampling and analytical technique required to establish compliance for secondary treatment plants and those agglomerations which require nutrient reduction in addition to secondary treatment. Flow proportional or time-based 24-hour samples are required; grab samples are **not** sufficient to establish compliance.

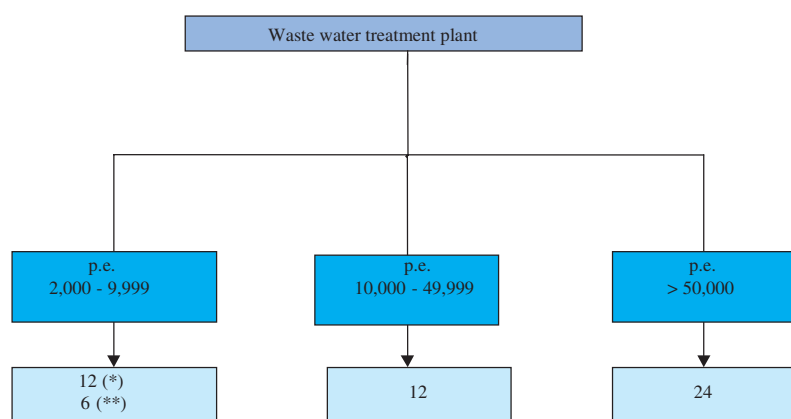


Figure 2-9. Mandatory Sampling Frequencies

** 4 samples in subsequent years, if it can be shown that the waste water discharged during the first year complies with the provisions of the Regulations; if one of the four fails, 12 samples must be taken in the year that follows.

* EPA recommends that a minimum of 6 samples should be taken per year.

It is important when reading this report to note that waste water discharges from the majority of agglomerations (i.e. population equivalents between 2,000 and 15,000 p.e.) are not required to have secondary treatment under the UWWT Regulations until 31 December, 2005. For

agglomerations less than 2,000 discharging to freshwater or estuaries ‘appropriate treatment’ is required by 31 December 2005. However, the Regulations apply to any **existing** secondary treatment plants that fall within the scope of the Regulations (i.e. discharges to freshwaters and estuaries from agglomerations greater than 2,000 p.e. and discharges to coastal waters from agglomerations greater than 10,000 p.e.)¹.

The Regulations also require local authorities to monitor surface waters which receive discharges from urban waste water treatment plants where it is anticipated that the receiving waters will be significantly affected, with implications for compliance with other Directives. Relevant Directives and National Regulations, which should be consulted to assess the impact of a discharge on the receiving water, are summarised in Table 2-3.

The Environmental Protection Agency Act, 1992, (Urban Waste Water Treatment) Regulations, 1994: A Handbook on Implementation for Sanitary Authorities provides advice on the monitoring requirements of the 1994 Regulations and can be adopted for use with the 2001 Regulations. This handbook includes analytical recommendations in respect of discharges to both sensitive and non-sensitive areas, the latter being sub-divided into riverine and lake discharges. Appendix B of this report reproduces the recommended analyses.

Table 2-3. Relevant Directives

<i>Directive</i>	<i>Statutory Instrument</i>
<i>Freshwater Fish Directive (78/659/EEC)</i>	S.I. 293 of 1988
<i>Shellfish Directive (79/923/EEC)</i>	S.I. 200 of 1994
<i>Bathing Water Directive (76/160/EEC)</i>	S.I. 155 of 1992 and S.I. 230 of 1996
<i>Surface Water Directive (75/440/EEC)</i>	S.I. 294 of 1989
<i>Dangerous Substances Directive (76/464/EEC)</i>	S.I. 258 of 1998
<i>Nitrates Directive (91/676/EEC)</i>	n/a
<i>*Water Framework Directive (2000/60/EC)</i>	n/a
<i>Groundwaters Directive (80/68/EEC)</i>	S.I. 42 of 1999

** The Water Framework Directive represents a major revision of EU water policy and establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. One of the main requirements of the Water Framework Directive is the development of “River Basin Management Plans” and the designation of a competent authority for each river basin district (RBD).*

In addition to the standards prescribed in the above Regulations, sanitary authorities must also have regard to the standards (objectives) outlined in:

- Any relevant Water Quality Management plan;
- Managing Ireland’s Rivers and Lakes - A Catchment Based Strategy Against Eutrophication;

¹ Department of the Environment Circular WP 3/95

- Measures Reports for Phosphorus Regulations, 1998 (S.I. No. 258 of 1998); and
- Memorandum No.1: Technical Committee on Effluent and Water Quality Standards.

2.2. WATER QUALITY REPORT

Article 5 of the Regulations requires that more stringent requirements than those specified in Part 1 and Part 2 shall apply where the receiving waters do not satisfy other relevant community directives. The EPA Water Quality Report 1998-2000 listed fifty locations as seriously polluted in the period 1998–2000 together with suspected causes of pollution. Sewage discharges were the most frequently suspected source category identified at some twenty eight locations (Table 2-4). The larger rivers highlighted as being seriously polluted are the Tullamore River downstream of Tullamore, the Triogue downstream of Portlaoise, the Boyne below Edenderry, the Finn below Stranorlar, the Liffey below Osberstown sewage treatment works and the Camac downstream of Saggart and at Inchicore.

The relevant local authorities should identify the causes of pollution in these stretches of river and, should urban waste water discharges be a contributing factor, take the necessary corrective action in relation to the discharge.

The provision of nutrient reduction facilities at secondary waste water treatment plants which are below the Regulation threshold is to be welcomed considering the extent of eutrophic conditions now prevalent in Irish freshwaters.

Table 2-4. Seriously polluted streams and rivers for the period 1998 to 2000 (Lucey et al., 2001)

<i>River Name</i>	<i>Channel Length km</i>	<i>Location</i>	<i>County</i>	<i>On record since</i>
<i>Ahavarraga Stream</i>	1.5	d/s Drumcolliher	Limerick	1989
<i>Anner</i>	2.0	Drangan area	Tipperary	1978
<i>Aughboy (Courtown)</i>	2.0	Lower reaches	Wexford	1998
<i>Boyne</i>	4.0	d/s Edenderry	Offaly	1975
<i>Bredagh</i>	0.5	Moville Br	Donegal	1987
<i>Broadmeadow</i>	3.0	Br in Ratoath	Meath	1988
<i>Broadmeadow</i>	3.5	d/s Ashbourne	Meath	1971
<i>Camac</i>	2.5	d/s Saggart	Dublin	1988
<i>Clodiagh (Tullamore)</i>	0.5	Just u/s Clonaslee Br	Laois	1999
<i>Daingean</i>	1.5	d/s Daingean	Offaly	1989
<i>Donagh</i>	3.5	2 points d/s Carndonagh	Donegal	1980
<i>Dunhill</i>	0.5	d/s Dunhill	Waterford	1998
<i>Figile</i>	4.0	Upper reaches	Kildare	1989
<i>Finn (Donegal)</i>	2.0	Br S of Stranorlar	Donegal	1998
<i>Hind</i>	9.5	4 points in & d/s Roscommon	Roscommon	1986
<i>Liffey</i>	1.0	d/s Osberstown STW	Kildare	1998
<i>Mayne</i>	2.0	Hole in the Wall Rd Br	Dublin	1998
<i>Rhine</i>	1.5	d/s Granard	Longford	1987
<i>Santry</i>	5.0	Clonshough & Bettyglen	Dublin	1988
<i>Tolka</i>	1.0	Rusk Br, Dunboyne	Meath	1971
<i>Triogue</i>	3.0	d/s Portlaoise	Laois	1971
<i>Tullamore</i>	6.0	d/s Tullamore	Offaly	1971
<i>Tully Stream</i>	1.5	d/s Kildare	Kildare	1981

2.3. NATIONAL DEVELOPMENT PLAN AND WATERS SERVICES PLAN

The National Development Plan (NDP) 2000 – 2006 involves an unprecedented investment in urban waste water infrastructure and water services. Under the NDP, €3.81 billion will be invested in the provision of waste water infrastructure over the period 2000 - 2006, which includes a €924 million investment to complete 24 waste water schemes (2000 - 2002) required under EU Waste Water Treatment Directive and the provision of a further €421 million to complete a further 62 schemes to meet the 2005 requirements.

Significant progress has been made during the years 2000-2002, the first phase of an on-going rolling three year programme under the NDP. The investment programme for this period covers the completion of Dublin Bay, Cork, Limerick and Waterford Main Drainage schemes, Drogheda, Dundalk, Osberstown and Swords Treatment Plants and the commencement of schemes such as Sligo Main Drainage, Letterkenny, Westport and Galway sewerage and many other treatment plants and schemes in every single county. The completion of such schemes will lead to a significant increase in the quantities of waste waters receiving secondary treatment and subsequent improvements in water quality.

One of the most ambitious projects under construction during this period was the Ringsend Wastewater Treatment Plant, part of the Dublin Bay Project. The plant was procured under a “Design, Build and Operate” programme for Dublin City Council. The Dublin Bay project also includes a new pumping station at Sutton and a 10 km submarine pipeline under Dublin Bay to bring wastewater from the north side of Dublin City to Ringsend for treatment.

Under the NDP major parts of the water services investment programme are carried out using the Public Private Partnership (PPP) approach. A Public Private Partnership is a partnership between the public and private sector for the purpose of delivering a project or service traditionally provided by the State or other government bodies. The key objectives of these investment plans are to secure compliance with EU and National water quality and waste water standards and the provision of a modern waste water infrastructure to support future economic and social development.

The 1998/1999 report on Urban Waste Water Discharges indicated that 26% of urban waste water arisings received secondary treatment. During the reporting period 2000 – 2001 this has increased to 29% representing a significant increase in waste waters receiving secondary treatment. The continued investment and commitment to higher standards of sewage treatment over the coming years will lead to a significant improvement in water quality during a period of economic and social progress.

2.4. BLUE FLAG AWARDS

The Blue Flag is a well-recognised, well respected eco-label, awarded to beaches and marinas with excellent environmental management and the system currently operates in twenty two countries. An Taisce which is a member organisation of the Foundation for Environmental Education is the responsible body in Ireland for the administration of the Blue Flag campaign.

To gain a Blue Flag, a beach has to meet 26 criteria and a marina 16 criteria covering water quality, beach/marina management, safety, services and facilities, environmental education and information. In Ireland, in 2002 the European jury awarded Blue Flags to 75 beaches and 4 marinas from a total of 79 beach and 4 marina applications. The Blue Flag for beaches is only valid during the blue flag season which coincides with the bathing season (June to August). In addition to compliance with the requirements corresponding to those of the EU

Bathing Water Directive there must be compliance with the standards and requirements for sewage treatment and effluent quality such as are contained in the EU Urban Waste Water Directive. There must be no industrial or sewage related discharges affecting the beach area. For discharges to coastal waters, the compliance date for the provision of secondary treatment for population equivalents greater than a population equivalent of 15,000 p.e. was 31 December 2000 and 31 December 2005 for agglomerations between a population equivalent of 10,000 p.e. and 15,000 p.e. For discharges to coastal waters from a population equivalent less than 10,000 p.e., appropriate treatment is required by 31 December 2005.

2.5. ECO-MANAGEMENT AND AUDIT SCHEME (EMAS)

The EU Eco-Management and Audit Scheme (EMAS) is a management tool open to all economic sectors including public and private services (Regulation (EC) No 761/2001 of the European Parliament and of the Council of 19 March 2001) to evaluate, report and improve their environmental performance.

Participation is voluntary and extends to public or private organisations operating in the European Union and the European Economic Area (EEA) — Iceland, Liechtenstein, and Norway. An increasing number of candidate countries are also implementing the scheme in preparation for their accession to the EU. The Irish National Accreditation Board is the competent body in Ireland for the administration of the EMAS scheme.

In March 2003 Mr. Martin Cullen, T.D., Minister for the Environment and Local Government launched a FÁS Environmental Management Systems Training Programme for Local Authorities. This Environmental Management Systems Training Programme was developed for FÁS by South Tipperary County Council with the assistance of a Steering Group comprising representatives from FÁS, EPA, Department of the Environment and Local Government, Cork County Council and SIPTU.

The training programme focuses on the implementation and operation of Environmental Management Systems and is designed to guide local authorities through the requirements of the EMAS Regulation (Eco Management and Audit Scheme, the EU EMS standard). The programme will train local authority staff to provide a system for local authorities to manage and report their environmental functions and will encourage local authorities to learn from the experience of other authorities. The implementation of EMAS schemes within local authorities will improve the quality of environmental management due to the use of a highly developed scheme and will have environmental and financial benefits through better control of operations. The system will be of particular importance in the management and operation of sewage treatment plants and will provide a structured approach for controlling and improving the impact on the receiving waters of the discharge.

3. SEWAGE SLUDGE

The Waste Management (Use of Sewage Sludge in Agriculture) Regulations, S.I. No. 148 of 1998 and The Waste Management (Use of Sewage Sludge in Agriculture) (Amended) Regulations, S.I. No. 267 of 2001 were made by the Minister of State at the Department of the Environment and Local Government, under sections 7 and 51 of the Waste Management Act, 1996 (S.I. No. 10 of 1996). The Regulations implement the requirements of Council Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture.

It is imperative that sewage sludge used or supplied for use in agriculture be used in accordance with the Regulations in order to minimise the risk to human, animal or plant health. Untreated sewage sludge may contain bacteria, viruses and parasites which can be eliminated or reduced by an appropriate treatment. The spreading of sewage sludge should not take place inside the estimated zone of contribution of private or public water supplies. It also is recommended that the “Code of Good Practice for the Use of Bio-solids in Agriculture” (Guidelines for Local Authorities and Wastewater Treatment Plant Operators) published by The Department of Environment and Local Government is strictly followed to provide a safe and sustainable use for sewage sludge in agriculture.

The Schedule to the Regulations (S.I. No. 148 of 1998) sets out maximum values for concentrations of heavy metals in soil (Part I), limit values for amounts of heavy metals which may be added annually to agricultural land, based on a ten year average (Part II, as amended by S.I. 267 of 2001), conditions for soil sampling and analysis (Part III), conditions applying to sludge sampling and analysis (Part IV) and methods of analysis (Part V). These are reproduced in Appendix C.

The Waste Management (Use of Sewage Sludge in Agriculture) (Amendment) Regulations, 2001 were made in June 2001 and amend the Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998 (S.I. No. 148 of 1998). The amendments include the replacement of the two tonne per hectare per year limit on the amount of dry matter to be added to the soil, with limits based on absolute quantities of specified heavy metals which may be applied annually based on a ten year average. A welcome amendment is the addition to Article 4 of the Regulations which states that “*A person shall, in using sewage sludge in agriculture; ensure that sludge is not used except in accordance with a nutrient management plan*”. Where sludge is applied to land in excess of the nutrient requirement it is considered disposal and not reuse or recycling. The Regulations also require additional analytical data to be included in the local authorities sludge register such as dry matter, organic matter, pH, nitrogen and phosphorous in addition to the metals specified in Part II of the Schedule. The EPA recommends that local authorities update the sludge register and maintain it according to Article 8 of the Regulations.

Any person using sludge in agriculture is required (under Article 4, The Waste Management (Use of Sewage Sludge in Agriculture) Regulations, S.I. No. 148 of 1998) to ensure that the quality of the soil, surface water and ground water is not impaired and ensure that sludge is not used except in accordance with a nutrient management plan.

The Waste Management Act, 1996 introduced radical changes in waste management planning in this country. Local authorities are responsible for the preparation of waste management plans for all non hazardous wastes produced within their functional area. The Waste Management (Planning) Regulations, 1997, S.I. 137 of 1997 set out the waste arisings which a plan must include (Article 2.1(a)). Sludge arisings from urban waste water treatment plants in the local authority area must be quantified and included in the plans.

Section 39 of the Waste Management Act, 1996 states that a person “shall not dispose of or undertake the recovery of waste at a facility unless the person has obtained a waste licence”. The treatment of sewage sludge (e.g. thermal treatment/anaerobic digestion/aerobic digestion/lime stabilisation) is exempted under the Act provided that the treated sludge is recovered. The EPA considers that disposal of treated sludge to landfill or application of sludge to lands, which exceed the crop requirements, cannot be considered as recovery. Hence, the exemption provided for in the Act does not apply in these cases. Local authorities are thus required to obtain a licence under the Waste Management Act, where sludge is treated and the resultant sludge is not sent for recovery. Where a design, build and operate model is planned in such circumstances, the local authority is advised to make provision in any contract documents to obtain a waste licence for such an activity.

4. IMPLEMENTATION OF THE REGULATIONS BY THE EPA

As mentioned earlier, the first milestone specified in the 2001 Urban Waste Water Regulations passed on the 31 December 1998. After this date, agglomerations with a population equivalent greater than 10,000 discharging into sensitive waters or the catchment of sensitive waters require nutrient reduction facilities. The next deadline in the Regulations was the 31 December 2000. After this date, agglomerations with a population equivalent greater than 15,000 persons were required to treat waste water arisings to secondary treatment standards and comply with the other requirements of the Regulations. Section 59 of the EPA Act, 1992 states that:

“Where a standard or other requirement is prescribed under subsection (2), the sanitary authority shall, where necessary, take steps as soon as is practicable, or within such period as may be prescribed for compliance with such standard or other requirement, to ensure that the said effluent complies with the standard or other requirement”.

In general, the Agency has noted in previous reports on Urban Waste Water Discharges in Ireland that local authorities are aware of the necessary infrastructure and deadlines required by the Regulations. However, delays in the planning process and/or construction commencement may delay the provision of the requisite treatment systems. The Agency will take this into account during the enforcement of the Regulations where such delays are outside the control of the local authority. However, where adequate monitoring of population trends and development is not undertaken which results in non-compliance with section 59 of the EPA Act, 1992; enforcement action will be considered against the local authority. This enforcement action will be proportionate to the non-compliance detected.

The Agency has noted in previous reports that for the most part, a monitoring programme exists for urban wastewater discharges. Particular attention however, is drawn to the requirements for 24-hour flow proportionate sampling, the analyses of obligatory parameters, and the minimum frequency of analyses, to establish compliance with the Regulations. Where a non-compliance with these requirements is recorded, the authority will be liable to enforcement action, which again will be proportionate to the non-compliance. During 2000 and 2001 the Agency carried out a number of audits and recommended that some local authorities review their monitoring schedules for both the influent and effluent to ensure that the mandatory level of monitoring is carried out at all plants. The monitoring results and recommendations are presented in the following chapter.

Urban Waste Water Discharges in Ireland:
A Report for the Years 2000 and 2001

5. FINDINGS OF THE 2000/2001 MONITORING

This section of the report provides an overview of the level of treatment afforded to urban waste water during the review period (2000 & 2001). A series of tables sets out details on the numbers and relative sizes of agglomerations throughout the country, the receiving waters to which waste water from these agglomerations discharge and an analysis of the level of treatment provided. Details about individual agglomerations are provided in Appendix D, grouped by local authority, so that the reader can easily review the information for a particular local authority.

The overall performance of secondary waste water treatment plants throughout the country during the review period is also evaluated. A complete listing of the number of samples taken and analysed for BOD, TSS and COD for secondary waste water treatment discharges during the review period is reported in Appendix E, together with an analysis of exceedances, which are highlighted. As with Appendix D, this information is grouped by local authority and provided for each secondary waste water treatment plant in the country. A colour code (green) is used to show whether or not an individual plant is failing to meet the effluent quality standards set by the Regulations. The blue code indicates that an insufficient number of samples were taken. The overall performance of plants that should be in compliance with the Regulations is therefore evaluated along with a general evaluation of all secondary treatment plants for which data was reported. Details are also provided about the performance of those plants discharging to sensitive waters and estuaries, which are by now required to have nutrient removal in addition to secondary treatment.

By the end of the review period, all agglomerations with a population equivalent greater than 15,000 were required to have secondary treatment and be in full compliance with the quality standards set out in the Regulations. Furthermore, agglomerations discharging to sensitive waters and estuaries specified in Part 1 of the Third Schedule to the 2001 Regulations were required to have nutrient removal in addition to secondary treatment. Existing secondary treatment plants that fall within the scope of the Regulations (i.e. plants discharging to freshwaters and estuaries serving agglomerations greater than 2,000 p.e. and plants discharging to coastal waters serving agglomerations greater than 10,000 p.e.) are also to be in full compliance with the quality standards set out in the Regulations.

As stated earlier, the Regulations are specific about the type of sampling that is to be conducted in order to demonstrate compliance with the quality standards set by the Regulations. Sampling procedures used by local authorities have therefore been reviewed and compared with the requirements of the Regulations.

Finally, the quantities of sewage sludge generated by primary and secondary treatment plants in each local authority area is reported (Appendix F) and commentary provided on the management practices employed.

5.1. WASTE WATER TREATMENT

Data on 412 agglomerations with a population equivalent greater than 500 persons were reported to the Agency for the 2000/2001 period. Of the 412 agglomerations, 260 receive secondary treatment (34 of which also receive nutrient reduction), 98 receive primary treatment and 54 either receive preliminary treatment or no treatment (see Table 5-1). Comparative figures for 1998/99 are also provided in parenthesis.

Table 5-1. Waste water treatment facilities for agglomerations greater than or equal to 500 population equivalent for the year 2000/2001 (years 1998/99 in brackets)

	<i>No treatment</i>	<i>Preliminary treatment only</i>	<i>Primary treatment only</i>	<i>Secondary treatment only</i>	<i>Secondary treatment with nutrient reduction</i>	<i>Total</i>
<i>Number of agglomerations</i>	32 (37)	22 (16)	98 (85)	226 (226)	34 (26)	412 (390)
<i>Total population equivalent (p.e.)</i>	1,271,369 (1,464,298)	372,472 (342,500)	2,268,113 (1,960,267)	1,131,713 (1,057,062)	449,671 (276,989)	5,493,338 (5,101,116)

Table 5-1 indicates that in the reporting period 2000 and 2001:

23% of waste water arisings did not receive any form of treatment (27% in 1998/99);

7% of waste water arisings received preliminary treatment only (7% in 1998/99);

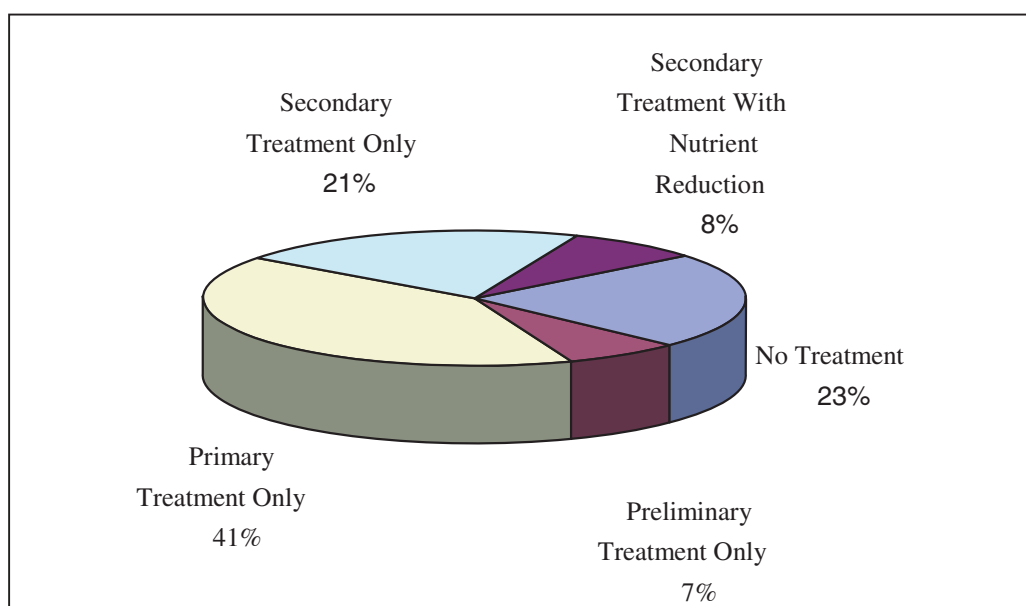
41% of waste water arisings received primary treatment only (40% in 1998/99);

21% of waste water arisings received secondary treatment only (21% in 1998/99);

8% of waste water arisings received nutrient reduction in addition to secondary treatment (5% in 1998/99).

These statistics are illustrated in Figure 5-1 below.

Figure 5-1. Waste Water Facilities for agglomerations with a Population Equivalent greater than 500



The national population equivalent figure has increased from 5,101,116 persons for 1998/99 to 5,493,338 for 2000/2001, which is an increase of 7.7%. This is due to accurate monitoring at new treatment plants where previously only estimations of population equivalent were made and improved measurements at existing plants.

The number and size of agglomerations is given in Table 5-2. Four agglomerations (Ringsend, Waterford, North Dublin and Cork) exceed population equivalents of 150,000 persons and collectively represent almost 60% of the waste water discharges for 2000/2001. The greatest number of agglomerations reported in 1998/99 related to the class 500 to 1,000 persons equivalent; however, data returned for the year 2000/2001 shows that agglomerations in the class 2,000 to 10,000 p.e. are now most common, with 131 out of a total of 412, representing 10.4% of waste water arisings. Another notable change appears in the class 50,000 to 150,000 p.e. where there has been an increase from 441,055 (8.6%) for the years 1998/99 to 776,849 (14.1%) for the year 2000/2001.

Table 5-2. Number of Agglomerations and Population Equivalents (2001)

<i>Normal and Sensitive Areas</i>			
<i>Class of Agglomeration</i>	Number	Total population equivalent (p.e)	% of Total population equivalent (p.e)
<i>500 to 1,000 p.e.</i>	118	77,410	1.4
<i>From 1,001 to 2,000 p.e.</i>	106	141,933	2.6
<i>From 2,001 to 10,000 p.e.</i>	131	573,023	10.4
<i>From 10,001 to 15,000 p.e.</i>	16	203,007	3.7
<i>From 15,001 to 50,000 p.e.</i>	27	651,495	11.8
<i>From 50,001 to 150,000 p.e.</i>	10	776,849	14.1
<i>150,001 p.e. and above.</i>	4	3,069,621	56
<i>Total</i>	412	5,493,338	100

Since the publication of the previous report (1998/99), an additional 30 water bodies have been designated as sensitive areas including the Liffey Estuary. There are now 40 water bodies designated as sensitive areas which receive waste water from one hundred and fifty one agglomerations (≥ 500 p.e.) which accounts for approximately 55% of waste water discharges in the country.

Table 5-3 presents an overview of the types of receiving water to which agglomerations discharge their waste water. Almost 80% of waste water arisings discharge into either freshwaters or estuaries and just over 20% to coastal waters. Since the publication of the previous report (1998/99), an additional 30 water bodies have been designated as sensitive areas including the Liffey Estuary. There are now 40 water bodies designated as sensitive areas which receive waste water from one hundred and fifty one agglomerations (≥ 500 p.e.). Discharges to sensitive areas or the catchment of sensitive areas now account for almost 55% of total discharges. However, it should be noted that the discharge from the new Ringsend

Treatment Plant to the Liffey Estuary accounts for 67% of the total discharge to sensitive areas.

Table 5-3. Agglomerations and population equivalents categorised by receiving waters (2001)

<i>Class of agglomeration</i>	<i>Normal Areas</i>				<i>Sensitive Areas</i>			
	Freshwaters and Estuaries		Coastal Waters		Freshwaters and Estuaries		Coastal Waters	
	No.	P.E	No.	P.E	No.	P.E	No.	P.E
<i>From 500 to 1,000 p.e.</i>	68	44074	7	4763	43	28573	0	0
<i>From 1,001 to 2,000 p.e.</i>	58	78033	12	14480	36	49420	0	0
<i>From 2001 to 10,000 p.e.</i>	65	277580	20	90533	45	196364	1	8546
<i>From 10,001 to 15,000 p.e.</i>	7	93500	4	46581	5	62926	0	0
<i>From 15,001 to 50,000 p.e.</i>	7	146800	3	120084	16	348452	1	36159
<i>From 50,001 to 150,000 p.e.</i>	4	290287	3	233700	3	252862	0	0
<i>Greater than 150,001 p.e.</i>	2	482000	1	578823	1	2008798	0	0
<i>Totals</i>	211	1412274	50	1088964	149	2947395	2	44705

The number of secondary treatment plants in operation during 2000 and 2001 are presented in Table 5-4 as a function of the receiving water to which they discharge. Two hundred and fifty eight secondary treatment plants were in operation during the reporting period. The most notable change since 1998/99 is the increase from 38 to 122 secondary treatment plants discharging to sensitive areas or to the catchment of sensitive areas and this is due to the designation of an additional 30 water bodies in the 2001 Urban Waste Water Regulations.

During the review period 2000-2001 a number of agglomerations have had their treatment facilities upgraded. These include Ballyconnell, Cootehill, and Ballyjamesduff (Co. Cavan), Ballaghaderreen, Monksland, Roscommon and Boyle (Co. Roscommon), Castletownroche and Dromahane (Co. Cork), Freshford (Co. Kilkenny), Leixlip and Osberstown (Co. Kildare).

All agglomerations with population equivalents greater than 15,000 were required to have secondary treatment by 31 December 2000. Of the forty one agglomerations greater than 15,000 p.e., only twenty five of these had secondary treatment installed and operational by that date. Agglomerations that did not have the necessary level of treatment installed and operational by that date were Arklow, Ballykeeffe, Blanchardstown/Castlenock, Bray, Cork City, Galway City, Howth, Limerick, Ringsend, Shangannagh, Sligo, Tramore, Tramore River Valley (Cork), Waterford City and Wexford. Details of the current status of drainage schemes and treatment plants can be found at the Private Public Partnership website at http://www.ppp.gov.ie/sectors/water_and_waste_water.

Table 5-4. Secondary Waste Water Treatment Plants (2001)

<i>Class of Agglomeration</i>	<i>Normal Areas</i>		<i>Sensitive Areas</i>	<i>No. of Secondary treatment plants</i>
	Freshwaters and estuaries	Coastal Waters	Freshwaters and estuaries	
	No. of Secondary treatment plants	No. of Secondary treatment plants	No. of Secondary treatment plants	
<i>From 500 to 1000 p.e</i>	40	2	32	74
<i>From 1,001 to 2,000 p.e</i>	35	2	29	66
<i>From 2,001 to 10,000 p.e</i>	41	4	37	82
<i>From 10,001 to 15,000 p.e</i>	5	1	5	11
<i>From 15,001 to 50,000 p.e</i>	2	1	16	19
<i>From 50,001 to 150,000 p.e</i>	2	1	3	6
<i>p.e 150,001 and above</i>	0	0	0	0
<i>Total</i>	125	11	122	258

Table 5-5 details the discharges to sensitive areas or the catchment of a sensitive area and the extent to which nutrient reduction facilities have been provided. It should, however, be noted that Article 4 of the 2001 Regulations requires the application of more stringent effluent quality standards than those specified in the Regulations where this is required to ensure that the receiving waters satisfy any other relevant Community Directives. This may mean that many of those agglomerations discharging to sensitive areas with population equivalents of less than 10,000 p.e. may also require nutrient reduction. A more detailed assessment of these agglomerations and receiving waters is therefore required in order to assess future needs to secure compliance by the appropriate dates.

Table 5-5. Discharges to Sensitive Areas

<i>Class of Agglomeration</i>	<i>Number of Primary Treatment Plants discharging to sensitive areas</i>	<i>Number of secondary treatment plants discharging to sensitive areas</i>		<i>Total number of discharges to sensitive areas</i>
		<i>...without nutrient reduction</i>	<i>...with nutrient reduction</i>	
<i>From 500 to 1000 p.e</i>	14	29	3	46
<i>From 1,001 to 2,000 p.e</i>	9	26	3	38
<i>From 2,001 to 10,000 p.e</i>	7	30	8	45
<i>From 10,001 to 15,000 p.e</i>	0	3	2	5
<i>From 15,001 to 50,000 p.e</i>	0	8	9	17
<i>From 50,001 to 150,000 p.e</i>	0	1	2	3
<i>p.e 150,001 and above</i>	1	0	0	1
<i>Total</i>	31	97	27	155

5.2. QUALITY OF WASTE WATER DISCHARGES

Appendix E contains details on the performance of secondary treatment plants throughout the country with respect to BOD, COD and TSS. Where breaches of effluent quality standards have occurred, these are highlighted in green. A limited number of outflow samples from

secondary wastewater treatment plants are permitted to fail (see appendix A) provided that in the cases of BOD₅, COD and TSS, respectively, the limits 50 mg/l O₂, 250 mg/l O₂ and 87.5 mg/l are not exceeded. This means that if a single sample exceeds these values then the required standard has not been achieved. Hence, if column three for each parameter in Appendix E shows a value (shaded green) greater than zero, the plant has not complied with the requirements of the Regulations.

Plants that fall within the scope of the Regulations are required to comply with the standards set out by the Regulations. This means that secondary waste water treatment plants from agglomerations greater than 2,000 p.e. discharging to freshwaters and estuaries and secondary waste water treatment plants from agglomerations greater than 10,000 p.e. discharging to coastal waters are required to comply with the standards set by the Regulations for BOD, COD and TSS. In total, there were 114 such plants in operation in 2001 (see Table 5-4). Of these 114 plants, fifteen are also required to comply with the relevant standard set for total phosphorus or total nitrogen because they are discharging to sensitive areas specified under Part 1 of the urban Waste Water Regulations, 2001 or have nutrient reduction facilities installed and operational.

An analysis of the 2001 data for the larger treatment plants in Ireland, i.e., treatment plants serving agglomerations of >15,000 p.e. show 16 out of 25 plants meeting the required standards (compliance rate of 64%). Plants in this class that failed to meet the standards were,

- ❖ Letterkenny, (Co. Donegal),
- ❖ Clonroadmore (Ennis Town),
- ❖ Malahide (Fingal County Council),
- ❖ Mortarstown (Co. Carlow),
- ❖ Ballina & Castlebar (Co. Mayo),
- ❖ Clonakilty & Mallow (Co.Cork),
- ❖ Osberstown (Co. Kildare).

In most cases the failures were due to relatively few samples failing to meet the required discharge limits and/or inadequate effluent sampling. Of particular concern, however, was the failure rate of BOD, COD and TSS of the discharge from the Letterkenny waste water treatment plant and the compliance rate for TSS from the Osberstown plant.

For secondary treatment plants serving agglomerations of between 2,000 and 15,000 p.e., only 26 out of 93 met the standards (compliance rate of 28%). This compares with a compliance rate of 64% for plants serving agglomerations greater than 15,000 p.e. The compliance rate was 68 % (17 plants out of 25) for secondary treatment plants greater than 10,000 p.e. discharging to sensitive areas (as defined in Part 1 and Part 2 of the Third Schedule to the Regulations). Some of this non-compliance is attributed to insufficient sampling which should be immediately address by local authorities.

For plants serving agglomerations between 500 p.e. and 2,000 p.e. only 24 out of 137 met the effluent quality standards (compliance rate of 18%). Some of this non-compliance can be attributed to insufficient/non-existent sampling.

This illustrates that there is a persistent problem with the operation, maintenance and management of smaller secondary treatment plants in Ireland. Local authorities are urged to review the operation of all urban waste water treatment plants in their functional areas and to implement corrective action programmes for those plants that are failing to meet the effluent quality standards set by the Regulations. Particular priority should be placed on correcting plants whose discharges are causing environmental pollution in the waters to which the effluents discharge.

In addition to the concentration limits set out in the Regulations (second schedule Part 1), the requirements for discharges from waste water treatment plants to sensitive areas which are subject to eutrophication, include concentration limits for total phosphorous and total nitrogen. One or both parameters may be applied depending on the local situation. Table 5-6 presents the results of phosphorous monitoring at plants where nutrient reduction facilities have been installed. Those plants which discharge to sensitive areas specified in the second schedule Part 1 of the 2001 Urban Waste Water Regulations should be in compliance since 31 December 1998 and are highlighted.

The annual mean Total P concentration of the discharge from the Osberstown waste water treatment plant is 3.5 mg/l P which exceeds the emission limit of 2 mg/l P for discharges to sensitive waters. The sampling frequency for total P at the Castlebar, Navan and Athlone waste water treatment plants was below the required level as specified in the Regulations. The EPA recommends that local authorities review their monitoring programmes and ensure that the sampling frequency for total P complies with the Regulations. Where the annual mean total P exceeds the concentration limits for discharges to sensitive waters a review of the treatment plant performance and operation should be initiated to ensure compliance.

Table 5-6. Phosphorus Monitoring

<i>Local Authority</i>	<i>Name of Treatment Plant</i>	<i>No. of Samples Total P</i>	<i>Annual Mean Total P mg/l P</i>	<i>No. of Samples o-P</i>	<i>Annual Mean Ortho-p mg/l P</i>
<i>Cavan County Council</i>	Cavan	12	1.1	11	0.7
<i>Galway County Council</i>	Ballinasloe	-	-	8	0.1
<i>Galway County Council</i>	Tuam	-	-	16	6.8
<i>Kerry County Council</i>	Killarney	52	0.4	0	-
<i>Kildare County Council</i>	Leixlip	38	0.6	0	-
<i>Kildare County Council</i>	Osberstown	348	3.5	280	2.1
<i>Laois County Council</i>	Portlaoise	0	-	19	1.3
<i>Limerick County Council</i>	Newcastlewest	-	-	22	3.7
<i>Longford County Council</i>	Longford	12	0.5	0	-
<i>Mayo County Council</i>	Balinrobe	2	8.9	2	0.7
<i>Mayo County Council</i>	Swinford	2	10.8	-	-
<i>Mayo County Council</i>	Castlebar	4	0.6	4	0.1
<i>Meath County Council</i>	Navan	11	1.3	0	-
<i>Meath County Council</i>	Trim	24	12.8	-	-
<i>Monaghan County Council</i>	Monaghan	0	-	12	0.7
<i>Monaghan County Council</i>	Carrickmacross	0	-	13	0.8
<i>Monaghan County Council</i>	Castleblayney	0	-	12	1.5
<i>Offaly County Council</i>	Tullamore	15	1.3	11	1.2
<i>Offaly County Council</i>	Birr	10	8.4	18	3.7
<i>Roscommon County Council</i>	Monksland	23	0.3	26	0.1
<i>Roscommon County Council</i>	Ballaghaderreenn	17	2.5	8	1.4
<i>Roscommon County Council</i>	Boyle	19	2.4	19	0.4
<i>Roscommon County Council</i>	Roscommon	83	2.0	91	0.6
<i>Tipperary N.R. Co. Co.</i>	New Nenagh	17	1.6	0	-
<i>Tipperary S.R. Co. Co.</i>	Ballina	-	-	2	2.6
<i>Westmeath County Council</i>	Mullingar	7	0.5	19	0.4
<i>Westmeath County Council</i>	Athlone	6	1.6	15	0.9

5.3. SAMPLING

There has been an increase in the number of results returned to the EPA for all parameters during the reporting period despite the foot and mouth restrictions imposed during the first half of 2001 (see Table 5-7). Many local authorities reported a suspended or severely reduced monitoring programme during this period so the increase in monitoring is a welcome development. The most notable increase in the number of results reported has been for total P, which has risen from 733 tests in 2000 to 2005 tests in 2001 (348 tests from Osberstown, Co. Kildare), reflecting the implementation by local authorities of the 2001 Urban Waste Water Treatment Regulations.

Monitoring of the inflow to a plant is important in order to determine the correct population equivalent for an agglomeration and also in the identification of unexpected loads which may affect the operation of the plant. Outflow monitoring is important to establish compliance with the standards specified in the Regulations. The Regulations are specific about the type of sampling and analytical technique required to establish compliance for secondary treatment

plants. Flow proportional or time-based 24-hour samples are required; grab samples are not sufficient to establish compliance.

Of the 3,429 total outflow samples for BOD taken in 2001, over 53% were grab samples, which is not in compliance with the Regulations. An analysis of the plants which fall within the scope of the Regulations (i.e. discharges to freshwaters and estuaries from agglomerations greater than 2,000 p.e. and discharges to coastal waters from agglomerations greater than 10,000 p.e.) shows that 22% of samples taken were grab samples. For larger plants with population equivalents of greater than 10,000 there has been an increase in the amount of composite sampling since the previous reporting period from 50% to 67% which, although a significant improvement, is still not fully in compliance with Regulations. Local authorities should take the necessary steps to rectify this situation and ensure that the correct procedures are applied when sampling secondary treatment plants that fall within the scope of the Regulations. These procedures (i.e. flow proportional or time-based 24-hour sampling) should also be applied at plants serving agglomerations of less than 2,000 p.e.

The Regulations also specify the minimum number of samples to be taken each year (see Appendix A). A county by county account of the number and compliance of samples of the outflow from secondary waste water treatment plants is given in Appendix E. Where the number of samples returned for a particular plant is less than that required the corresponding box in the table is highlighted in blue. An examination of Appendix E indicates that for 56 plants with a population equivalent greater than 2,000, the required number of samples were not taken during 2001. It is therefore recommended that local authorities review their monitoring programmes to ensure that the requisite monitoring is undertaken at all plants.

Table 5-7. Number of Analytical Results Reported in 2000/2001 (No. Of Results for 1999 in Brackets)

<i>Sample Type</i>	<i>Year</i>	<i>BOD₅</i>	<i>COD</i>	<i>TSS</i>	<i>Total P</i>	<i>Ortho-P</i>
<i>Inflow</i>	2000	2700 (2520)	2692 (2495)	2816 (2406)	809 (572)	1196 (962)
	2001	2952	3049	2998	1519	1579
<i>Outflow</i>	2000	3415 (2883)	3282 (2833)	3547 (2982)	1170 (733)	1620 (1322)
	2001	3429	3508	3654	2005	1939

5.4. SEWAGE SLUDGE

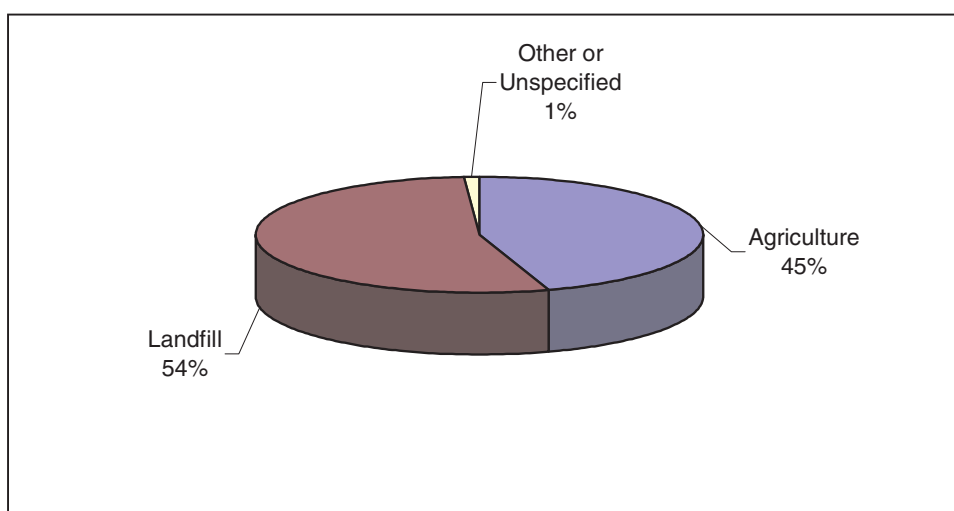
During the reporting period a total of 29,810 tonnes (2000) and 33,559 tonnes (2001) respectively of dry solids were reported to have been produced nationally by agglomerations with population equivalent greater than 500 persons. The disposal of sewage sludge to landfill remains the favoured disposal route by local authorities with a slight increase from the period 1998/1999. Data returned to the EPA for 2000/2001 has confirmed that disposal of sludge to the marine environment has ceased with the exception of Fingal County Council who reported that sludge for Portrane (p.e 8,500) waste water treatment plant was disposed to the marine environment during the reporting period. The EPA has since been advised that a sludge dewatering plant has been installed and that the practice of disposing sewage sludge to sea has ceased.

The use of sewage sludge in agriculture has increased since the last report and now accounts for 45% of the total sludge arisings compared with 23.2% in 1998/99. The disposal routes for sewage sludge are set out in the Table 5-8 below and illustrated in Figure 5-2.

Table 5-8. Sewage Sludge Reuse and Disposal routes

	<i>Agriculture</i>	<i>Landfill</i>	<i>Sea Disposal</i>	<i>Forestry</i>	<i>Other or Unspecified</i>	<i>Total</i>
<i>Sludge</i>						
<i>Quantity</i>	15,155	18,052	0	0	352	33,559
<i>tds/yr</i>						
<i>% of Total</i>	45	54	0.0	0.0	1.0	100

Figure 5-2. Sewage Sludge Reuse and Disposal routes



The Regulations require an analysis of sewage sludge at least once every six months. The frequency of analysis may then be reduced to yearly where the results of analysis do not vary significantly over a year. Where it is evident that copper and zinc are present only in small or negligible quantities in the waste water treated by the sewage treatment plant, the frequency of analyses for those parameters may be reduced to once in three years. Table 5-9 presents the concentration of heavy metals in sludges reused in agriculture. Where exceedences of the limits are reported the reported result is highlighted in blue. Two results out of 80 samples tested during the period 2000 and 2001 exceeded the concentration of heavy metals in sludges used in agriculture, namely Copper at 1197 mg/kg DM Cu (Moate) and Nickel at 320 mg/kg DM Ni (Ringsend). The concentrations of the other metals for these two particular samples were within the limit values.

Table 5-9. Maximum Concentration of Heavy Metals in Sludges Reused in Agriculture

		Cd	Cu	Ni	Pb	Zn	Hg
Limit mg/kg DM		20	1000	300	750	2500	16
PlantName	No. Of Tests	Maximum value recorded (mg/kg DM)					
New Nenagh	1	1.0	305	2	66	739	1.4
Athlone	1	5.2	483	44	41	2350	3.0
Ballaghaderreen	1	<1	90	2	10	256	<0.5
Borrisokane	1	1.1	808	9	57	693	0.3
Boyle	1	<1	120	11	4.4	193	<0.5
Cashel	1	0.8	418	5	10	150	0.5
Clonmel	5	-	249	55	117	627	-
Holycross	1	1.3	316	3	53	833	0.3
Kilkenny	1	0.3	45	3	6	82	0.4
Kinnegad	1	2.1	372	27	26	988	3.9
Littleton	1	1.2	218	4	39	597	0.3
Moate	1	3.2	1197	24	24	876	4.5
Monksland	1	<0.5	100	3	1	266	<0.5
Mullingar	1	1.6	367	27	26	923	3.5
Navan	1	1.0	-	-	18	-	1.0
Nenagh Old	1	0.0	158	2	48	397	1.9
Portumna	1	0.0	17	8	3	34	0.0
Ringsend	51	1.3	559	320	290	1510	2.1
Roscommon	1	<0.5	120	11	4	193	<0.5
Roscrea	1	1.2	484	3	156	995	1.1
Templemore	1	1.3	211	4	82	453	2.9
Thurles	1	1.1	823	7	75	596	0.9
Tullamore	1	<1	3	<1	1	7	0.0
Tullow	3	0.3	53	4	131	131	0.2

In 2001 sludge arisings at the Ringsend plant accounted for 20% of the total national sludge arisings compared to 35% for the period 1998 to 1999.

The Regulations (Use of Sewage Sludge in Agriculture Regulations, 1998) specify that sludge shall not be used in agriculture where the concentration of one or more of the heavy metals exceeds the values specified. Part III of the Regulations sets out the conditions applying to soil sampling and analysis including the parameters to be analysed. Table 5-10 presents the results of analysis reported to the EPA by local authorities. Due to the large amount of data submitted for metal concentrations of soil where the sludge from the Ringsend sewage treatment plant is used, a separate analysis is presented in Table 5-11 for the Ringsend plant.

Table 5-10. Maximum Concentration of Heavy Metals in Soils where Sludge was Reused in Agriculture (2000 and 2001)

		Cd	Cu	Ni	Pb	Zn	Hg
Limit mg/kg DM		1	50	30	50	150	1
PlantName	No. Of Tests	Maximum value recorded (mg/kg DM)					
Ballybunion	1	0.7	11	1	0.9	9.2	0.1
Birr	1	0.5	17	22	40.7	76	0.6
Caherciveen	1	0.7	12	9	<1	9	<0.1
Castleisland	5	0.3	7	1.3	2	10	<0.1
Dingle	1	0.5	15	11	12	39	-
Kenmare	3	0.3	17	1	1	57	<0.1
Killarney	1	<0.1	9	1	2	11	<0.1
Killorglin	2	0.3	8	6	2	24	<0.1
Tralee	1	<1	4	1	2	11	<0.1
Tullamore	1	1.8	19	33	24	262	0.1

The monitoring results indicate that the heavy metal concentrations in the soils tested for sludge application from the treatment plants (excluding Ringsend) listed in Table 5-10 were within the specified limits except for nickel and zinc reported from Tullamore. The monitoring results for soils used to spread the sludge from the Ringsend treatment plant however show that the limits have been exceeded for all but one metal during the reporting period. In light of these exceedances the EPA recommends that Dublin City Council review current practice and cease using lands where the metal concentration in the soils exceed the permitted limits.

Table 5-11. Maximum Concentration of Heavy Metals in Soils where Ringsend Sludge was Reused in Agriculture (2000 and 2001).

Metal	Limit mg/kg DM	2000 Results			2001 Results		
		Max Value (mg/kg DM)	No. of Exceedances	No. of tests	Max Value (mg/kg DM)	No. of Exceedances	No. of tests
Cd	1	2.9	38	612	3.1	59	499
Cu	50	43	0	615	59	2	441
Ni	30	63	61	605	75	71	439
Pb	50	142	13	615	142	50	439
Zn	150	188	7	614	272	11	441
Hg	1	1.1	1	579	1.8	2	436

5.5. EPA AUDITS

The EPA undertook a number of audits in 2000 and 2001 to determine the conformity with the Urban Waste Water Treatment Regulations and good practices and to assess the performance of the local authority with regard to their statutory duties pertaining to urban wastewater treatment. The criteria used in the audits were:

- Recommendations contained in the Environmental Protection Agency Act, 1992 [Urban Wastewater Treatment] Regulations, 1994: A handbook on the Implementation for Sanitary Authorities;

- Recommendations contained in - Urban Wastewater Treatment: A Report for the Years 1996/97 and 1998/99;
- The Water Pollution Acts 1997-1990; and
- The Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998 and The Waste Management (Use of Sewage Sludge in Agriculture) Regulations, Amended Regulations, 2001.

The following local authorities were audited during the review period: Kilkenny County Council, Sligo County Council, Westmeath County Council, Donegal County Council, Dun-Laoghaire Rathdown County Council, Galway County Council, Leitrim County Council, Limerick City Council, Limerick County Council, Louth County Council, Mayo County Council, Monaghan County Council, Tipperary South Riding County Council.

The audit procedure consisted of an opening meeting, a site inspection, and a closing meeting. The opening meeting reviewed the scope and objectives of the audit. The site inspection was used to review the sampling, analytical and reporting procedures in place. The closing meeting followed the audit and was used to present the audit findings. Subsequent to the audit, a report was issued to each authority. This audit report set out the observations noted during the audit and recommended actions to be taken by the authority concerned. These actions will form part of the criteria to be used in future audits.

The results of the audits indicated that all authorities were aware of their monitoring obligations under the UWWT Regulations.

Chapter 10 of the 1997 EPA manual on Primary, Secondary and Tertiary Treatment advised local authorities to use a systems approach to manage wastewater treatment plants. The audits indicated that such an approach has been adopted by some of the authorities audited with elements of a management system in place at others.

It was also noted that most laboratories follow documented analytical procedures including quality control protocols. All local authorities audited continue to participate successfully in the EPA intercalibration scheme.

There has also been an improvement in the approach to licencing of discharges under the Water Pollution Acts compared with observations made in audits conducted during the previous reporting period (1998/1999). It is recommended that enforcement of these licences should be reviewed regularly with the inclusion of periodic site audits.

The following is a compilation of other observations noted during individual audits. These observations do not apply to all local authorities or all plants audited but provide a flavour of the types of issues that need to be resolved so that best practice becomes the norm in the operation and management of waste water treatment plants.

- An absence of written procedures for the maintenance and calibration of equipment used at some waste water treatment plants;
- An absence of sampling procedures at some waste water plants audited;
- An absence of a scheduled trade effluent monitoring programme at some local authorities;
- Breaches of discharge licences not pursued by some local authorities.

- Absence of Total Phosphorus and Total Nitrogen monitoring for population equivalent greater than 10,000;
- Grab sampling employed to determine compliance instead of the mandatory flow proportional or time based 24-hour samples;
- Inadequate maintenance of Registers required under the Water Pollution Acts and Use of Sewage Sludge in Agriculture Regulations;
- Inconsistency between the limits set in trade effluent discharge licences and the follow up enforcement monitoring;
- Information on all agglomerations greater than 500 persons not submitted to the EPA;
- Ortho-P determinations used instead of the required Total Phosphorus.

It was also noted at three local authorities that there has been considerable improvement in the implementation of the Regulations and management of the monitoring programme since previous audits by the EPA. In general, the response to the audits by local authority personnel has been very favourable and a positive audit report is seen as formal recognition of improvements made in the implementation of the Regulations. Where it was found that improvements could be made in the implementation of the Regulations, it was felt by some local authority personnel that the results of a formal audit was very valuable in highlighting deficiencies to senior management within the authority.

6. ENVIRONMENTAL INDICATORS

The Agency has included in previous reports a series of environmental indicators to monitor trends in the quality of urban waste water discharges and the reuse and disposal routes of sewage sludges over future years. Table 6-1 presents the indicators and their respective values for 2000/2001 as well as the values for 1994/95, 1996/97 and 1998/99.

The quantity of urban waste water arisings has increased significantly, though much of this is accounted for by improved monitoring at existing plants and more accurate assessments of the population equivalent at new treatment plants. In addition to this the reporting threshold has been reduced to include agglomerations of 500 p.e. There are five agglomerations with a population equivalent greater than 150,000 persons and collectively they represent almost 60% of waste water arisings. The increase in wastewater arisings receiving nutrient reduction recorded in the previous report continues with a further increase of 3%. Trends in sewage sludge reuse and disposal show an increase in disposal to landfill and a significant increase in the use of sewage sludge in agriculture. The primary reason for both these increases is because the dumping of sewage sludge to the marine environment has ceased.

Table 6-1. Environmental Indicators for 1994 – 2001

<i>Urban Waste Water</i>	<i>Value for 1994-'95*</i>	<i>Value for 1996-'97**</i>	<i>Value for 1998-'99***</i>	<i>Value for 2000 -'01***</i>
<i>total p.e. of all discharges</i>	3,992,654	3,913,644	5,101,116	5,493,338
<i>percentage arisings not receiving any form of treatment</i>	41%	39%	29%	23%
<i>percentage arisings receiving preliminary treatment only</i>	6%	7%	7%	7%
<i>percentage arisings receiving primary treatment only</i>	33%	28%	38%	41%
<i>percentage arisings receiving secondary treatment only</i>	18%	22%	21%	21%
<i>percentage arisings receiving nutrient reduction in addition to secondary treatment</i>	2%	4%	5%	8%
<i>percentage arisings discharging to freshwater/estuaries</i>	76%	77%	81%	79%
<i>percentage arisings discharging to coastal waters</i>	24%	23%	19%	21%
<i>percentage discharges from the agglomerations class 500 to 1000 p.e.</i>	-	-	1.9%	1.4%
<i>percentage discharges from the agglomerations class 1,001 to 2,000 p.e.</i>	-	2.0%	2.7%	2.6%
<i>percentage discharges from the agglomerations class 2,001 to 10,000 p.e.</i>	13.3%	14.5%	10.6%	10.4%
<i>percentage discharges from the agglomerations class 10,001 to 15,000 p.e.</i>	4.4%	5.5%	4.7%	3.7%
<i>percentage discharges from the agglomerations class 15,001 to 50,000 p.e.</i>	-	14.6%	13.1%	11.8%
<i>percentage discharges from the agglomerations class 50,001 to 150,000 p.e.</i>	-	14.1%	8.6%	14.1%
<i>percentage discharges from agglomerations above 150,000 p.e.</i>	55%	49.4%	58.5%	56%

Table 6.1: Environmental Indicators for 1994 – 2001 (cont.)

<u>Urban Waste Water</u>	Value for 1994-'95*	Value for 1996-'97**	Value for 1998-'99***	Value for 2000 -'01***
<i>Effluent quality standard compliance rate for plants > 15,000 p.e.²</i>	-	43%	53%	64%
<i>Effluent quality standard compliance rate for plants between 2,000 p.e. and 15,000 p.e.²</i>	-	20%	22%	28%
<i>Effluent quality standard compliance rate for plants less than 2,000 p.e.²</i>	-	23%	18%	18%
<i>Effluent quality standard compliance rate for plants > 10,000 p.e. with nutrient reduction discharging to sensitive areas</i>	-	44%	56%	68%
<u>Sewage Sludge</u>				
<i>tonnes of dry solids produced</i>	28,541	34,484	35,595	33,559
<i>percentage disposed of to landfill/marine/other</i>	42.0/42.7/3.7	43.0/42.0/4.9	44.6/33.1/0.9	53.8/0/1.0
<i>percentage reused in agriculture/forestry/other</i>	11.6/0.0/3.7	9.8/0.0/4.9	23.2/0.0/0.9	45.2/0/1.0
<i>*p.e ≥ 2,000 persons reported ** p.e ≥ 1,000 persons reported *** p.e ≥ 500 persons reported</i>				

² An assessment of compliance is not reported for 1994-1995 due incomplete data reported.

Urban Waste Water Discharges in Ireland:
A Report for the Years 2000 and 2001

7. CONCLUSIONS

This is the fourth report to be prepared on the quality of urban waste water discharges and sewage sludges. The reporting threshold for this report, in common with the last report, is 500 persons equivalent. Previous reports (three in total), reported on population equivalents of greater than 2000 p.e., greater than 1000 p.e. and greater than 500 p.e. respectively.

Previous reports have acknowledged that local authorities are aware of the requirements of the Regulations. The EPA has recommended however, that local authorities focus on the monitoring requirements of both the Urban Waste Water Treatment Regulations and the Use of Sewage Sludge in Agriculture Regulations and ensure that these monitoring requirements are fully complied with. The level of monitoring undertaken by local authorities to comply with the requirements of the Use of Sewage Sludge in Agriculture Regulations continues to be generally inadequate.

The following is a summary of the main findings:

1. Information on discharges from four hundred and twelve agglomerations with a population equivalent equal to or greater than 500 persons was reported to the EPA for 2001. The reporting of discharges with a p.e. between 500 and 2,000 p.e. is considered low and requires further effort by local authorities.
2. Two hundred and sixty of the reported agglomerations had secondary treatment facilities in 2001, treating 28.8% of total wastewater arisings. This compares with 26% for the 1998/1999 reporting period.
3. The largest number of agglomerations (131) fall within the 2,000 – 10,000 population equivalent range though they account for just over 10% of waste water arisings.
4. The five largest agglomerations (based on population equivalent) Ringsend, Cork, North Dublin (Howth), Waterford and Kilkenny account for almost sixty percent of all waste water arisings.
5. The forty areas currently designated as sensitive by the UWWT Regulations receive one hundred and fifty five discharges of greater than 500 p.e. Of these, one hundred and twenty four receive secondary treatment of which twenty seven receive nutrient reduction in addition to secondary treatment.
6. Sampling regimes exist at most secondary waste water treatment plants. In the majority of cases, however, the reference methods for monitoring, as set out in the schedules to the Regulations, are not being rigidly adhered to, particularly the use of grab sampling instead of flow proportional sampling.
7. 16 out of 25 secondary treatment plants serving agglomerations greater than 15,000 p.e. met the effluent quality standards set by the Regulations resulting in a compliance rate of 64% for this class.
8. For plants serving agglomerations greater than 10,000 p.e. and discharging to sensitive areas, 17 out of 25 plants met the standards resulting in a compliance rate of 68%.
9. 26 out of 93 secondary treatment plants serving agglomerations between 2,000 and 15,000 p.e met the effluent quality standards set by the Regulations resulting in a compliance rate of 28% for this class.
10. 24 out of 137 secondary treatment plants serving agglomerations less than 2,000 p.e. met the effluent quality standards set by the Regulations resulting in a compliance rate of 18% for this class.

11. In addition to BOD₅, COD and total suspended solids, total phosphorus is the key emission limit parameter specified in the Regulations for the monitoring of discharges to sensitive freshwaters. There has been a significant increase in monitoring returns of total phosphorus at waste water treatment plants discharging to sensitive areas.
12. Approximately 45% of sludge produced in treatment plants with a p.e. greater than 500 persons is reused in agriculture.
13. Sampling programmes for soil and sludge testing at some local authorities are either non-existent or in need of improvement.

8. Recommendations

Recommendations made throughout the report are summarised in this chapter under the headings of treatment plants and discharges; monitoring and reporting; and sewage sludge. The recommendations are based on an analysis of the urban waste water returns for the year 2000/2001 and audits carried out by the agency during this period. It is considered necessary to repeat the recommendations set out in previous report as it was found that in some cases they were not being implemented.

8.1. TREATMENT PLANTS AND DISCHARGES

1. The management and operation of municipal wastewater treatment plants has changed considerably since previous reports as a result of the NDP and DBO (design build and operate) contracts with a number of independent companies operating waste water treatment plants around the country. It is therefore recommended that local authorities ensure the sampling and analysis carried out at these plants is carried out in accordance with the Regulations.
2. Local authorities should review the operation of all urban waste water treatment plants in their functional areas and develop and implement corrective action programmes for those plants that are failing to meet the effluent quality standards set by the Regulations. Particular priority should be placed on correcting plants whose discharges are causing environmental pollution in the waters to which the effluents discharge.
3. An environmental management systems approach should be adopted to the management and operation of urban waste water treatment plants to ensure the treatment objectives are met. The management system should address:
 - Organisation and responsibilities of personnel involved in operating the treatment plant;
 - Quantification of the environmental effects of the treatment plant;
 - Operational control of the treatment plant;
 - Documentation and maintenance records at the treatment plant;
 - Preventative maintenance;
 - Routine servicing;
 - Emergency response;
 - Equipment replacement;
 - Quantification of inflow to the plant; and
 - Monitoring of outflows.
4. The Regulations require that appropriate treatment be in place by 31 December 2005 for agglomerations with a population equivalent less than 2000 p.e. discharging to freshwaters and estuaries and agglomerations less than 10,000 p.e discharging to coastal waters. In order to determine what appropriate treatment is required the following should be consulted:
 - Freshwater Fish Directive (78/659/EEC) as implemented by S.I. 293 of 1988;
 - Shellfish Directive (79/923/EEC) as implemented by S.I. 200 of 1994;

- Bathing Water Directive (76/160/EEC) as implemented by S.I. 155 of 1992 and S.I. 230 of 1996;
 - Surface Water Directive (75/440/EEC) as implemented by S.I. 294 of 1989;
 - The relevant Water Quality Management Plan;
 - Memorandum No.1: Technical Committee on Effluent and Water Quality Standards;
 - Agency Handbook on Implementation (of the UWWT Regulations) for Sanitary Authorities;
 - Managing Ireland's Rivers and Lakes - A catchment based Strategy against eutrophication; and
 - Statutory environmental standards.
4. With regard to trade effluent entering collection systems, local authorities should ensure that these discharges are licensed and that appropriate conditions are included in the licences (or revised licences) issued in accordance with the Water Pollution Acts such that:
- The operation and performance of the waste water and sludge treatment plants and their operation is not adversely affected;
 - The resultant sludge can be beneficially reused (if required); and
 - The receiving waters are not adversely affected.

The licensing authority should audit against the licence conditions to ensure that all the requirements of the licence are in compliance and where appropriate enforcement action should be initiated.

Where the EPA proposes to grant a licence or revised licence which involves a discharge to sewer, the local authority should ensure that consents under the provisions of section 97 of the EPA Act, 1992, and section 52 of the Waste Management Act, 1996 contain similar conditions.

For additional advice on the licensing of industrial discharges local authorities are advised to consult the 1998 EPA publication on the Characterisation of Industrial Waste Waters (EPA, 1998).

8.2. MONITORING AND REPORTING

1. All sampling should be undertaken by competent personnel and all analyses, where possible, should be carried out by an approved or accredited laboratory. The use of laboratories participating in the EPA intercalibration programme is encouraged.
2. Local authorities should review their monitoring programmes to ensure that they are fully in compliance with the Regulations and that the requisite number of samples are taken.
3. Local authorities should ensure that secondary treatment plants serving a population equivalent greater than 500 should have their waste water treatment discharges sampled at least 6 times per year.
4. Sampling and analyses should be carried out using the methods specified in the Regulations. In particular twenty four hour flow proportional samples should be taken in

order to monitor compliance with the requirements for discharged waste waters as specified in the Regulations.

5. The maximum average weekly BOD₅ load entering a treatment plant should be determined and this figure used to calculate the population equivalent of the plant. Measurement during heavy rain should be excluded when calculating the population equivalent.
6. Notwithstanding the above, monitoring of the influent should be carried out in conjunction with flow measurements on a regular basis to establish the p.e. of the plant and assist in maintaining the plant at optimum operating conditions and to identify potential problems.
7. For agglomerations with treatment plants between 500 – 2,000 p.e. where a local authority is certain that a discharge from the collecting system consists of domestic waste water without admixture of any other type of waste water, the agglomeration load can be calculated using the total population served and estimates of commercial contributions.
8. All plants with a population equivalent greater than 10,000 should implement monitoring programmes for the influent and effluent analysis of total nitrogen and total phosphorus regardless of whether they discharge to sensitive areas or not.
9. Local authorities should ensure that information on **all** urban waste water treatment plants in their functional area serving agglomerations greater than 500 p.e. is returned to the EPA as part of its annual return.
10. There have been significant delays in returns to the EPA by a number of local authorities. This in turn delays the EPA in its work. Local authorities will in future be requested to submit the required information to the EPA on or before 28th February. In future reports, those local authorities that have failed to meet this deadline will be named.

For detailed advice on the sampling and monitoring requirements of the Regulations local authorities are advised to consult the EPA publication, “The Environmental Protection Agency Act, 1992, (Urban Waste Water Treatment) Regulations, 1994: A Handbook on Implementation for Sanitary Authorities”.

8.3. SEWAGE SLUDGE

1. An environmental management systems approach should be taken to the application of treated sewage sludge in agriculture, forestry, peatland and other similar outlets. The management system should address as a minimum:
 - Organisation and responsibilities of personnel involved in producing and reusing the treated sludge;
 - Quantification of the environmental effects of the sludge on the environment (including the soil) where the sludge is reused;
 - Control of the sludge storage, holding and spreading operations;
 - Documentation and maintenance of records;
 - Documentation to ensure compliance with recognised standards. (The Waste Management (Use of Sewage Sludge in Agriculture) Regulations, S.I. No. 148 of 1998 and The Waste Management (Use of Sewage Sludge in Agriculture) (Amended) Regulations, S.I. No. 267 of 2001)
 - Preventative maintenance;
 - Emergency response; and

- A monitoring programme.
2. The quantities of sludge generated at urban waste water treatment plants should be recorded and this data used in the preparation of waste management plans. Where a local authority intends to reuse sludge in agriculture, the requirements of the Waste Management (Use of Sewage Sludge in Agriculture) Regulations, S.I. No. 148 of 1998 and The Waste Management (Use of Sewage Sludge in Agriculture) (Amended) Regulations, S.I. No. 267 of 2001 should be implemented.
 3. The sludge disposal route should be recorded and where sewage sludge is reused in agriculture (and is not injected or otherwise worked into the land) local authorities should ensure that the sludge is treated prior to reuse.
 4. Where sludge is reused in agriculture, the sludge from each waste water treatment plant should be analysed according to the Regulations.
 5. Where sludge from urban waste water treatment plants is reused in agriculture, a detailed analysis of soils should be carried out according to the standards prescribed in the Regulations. Where the limit values in the Regulations pertaining to soils are exceeded the practice of reusing sludge in that area should cease.

Reference List

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- Oireachtas na hÉireann, (1992). Quality of Bathing Water, S.I. 155 of 1992.
- Oireachtas na hÉireann, Local Government (Water Pollution) (Amendment) Act, 1990.
- Oireachtas na hÉireann, (1989). Quality of Surface Water Intended for the Abstraction of Drinking Water, S.I. 294 of 1989
- Oireachtas na hÉireann, (1988). Quality of Salmonid Waters, S.I. 293 of 1988.

Oireachtas na hÉireann, (1988). Quality of Water Intended for Human Consumption, S.I. 81 of 1988.

Oireachtas na hÉireann, Local Government (Water Pollution) Act, 1977.

O' Leary G., Carty G. (1998). Urban Waste Water Discharges in Ireland - *A report for the Years 1996 and 1997*.

O' Leary G., Meaney B., Carty G. (1997). Urban Waste Water Discharges in Ireland - *A report for the Years 1994 and 1995*.

Appendix A: Schedules to the Urban Waste Water Treatment Regulations, 2001

S.I. NO 254 of 2001

**ENVIRONMENTAL PROTECTION AGENCY ACT, 1992
(URBAN WASTE WATER TREATMENT REGULATIONS, 2001)**

First Schedule Collecting Systems

A collection system shall take into account waste water treatment requirements.

The design, construction and maintenance of a collecting system shall be undertaken in accordance with the best technical knowledge not entailing excessive costs, regarding;

- volume and characteristics of urban waste water,
- prevention of leaks,
- limitation of pollution of receiving waters due to storm water overflows.

Second Schedule
Part 1

The values for concentration or for the percentage of reduction shall apply.

Parameters	Concentration	Minimum percentage of reduction ⁽¹⁾	Reference method of measurement
Biochemical oxygen demand (BOD ₅ at 20° C) without nitrification ⁽²⁾	25 mg/l O ₂	70 - 90	Homogenised, unfiltered, undecanted sample. Determination of dissolved oxygen before and after five-day incubation at 20° C ± 1° C, in complete darkness. Addition of a nitrification inhibitor.
Chemical oxygen demand (COD)	125 mg/l O ₂	75	Homogenised, unfiltered, undecanted sample. Potassium dichromate
Total suspended solids	35 mg/l	90	<p>- Filtering of a representative sample through a 0.45µm filter membrane. Drying at 105°C and weighing</p> <p>- Centrifuging of a representative sample (for at least five mins with mean acceleration of 2,800 to 3,200 g), drying at least 105°C and weighing</p>
<p>⁽¹⁾ Reduction in relation to the load of influent.</p> <p>⁽²⁾ The parameter can be replaced by another parameter: total organic carbon (TOC) or total oxygen demand (TOD) if a relationship can be established between BOD₅ and the substitute parameter.</p>			

Part II

Requirements for discharges from urban waste water treatment plants to sensitive area which are subject to eutrophication. One or both parameters may be applied depending on the local situation. The values for concentration or for the percentage shall apply.

Parameters	Concentration	Minimum percentage of reduction ⁽¹⁾	Reference method of measurement
Total phosphorus	2 mg/l P (10,000 - 100,000 p.e.) 1 mg/l P (more than 100,000 p.e.)	80	Molecular absorption spectrophotometry
Total nitrogen ⁽²⁾	15 mg/l N (10,000 - 100,000 p.e.) ⁽³⁾ 10 mg/l N (more than 100,000 p.e.) ⁽³⁾	70 - 80	Molecular absorption spectrophotometry
⁽¹⁾ Reduction in relation to the load of the influent. ⁽²⁾ Total nitrogen means: the sum of total Kjeldahl-nitrogen (organic N + NH ₃), nitrate (NO ₃) - nitrogen and nitrite (NO ₂) - nitrogen. ⁽³⁾ These values for concentration are annual means as referred to in paragraph 4 (c) of the Fifth Schedule. However, the requirements for nitrogen may be checked using daily averages when it is proved, in accordance with paragraph 1 of that Schedule, that the same level of protection is obtained. In this case, the daily average must not exceed 20 mg/l of total nitrogen for all the samples when the temperature from the effluent in the biological reactor is superior or equal to 12°C. The conditions concerning temperature could be replaced by a limitation on the time of operation to take account of regional climatic conditions.			

**Third Schedule
Sensitive Areas**

Part 1.

Receiving water	Extent of Sensitive Area
River Boyne Co. Meath	6.5 km section downstream of sewage treatment plant outfall at Blackcastle, Navan, Co. Meath.
River Camlin Co. Longford	From sewage treatment plant at Longford to entry into the River Shannon.
River Castlebar Co. Mayo	Downstream of sewage treatment plant outfall at Knockthomas to entry into Lough Cullin.
River Liffey	Downstream of Osberstown sewage treatment plant to Leixlip reservoir, Co. Kildare.
River Nenagh Co. Tipperary	Downstream of sewage treatment plant outfall in Nenagh to entry into Lough Derg.
River Tullamore Co. Offaly	0.5 km section downstream of sewage treatment plant outfall in Tullamore.
Lough Derg on the River Shannon	Whole lake.
Lough Leane Co. Kerry	Whole lake.
Lough Oughter Co. Cavan	Whole lake.
Lough Ree on the River Shannon	Whole lake.

Third Schedule
Sensitive Areas
Part 2

Receiving water	Extent of Sensitive Area
River Blackwater (Monaghan)	From the confluence of the River Shambles to Newmills Bridge.
River Brosna	Downstream of Mullingar sewage outfall [opposite intersection of regional road (R400) with N52 south of Mullingar], to Lough Ennell.
River Cavan	From the bridge at Lisdarn downstream of Cavan Town to the Annalee River confluence.
River Proules	Downstream of Carrickmacross sewage outfall, to confluence with the River Glyde.
River Barrow	Downstream of Portarlinton sewage outfall, to Graiguenamanagh Bridge.
River Triogue	Downstream of Portlaoise sewage outfall, to confluence with the River Barrow.
River Nore	Downstream of Kilkenny sewage outfall, to Inistioge Bridge.
River Hind	Downstream of Roscommon Town sewage outfall, to Lough Ree.
River Suir	Downstream of Clonmel sewage outfall, to Coolnamuck Weir.
Little Brosna River	Downstream of Roscrea sewage outfall below its confluence with the Bunow River, to the bridge near Brosna House.
River Blackwater (Munster)	Downstream of Mallow railway bridge, to Ballyduff Bridge.
Lough Ennell	County Westmeath.
Lough Muckno	County Monaghan.
Lough Monalty	County Monaghan.
Broadmeadow Estuary (Inner)	From the bridge west of Lissenhall (Broadmeadow River) to the railway viaduct.

Third Schedule Sensitive Areas

Part 2 (cont.)

Liffey Estuary	From Islandbridge weir to Poolbeg Lighthouse, including the River Tolka basin and South Bull Lagoon.
Slaney Estuary (Upper)	From Enniscorthy railway bridge to Macmine.
Slaney Estuary (Lower)	From Macmine to Drinagh / Big Island.
Barrow Estuary	From the weir at Bahana Wood to New Ross Bridge.
Suir Estuary (Upper)	From Coolnamuck Weir to Mount Congreve.
Bandon Estuary Upper	From Inishannon Bridge to Kinsale Western Bridge.
Bandon Estuary Lower	Downstream of Kinsale Western Bridge, to Money Point.
Lee Estuary Upper (Tralee)	From Ballymullin Bridge to seaward end of Tralee Ship Canal / Annagh Island.
Feale Estuary Upper	Downstream of Finuge Bridge, to Poulnahaha old Railway Bridge.
Cashen / Feale Estuary	Downstream of Poulnahaha old Railway Bridge, to Moneycashen.
Killybegs Harbour	Killybegs Harbour inside Kane's Rock / Carntullagh Head.
Castletown Estuary	From the weir 130 m downstream St. Johns Bridge (Castletown River) to Pile Light
Blackwater Estuary Upper	From Bullsod Island (1 km downstream Lismore Bridge) to Dromana Ferry.
Blackwater Estuary Lower	Downstream of Dromana Ferry, to near East Point, Youghal Harbour.

Fourth Schedule
Industrial Waste Water

Industrial waste water entering collecting systems and urban waste water treatment plants shall be subject to such pre-treatment as is required to:

- protect the health of staff working in collecting systems and treatment plants;
- ensure that collecting systems, waste water treatment plant and associated equipment are not damaged;
- ensure that the operation of a waste water treatment plant and the treatment of sludge is not impeded;
- ensure that the discharges from treatment plants do not adversely affect the environment or prevent receiving waters from complying with other Community Directives;
- ensure that the sludge can be disposed of safely in an environmentally acceptable manner.

Fifth Schedule
Reference methods for emissions and evaluation of results

1. Sanitary authorities shall ensure that a monitoring method is required which corresponds at least with the level of requirements described below.

Alternative methods to those mentioned in paragraphs 2, 3 and 4 may be used provided that it can be demonstrated that equivalent results are obtained.

2. Flow-proportional or time-based 24-hour samples shall be collected at the same well-defined point in the outlet and if necessary in the inlet of the treatment plant, in order to monitor compliance in these regulations.
3. The minimum annual number of samples shall be determined according to the size of the treatment plant and be collected at regular intervals during the year.

Population Equivalent	Number of samples
2,000-9,999	12 samples during the first year. Four samples in subsequent years, if it can be shown that the waste water discharged during the first year complies with the Regulations.; if one sample of the four fails, 12 samples must be taken in the year that follows.
10,000-49,999	12
50,000 or over	24

4. The treated waste water shall be assumed to conform to the relevant parameters if, for each relevant parameter considered individually, samples of the water show that it complies with the relevant parametric value in the following way:
 - (a) for the parameters specified in Part 1 of the second Schedule, a maximum number of samples which are allowed to fail the requirements, expressed in concentrations and/or percentage reductions in Part 1 of the second Schedule, is set out in the Table to this Schedule;
 - (b) for the parameters in Part 1 of the second Schedule expressed in concentrations, the failing samples taken under normal operating conditions must not deviate from the parametric values by more than 100% but, for the parametric value in concentration relating to total suspended solids, deviation of up to 150% may be accepted;
 - (c) for those parameters specified in Part 2 of the second Schedule the annual mean of the samples for each parameter shall conform to the relevant parametric values.
5. Extreme values for the water quality in question shall not be taken into consideration when they are the result of unusual situations such as those due to heavy rain.

Table

Series of samples taken in any one year	Maximum permitted number of samples which fail to conform
4-7	1
8-16	2
17-28	3
29-40	4
41-53	5
54-67	6
68-81	7
82-95	8
96-110	9
111-125	10
126-140	11
141-155	12
156-171	13
172-187	14
188-203	15
204-219	16
220-235	17
236-251	18
252-268	19
269-284	20
285-300	21
301-317	22
318-334	23
335-350	24
351-365	25

Appendix B: The Environmental Protection Agency Act, 1992 (Urban Waste Water Treatment) Regulations, 1994: A Handbook on Implementation for Sanitary Authorities

Recommended Analyses: Non-sensitive Areas

Parameter	INFLUENT	Effluent	RWUS	RWDS	Note(s)
BOD ₅	Yes	Yes	Yes	Yes	-
COD	Yes	Yes	No	[Yes]	a
Total S Solids	[No]	Yes	Yes	[Yes]	b,c

ABBREVIATIONS

RWUS Receiving water above [US] discharge point,

RWDS Receiving water below [DS] discharge point, clear of the mixing zone.

KEY

* With inhibition of nitrification during analysis

[] Denotes a qualified "Yes" or "No".

NOTES

a The COD test is not suited to very clean waters and is not usually carried out on such samples. However, a provision is made in the table for the carrying out of the test on down-stream receiving waters visibly affected by discharge(s).

b In view of the often unpleasant nature of influent samples it is considered that suspended solids measurement need not be mandatory on such samples.

c The measurement of suspended solids in waters of apparent clarity is of little practical value, and it is proposed that their determination be confined to those down-stream samples of receiving water on which it is considered the COD should be determined (see a above).

Recommended Analyses: Sensitive Areas - Rivers

Parameter	INFLUENT	Effluent	RWUS	RWDS	Note(s)
BOD ₅	Yes	Yes	Yes	Yes	-
COD	Yes	Yes	No	[Yes]	a
Total S Solids	[No]	Yes	Yes	[Yes]	
Total Phosphorus	Yes	Yes	Yes	Yes	b,c
Total oxidised Nitrogen	No	Yes	Yes	Yes	d
Total Kjeldhal Nitrogen	Yes	Yes	No	No	d,e
Ammonia	No	No	Yes	Yes	e

ABBREVIATIONS

RWUS Receiving water above [US] discharge point,

RWDS Receiving water below [DS] discharge point, clear of the mixing zone.

KEY

* With inhibition of nitrification during analysis
[] Denotes a qualified "Yes" or "No".

NOTES

- a** The COD test is not suited to very clean waters and is not usually carried out on such samples. However, a provision is made in the table for the carrying out of the test on down-stream receiving waters visibly affected by discharge(s).
- b** In view of the often unpleasant nature of influent samples it is considered that suspended solids measurement need not be mandatory on such samples.
- c** The measurement of suspended solids in waters of apparent clarity is of little practical value, and it is proposed that their determination be confined to those down-stream samples of receiving water on which it is considered the COD should be determined (see a above).
- d** The measurement of nutrients is essential in sensitive areas. Although phosphorus is the key element concerning the eutrophication of fresh waters, nitrogen is very often determined routinely on such waters, hence its recommended inclusion in programmes.
- e** Total Oxidised Nitrogen comprises nitrate and nitrite. The Total Kjeldahl Nitrogen [TKN] determination includes the measurement of ammonia. The measurement of TKN is not particularly suited to unpolluted (or mildly polluted) receiving waters and, accordingly, it is considered that the determination of ammonia instead of TKN on such waters is more practicable.

Recommended Analyses: Sensitive Areas - Lakes

Parameter	INFLUENT	Effluent	LWGA	LWLB	Note(s)
BOD ₅	Yes	Yes	No	No	a
COD	Yes	Yes	No	No	b
Total S Solids	[No]	Yes	No	No	c
Total Phosphorus	Yes	Yes	Yes	Yes	d
Total oxidised Nitrogen	Yes	Yes	Yes	Yes	d
Total Kjeldhal Nitrogen	Yes	Yes	Yes	Yes	d

ABBREVIATIONS

LWGA Lake water in the general area of the discharge

LWLB Lake water in the general body of the lake, in representative area(s) away from immediate influence of discharge.

KEY

*With inhibition of nitrification during analysis
[] Denotes a qualified "Yes" or "No".

NOTES

- a** The BOD test is not a routine determination on lake waters.
- b** The COD test is rarely if ever carried out on lake water samples.
- c** The test for Suspended Solids would be relevant only in cases of significant algal presence, for which the determination of chlorophyll is a more meaningful routine test.
- d** These are the key tests on lake water

Appendix C: Part I - V from Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998

S.I. NO 148 OF 1998

Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998

SCHEDULE

Part I

Maximum Values for Concentration of Heavy Metals in Soil

Parameters	Maximum Values*	Expression of Results
Cadmium	1	mg/kg of dry matter in a representative sample as defined in Part III of this schedule of soil with a pH of 5-7
Copper	50	
Nickel	30	
Lead	50	
Zinc	150	
Mercury	1	

*Where the pH of the soil is consistently higher than 7, the values may be exceeded by not more than 50%, provided that there is no resulting hazard to human health, the environment, or in particular, ground water.

Part II

Limit Values for Amounts of Heavy Metals Which May be Added Annually to Agricultural Land, Based on a Ten Year Average.

Heavy Metal	Limit Value (kilograms per Hectare per year)
Cadmium	0.05
Copper	7.50
Nickel	3.00
Lead	4.00
Zinc	7.5
Mercury	0.10
Chromium	3.50

Part III

Conditions Applying to soil sampling and analysis

- A soil analysis shall cover:-
 - the parameters included in part 1 of the schedule to this schedule, and
 - pH.
- Samples taken for analysis shall be representative of the soil on the site and shall be made up by mixing together twenty five core samples taken over each area of five hectares or less used for the same agricultural purpose.
- Except where sludge is used on grassland, samples shall be taken to a depth of twenty five centimetres or the depth of the surface soil if less, provided that such lesser sampling depth is at least ten centimetres.

(b) where sludge is used on grassland, samples shall be taken to a depth of not more than six centimetres.

4. Where sludge is regularly used in agriculture soil shall be analysed at a minimum frequency of once in ten years.

Part IV

Conditions Applying to Sludge Sampling and Analysis

1. A sludge analysis shall cover:-
 - (a) the parameters included in part II of this Schedule, and
 - (b) The following parameters:
 - ⇒ dry matter, organic matter,
 - ⇒ pH,
 - ⇒ nitrogen and phosphorus.
2. Samples of sludge for analysis shall be representative of the sludge production and shall be taken before to the user.
3. Subject to sub-paragraph (a) and (b), sludge other than sludge referred to in paragraph 6 shall be analysed at least once every six months
 - (a) The frequency of sludge analyses may be reduced to once a year where the results of analyses do not vary significantly over a full year.
 - (b) The frequency of sludge analyses shall be increased where changes occur in the characteristics of the waste water being treated.
4. Where it is evident, on the basis of analyses, that copper and zinc are either not present or are present only in negligible quantities in the waste water treated by the sewage treatment plant, the frequency of analyses for those parameters may be reduced to once in three years.
5. A person, other than a local authority, producing sludge for use in agriculture shall not reduce the frequency of analyses under conditions 3 or 4 without the prior approval of the local authority in whose functional area the sludge is produced.
6. In the case of sludge from a septic tank or sewage treatment plant referred to in article 9:-
 - (a) a sludge analysis shall be carried out within six months after the commencement of the use of such sludge in agriculture,
 - (b) the frequency of the sludge analyses may be reduced to not less than once in five years provided that, in the initial analysis, the values for the concentrations of heavy metals are lower than the values shown in Part II of this schedule, and there is no change in the characteristics of the waste water being treated.

Part V

Methods of Analysis

1. Analysis for heavy metals shall be carried out following strong acid digestion.

2. The reference method of analysis shall be atomic absorption spectrometry.

The limit of detection for each metal shall be no greater than 10 % of the maximum value for that metal.

Appendix D: List of Agglomerations, Discharge Locations and Level of Treatment in 2001

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
Carlow	Borris	1500	Freshwater(River)	Yes	Secondary treatment only
	Carlow	31500	Freshwater(River)	Yes	Secondary treatment only
	Hacketstown	750	Freshwater(River)	Yes	Secondary treatment only
	Leighinbridge	700	Freshwater(River)	Yes	Secondary treatment only
	Muinebheag	4000	Freshwater(River)	Yes	Secondary treatment only
	Rathvilly	520	Freshwater(River)	Yes	Secondary treatment only
	Tinnahinch	700	Freshwater(River)	Yes	Secondary treatment only
	Tullow	3900	Freshwater(River)	Yes	Secondary treatment only
Cavan	Bailieborough	1900	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Ballyconnell	800	Freshwater(River)	No	Secondary treatment with nutrient reduction
	Ballyjamesduff	1400	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Belturbet	1900	Freshwater(River)	No	Primary treatment only
	Cavan	13850	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Cootehill	1671	Freshwater(Lake)	No	Secondary treatment with nutrient reduction
	Killeshandra	530	Freshwater(Lake)	No	Secondary treatment only
	Kingscourt	1950	Freshwater(River)	No	Secondary treatment only
Clare	Virginia	925	Freshwater(Lake)	Yes	Secondary treatment with nutrient reduction
	Clarecastle	2500	Estuarine	No	None
	Ennis North	17000	Freshwater(River)	No	Secondary treatment only
	Ennis South	4000	Freshwater(River)	No	Secondary treatment only
	Ennistymon	2000	Freshwater(River)	No	Secondary treatment only
	Inagh	500	Freshwater(River)	No	Secondary treatment only
	Kilkee	1330	Coastal Water	No	None
	Killaloe	1493	Freshwater(River)	No	Secondary treatment only
	Kilmihil	640	Freshwater(River)	No	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
	Kilrush	2600	Coastal Water	No	None
	Lahinch	8400	Freshwater(River)	No	Secondary treatment only
	Lisdoonvarna	1000	Freshwater(River)	No	Secondary treatment only
	Milltown/Malbay	1360	Freshwater(River)	No	Secondary treatment only
	Newmarket on Fergus	1940	Freshwater(Lake)	No	Secondary treatment only
	Quin	600	Freshwater(River)	No	Secondary treatment only
	Scarriff	1300	Freshwater(River)	Yes	Primary treatment only
	Shannon Town	12500	Estuarine	No	Secondary treatment only
	Shannonbanks	1000	Freshwater(River)	No	Primary treatment only
	Sixmilebridge	1500	Freshwater(River)	No	Secondary treatment only
	Tulla	720	Freshwater(River)	No	Secondary treatment only
<i>Cork City</i>	Cork city	328000	Estuarine	No	None
<i>Cork (North)</i>	Boherbue	600	Freshwater(River)	No	Secondary treatment only
	Buttevant	1161	Freshwater(River)	No	Secondary treatment only
	Castletownroche	800	Freshwater(River)	No	Preliminary treatment only
	Charleville	5248	Freshwater(River)	No	Secondary treatment only
	Doneraile	920	Freshwater(River)	No	Secondary treatment only
	Dromahane	686	Freshwater(River)	No	Preliminary treatment only
	Fermoy	20769	Freshwater(River)	Yes	Secondary treatment only
	Kanturk	1660	Freshwater(River)	Yes	Secondary treatment only
	Mallow	15406	Freshwater(River)	Yes	Secondary treatment only
	Millstreet	1600	Freshwater(River)	Yes	Secondary treatment only
	Mitchelstown	5797	Freshwater(River)	Yes	Secondary treatment only
	Newmarket	1000	Freshwater(River)	Yes	Secondary treatment only
<i>Cork (South)</i>	Ballincollig	16000	Freshwater(River)	No	Secondary treatment only
	Ballymakeera	660	Freshwater(River)	No	Primary treatment only
	Bandon	10200	Freshwater(River)	Yes	Secondary treatment only
	Blarney	6500	Freshwater(River)	No	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
<i>Cork (West)</i>	Carrigaline	12000	Estuarine	No	None
	Carrigrohane	750	Freshwater(River)	No	Secondary treatment only
	Carrigtohill	5500	Estuarine	No	Secondary treatment only
	Castlemartyr	690	Freshwater(River)	No	Secondary treatment only
	Cloughroe	630	Freshwater(River)	No	Secondary treatment only
	Cloyne	610	Freshwater(River)	No	Secondary treatment only
	Coachford	620	Freshwater(Lake)	No	Primary treatment only
	Cobh	10000	Coastal Water	No	None
	Crosshaven	2000	Coastal Water	No	Preliminary treatment only
	Glanmire/ Riverstown/L. Island	10000	Estuarine	No	Preliminary treatment only
	Innishannon	540	Freshwater(River)	Yes	Primary treatment only
	Killeagh	520	Freshwater(River)	No	Primary treatment only
	Kinsale	5000	Estuarine	No	Preliminary treatment only
	Macroom	4300	Freshwater(River)	No	Secondary treatment only
	Midleton	10000	Estuarine	No	Secondary treatment only
	Passage/Monkstown	5000	Estuarine	No	None
	Tramore River Valley	37000	Estuarine	No	None
	Youghal	8000	Estuarine	No	None
	Baltimore	1150	Coastal Water	No	Primary treatment only
	Bantry	2700	Coastal Water	No	None
	Castletownbere	1100	Coastal Water	No	None
	Clonakilty	15000	Estuarine	No	Secondary treatment only
	Dunmanway	1500	Freshwater(River)	Yes	Secondary treatment only
<i>Donegal</i>	Rosscarbery/ Owenahincha	2500	Coastal Water	No	Primary treatment only
	Schull	1100	Coastal Water	No	Primary treatment only
	Skibbereen	3500	Estuarine	No	None
	Ardara	1900	Freshwater(River)	No	Primary treatment only
	Ballybofey/ Stranorlar	5100	Freshwater(River)	No	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
	Ballyliffen	1000	Freshwater(River)	No	Secondary treatment only
	Ballyshannon	3000	Estuarine	No	Primary treatment only
	Buncrana	5500	Coastal Water	No	Primary treatment only
	Bundoran	9000	Coastal Water	No	Preliminary treatment only
	Carndonagh	3000	Freshwater(River)	No	Primary treatment only
	Carrigart	1500	Estuarine	No	Primary treatment only
	Castlefinn	1000	Freshwater(River)	No	Primary treatment only
	Convoy	1500	Freshwater(River)	No	Primary treatment only
	Donegal Town	5800	Freshwater(River)	No	Secondary treatment only
	Downings	1000	Coastal Water	No	Primary treatment only
	Dunfanaghy/ Portnablagh	2000	Coastal Water	No	Primary treatment only
	Dungloe	2000	Freshwater(River)	No	Primary treatment only
	Dunkineeley	1000	Coastal Water	No	Primary treatment only
	Falcarragh	2000	Estuarine	No	Primary treatment only
	Glenties	1000	Freshwater(River)	No	Primary treatment only
	Kilcar	1000	Coastal Water	No	Preliminary treatment only
	Killybegs	4000	Coastal Water	No	Preliminary treatment only
	Kilmacrennan	500	Freshwater(River)	No	Secondary treatment only
	Letterkenny	73650	Estuarine	No	Secondary treatment only
	Lifford	1550	Freshwater(River)	No	Primary treatment only
	Milford	2000	Freshwater(River)	No	Secondary treatment only
	Moville	2000	Estuarine	No	Preliminary treatment only
	Newtowncunningham	700	Freshwater(River)	No	Secondary treatment only
	Ramelton	1000	Estuarine	No	Primary treatment only
	Raphoe	2000	Freshwater(River)	No	Secondary treatment only
	Rathmullan	2000	Estuarine	No	Primary treatment only
Dublin	North Dublin	578823	Estuarine	No	None
	Ringsend	2008798	Estuarine	Yes	Primary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive</i> <i>*</i>	<i>Present Treatment</i>
<i>Dun Laoghaire</i>	Coliemore	1000	Coastal Water	No	None
	Corke Abbey	2000	Coastal Water	No	Secondary treatment only
	Shanganagh	65700	Coastal Water	No	Preliminary treatment only
<i>Fingal</i>	Balbriggan	11201	Coastal Water	No	None
	Blanchardstown/ Castleknock	96637	Estuarine	No	Primary treatment only
	Howth	45684	Coastal Water	No	None
	Loughshinny	707	Coastal Water	No	Primary treatment only
	Lusk	2856	Estuarine	No	Primary treatment only
	Malahide	18597	Estuarine	Yes	Secondary treatment only
	Portrane	8546	Coastal Water	Yes	Secondary treatment only
	Rush	7731	Coastal Water	No	None
	Skerries	10380	Coastal Water	No	Primary treatment only
	Swords	36159	Coastal Water	Yes	Secondary treatment only
	Toberburr	640	Freshwater(River)	Yes	Secondary treatment only
<i>Galway City</i>	Galway	73000	Coastal Water	No	None
<i>Galway</i>	Athenry	4400	Freshwater(River)	No	Secondary treatment only
	Ballinasloe	9720	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Ballygar	900	Freshwater(River)	Yes	Secondary treatment only
	Clifden	2300	Estuarine	No	Primary treatment only
	Dunmore	900	Freshwater(River)	No	Primary treatment only
	Eyrecourt	720	Freshwater(River)	Yes	Primary treatment only
	Glenamaddy	750	Freshwater(Lake)	No	Primary treatment only
	Gort	3500	Freshwater(River)	No	Secondary treatment only
	Headford	1230	Freshwater(River)	No	Secondary treatment only
	Killimor	520	Freshwater(River)	Yes	Secondary treatment only
	Loughrea	5630	Freshwater(River)	No	Secondary treatment only
	Mountbellew	1000	Freshwater(River)	Yes	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
<i>Kerry</i>	Moycullen	850	Freshwater(River)	No	Secondary treatment only
	Oughterard	1360	Freshwater(River)	No	Secondary treatment only
	Portumna	2572	Freshwater(Lake)	Yes	Primary treatment only
	Tuam	13000	Freshwater(River)	No	Secondary treatment with nutrient reduction
	Ardfert	1046	Freshwater(River)	No	Secondary treatment only
	Ballybunion	5203	Estuarine	Yes	Secondary treatment only
	Ballyduff	822	Freshwater(River)	Yes	Primary treatment only
	Ballyferriter	544	Estuarine	No	Primary treatment only
	Ballylongford	909	Estuarine	No	Primary treatment only
	Cahersiveen	4502	Coastal Water	No	Secondary treatment only
	Castleisland	5750	Freshwater(River)	No	Secondary treatment only
	Dingle	8050	Estuarine	No	Secondary treatment only
	Fenit	956	Coastal Water	No	Primary treatment only
	Glenbeigh	1947	Freshwater(Lake)	No	Primary treatment only
	Kenmare	6772	Freshwater(River)	No	Secondary treatment only
	Killarney	34664	Freshwater(Lake)	Yes	Secondary treatment with nutrient reduction
	Killorglin	9807	Freshwater(River)	No	Secondary treatment only
	Listowel	5519	Freshwater(River)	Yes	Secondary treatment only
	Rathmore	1200	Freshwater(River)	No	Secondary treatment only
	Sneem	927	Estuarine	No	Primary treatment only
<i>Kildare</i>	Tarbert	1401	Estuarine	No	Primary treatment only
	Tralee	34400	Coastal Water	No	Secondary treatment only
	Waterville	2000	Coastal Water	No	Primary treatment only
	Athy	9483	Freshwater(River)	Yes	Secondary treatment only
	Ballymore Eustace	2689	Freshwater(River)	Yes	Primary treatment only
	Brownstown (Curragh Camp)	1193	Freshwater(Lake)	No	Primary treatment only
	Castledermot	615	Freshwater(River)	Yes	Primary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
<i>Kilkenny</i>	Coill Dubh	800	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Derrinturn	500	Freshwater(River)	No	Secondary treatment only
	Kilcullen	500	Freshwater(River)	Yes	Primary treatment only
	Kildare Town	3254	Freshwater(River)	No	Secondary treatment only
	Kilmeague	700	Freshwater(River)	No	Secondary treatment only
	Leixlip	76648	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Monasterevin	1982	Freshwater(River)	Yes	Primary treatment only
	Nurney	500	Freshwater(River)	Yes	Secondary treatment only
	Osberstown	66214	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Prosperous	1000	Freshwater(River)	No	Secondary treatment only
	Rathangan	2000	Freshwater(River)	No	Secondary treatment only
	Suncroft	500	Freshwater(River)	Yes	Primary treatment only
	Abbey Park	580	Estuarine	No	Primary treatment only
	Ballyhale-Knocktopher	500	Freshwater(River)	Yes	Primary treatment only
	Ballyragget	760	Freshwater(River)	Yes	Primary treatment only
	Bennettsbridge	525	Freshwater(River)	Yes	Primary treatment only
	Callan	2500	Freshwater(River)	Yes	Secondary treatment only
	Castlecomer	1300	Freshwater(River)	Yes	Secondary treatment only
	Clogh - Moneenroe	700	Freshwater(River)	Yes	Secondary treatment only
	Freshford	900	Freshwater(River)	Yes	Primary treatment only
	Gowran	600	Freshwater(River)	No	None
<i>Kilkenny</i>	Graignamanagh	1100	Freshwater(River)	Yes	Primary treatment only
	Kilkenny City and Environs	110000	Freshwater(River)	Yes	Secondary treatment only
	Mooncoin	750	Estuarine	Yes	Primary treatment only
	Piltown	900	Estuarine	Yes	Secondary treatment only
	Stonyford	500	Freshwater(River)	No	None
	Thomastown	2200	Freshwater(River)	Yes	Primary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
<i>Laois</i>	Urlingford	1000	Freshwater(River)	Yes	Primary treatment only
	Abbeyleix	2172	Freshwater(River)	Yes	Secondary treatment only
	Durrow	860	Freshwater(River)	Yes	Primary treatment only
	Mountmellick	4500	Freshwater(River)	Yes	Secondary treatment only
	Mountrath	1964	Freshwater(River)	Yes	Secondary treatment only
	Portarlinton	5000	Freshwater(River)	Yes	Secondary treatment only
	Portlaoise	18000	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Rathdowney	1668	Freshwater(River)	Yes	Secondary treatment only
<i>Leitrim</i>	Stradbally	2172	Freshwater(River)	Yes	Secondary treatment only
	Ballinamore	1425	Freshwater(River)	No	Secondary treatment with nutrient reduction
	Carrick on Shannon	3200	Freshwater(River)	Yes	Secondary treatment only
	Drumshanbo	1160	Freshwater(Lake)	Yes	Secondary treatment only
	Manorhamilton	2400	Freshwater(River)	No	Secondary treatment only
<i>Limerick city</i>	Mohill	2000	Freshwater(River)	No	Secondary treatment only
	Limerick	60000	Estuarine	No	None
	Abbeyfeale	1500	Freshwater(River)	No	Secondary treatment only
	Adare	1600	Estuarine	No	Primary treatment only
	Askeaton	1024	Estuarine	No	Primary treatment only
	Athea	592	Freshwater(River)	No	Secondary treatment only
	Ballykeeffe	25500	Estuarine	No	Preliminary treatment only
	Bruff	1200	Freshwater(River)	No	Secondary treatment only
	Cahercomlish	800	Freshwater(River)	No	Secondary treatment only
	Caherdavin	5600	Estuarine	No	Primary treatment only
	Cappamore	860	Freshwater(River)	No	Secondary treatment only
	Castleconnell	1300	Freshwater(River)	No	Secondary treatment only
	Castletroy	13000	Freshwater(River)	No	Secondary treatment only
	Croom	1200	Freshwater(River)	No	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive *</i>	<i>Present Treatment</i>
	Doon	700	Freshwater(River)	No	Secondary treatment only
	Dromcollagher	500	Freshwater(River)	No	Secondary treatment only
	Glin	1386	Estuarine	No	Preliminary treatment only
	Hospital	1000	Freshwater(River)	No	Secondary treatment only
	Kilfinnane	900	Estuarine	No	Secondary treatment only
	Kilmallock	2400	Freshwater(River)	No	Secondary treatment only
	Murroe	500	Freshwater(River)	No	Secondary treatment only
	Newcastle West	6100	Freshwater(River)	No	Secondary treatment with nutrient reduction
	Oola	500	Freshwater(River)	No	Secondary treatment only
	Pallaskenry	550	Estuarine	No	Primary treatment only
<i>Longford</i>	Patrickswell	1500	Freshwater(River)	No	Secondary treatment only
	Rathkeale	2000	Freshwater(River)	No	Secondary treatment only
	Ballymahon	1200	Freshwater(River)	Yes	Primary treatment only
	Drumlish	1500	Freshwater(River)	Yes	Secondary treatment only
	Edgeworthstown	3000	Freshwater(River)	Yes	Secondary treatment only
	Granard	3000	Freshwater(River)	Yes	Secondary treatment only
	Lanesboro	1000	Freshwater(River)	Yes	Primary treatment only
	Longford	16000	Freshwater(River)	Yes	Secondary treatment only
	Newtownforbes	1000	Freshwater(River)	Yes	Secondary treatment only
<i>Louth</i>	Ardee	4785	Freshwater(River)	No	Secondary treatment only
	Blackrock	4000	Estuarine	No	Secondary treatment only
	Carlingford	600	Coastal Water	No	Secondary treatment only
	Castlebellingham	1000	Freshwater(River)	No	Secondary treatment only
	Clogherhead	1300	Coastal Water	No	Secondary treatment only
	Drogheda	60000	Estuarine	No	None
	Dromiskin	1200	Freshwater(River)	No	Secondary treatment only
	Dundalk	95000	Estuarine	No	None
	Dunleer	1200	Freshwater(River)	No	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
<i>Mayo</i>	Louth Village	550	Freshwater(River)	No	Secondary treatment only
	Tullyallen	500	Freshwater(River)	No	Secondary treatment only
	Achill Island Central	3000	Coastal Water	No	Secondary treatment only
	Achill Sound	800	Coastal Water	No	None
	Ballina	13000	Estuarine	No	Secondary treatment only
	Ballindine	500	Freshwater(River)	No	Secondary treatment only
	Ballinrobe	5000	Freshwater(River)	No	Secondary treatment with nutrient reduction
	Ballyhaunis	2000	Freshwater(River)	No	Primary treatment only
	Bangor Erris	1000	Freshwater(River)	No	Secondary treatment only
	Belmullet	2000	Coastal Water	No	None
	Castlebar	18500	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Charlestown	1100	Freshwater(River)	No	Secondary treatment only
	Claremorris	4000	Freshwater(Lake)	No	Secondary treatment only
	Cong	1400	Freshwater(Lake)	No	Secondary treatment only
	Crossmolina	2500	Freshwater(River)	No	Secondary treatment only
	Doogort	500	Coastal Water	No	None
	Foxford	1800	Freshwater(River)	No	Secondary treatment only
	Kilkelly	800	Freshwater(River)	No	Secondary treatment only
	Killala	1500	Coastal Water	No	None
	Kiltimagh	2000	Freshwater(River)	No	Primary treatment only
<i>Meath</i>	Knock	2000	Freshwater(River)	No	Secondary treatment only
	Louisborough	550	Freshwater(River)	No	Primary treatment only
	Mallaranny	600	Coastal Water	No	Secondary treatment only
	Newport	850	Estuarine	No	Primary treatment only
	Swinford	3000	Freshwater(River)	No	Secondary treatment with nutrient reduction
	Westport	12000	Coastal Water	No	None
	Ashbourne	7500	Freshwater(River)	Yes	Primary treatment only
	Athboy	2500	Freshwater(River)	Yes	Secondary treatment only
	Ballivor	500	Freshwater(River)	Yes	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
<i>Monaghan</i>	Donore	500	Freshwater(River)	No	Secondary treatment only
	Drumconrath	500	Freshwater(River)	No	Secondary treatment only
	Duleek	2500	Freshwater(River)	No	Secondary treatment only
	Dunshaughlin	3300	Freshwater(River)	Yes	Secondary treatment only
	Enfield	1200	Freshwater(River)	Yes	Secondary treatment only
	Julianstown	500	Freshwater(River)	No	Secondary treatment only
	Kells	5500	Freshwater(River)	Kells	Secondary treatment only
	Laytown	2500	Estuarine	No	Secondary treatment only
	Longwood	700	Freshwater(River)	Yes	Secondary treatment only
	Mornington	6000	Coastal Water	No	Preliminary treatment only
	Navan	18000	Freshwater(River)	Yes	Secondary treatment only
	Oldcastle	1400	Freshwater(River)	Yes	Secondary treatment only
	Ratoath	2500	Freshwater(River)	Yes	Secondary treatment only
	Slane	1400	Freshwater(River)	No	Secondary treatment only
	Summerhill	600	Freshwater(River)	Yes	Secondary treatment only
	Trim	7000	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Ballybay	6250	Freshwater(River)	No	Secondary treatment only
	Carrickmacross	18900	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Castleblayney	8330	Freshwater(Lake)	Yes	Secondary treatment with nutrient reduction
	Clones	7616	Freshwater(River)	No	Secondary treatment only
<i>Offaly</i>	Emyvale	2362	Freshwater(River)	No	Secondary treatment only
	Glaslough	640	Freshwater(River)	No	Secondary treatment only
	Inniskeen	640	Freshwater(River)	Yes	Secondary treatment only
	Monaghan	27283	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Scotstown	917	Freshwater(River)	Yes	Secondary treatment only
<i>Offaly</i>	Smithboro	1466	Freshwater(River)	No	Secondary treatment only
	Banagher	1500	Freshwater(River)	Yes	Secondary treatment only
	Birr	8000	Freshwater(River)	Yes	Secondary treatment with nutrient reduction

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
	Clara	2800	Freshwater(River)	Yes	Primary treatment only
	Cloghan	550	Freshwater(River)	Yes	Secondary treatment only
	Daingean	833	Freshwater(River)	No	Secondary treatment only
	Edenderry	6130	Freshwater(River)	Yes	Secondary treatment only
	Ferbane	1616	Freshwater(River)	Yes	Primary treatment only
	Kilcormac	1450	Freshwater(River)	Yes	Secondary treatment only
	Rhode	533	Freshwater(River)	No	Primary treatment only
	Tullamore	15833	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
<i>Roscommon</i>	Ballaghaderreen	2100	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Boyle	6593	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Castlerea	3411	Freshwater(River)	Yes	Secondary treatment only
	Monksland	8139	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Roscommon	14276	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
<i>Sligo</i>	Ballisadare	2000	Estuarine	No	None
	Ballymote	2000	Freshwater(River)	No	Secondary treatment only
	Collooney	850	Freshwater(River)	No	Secondary treatment only
	Enniscrone	3000	Coastal Water	No	Secondary treatment only
	Gurteen	535	Freshwater(River)	No	Secondary treatment only
	Rosses Point	1500	Coastal Water	No	Primary treatment only
	Sligo	20000	Estuarine	No	None
	Strandhill	1500	Coastal Water	No	Secondary treatment only
	Tubbercurry	3000	Freshwater(River)	No	Secondary treatment only
<i>South Dublin</i>	Newcastle	1200	Freshwater(River)	Yes	Secondary treatment only
	Saggart	2404	Freshwater(River)	Yes	Secondary treatment only
<i>Tipperary North</i>	Ballina	2500	Freshwater(Lake)	Yes	Secondary treatment with nutrient reduction
	Borrisokane	700	Freshwater(River)	Yes	Secondary treatment only
	Borrisoleigh	1000	Freshwater(River)	Yes	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
<i>Tipperary South</i>	Holycross	500	Freshwater(River)	Yes	Secondary treatment only
	Littleton	700	Freshwater(River)	Yes	Secondary treatment only
	Nenagh	18000	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Newport	700	Freshwater(River)	No	Secondary treatment only
	Roscrea	14000	Freshwater(River)	Yes	Secondary treatment only
	Templemore	5000	Freshwater(River)	Yes	Primary treatment only
	Thurles	10600	Freshwater(River)	Yes	Secondary treatment only
	Twomile Borris	600	Freshwater(River)	No	Primary treatment only
	Ardfinnan	572	Freshwater(River)	Yes	Primary treatment only
	Cahir	3000	Freshwater(River)	Yes	Secondary treatment only
	Cappawhite	533	Freshwater(River)	Yes	Primary treatment only
	Carrick-on-Suir	6000	Freshwater(River)	Yes	Preliminary treatment only
	Cashel	2280	Freshwater(River)	Yes	Secondary treatment only
	Clonmel	40000	Freshwater(River)	Yes	Secondary treatment only
<i>Waterford City</i>	Fethard	1920	Freshwater(River)	Yes	Secondary treatment only
	Killenaule	864	Freshwater(River)	Yes	Secondary treatment only
	Tipperary	4750	Freshwater(River)	Yes	Secondary treatment only
	Viewmount	3500	Estuarine	No	Primary treatment only
	Waterford city	154000	Estuarine	No	Preliminary treatment only
<i>Waterford</i>	Williamstown	1100	Estuarine	No	Primary treatment only
	Ardmore	500	Coastal Water	No	None
	Cappoquin	950	Freshwater(River)	No	None
	Dungarvan	10000	Estuarine	No	None
	Dunmore East	1600	Coastal Water	No	None
	Kilmacthomas	600	Freshwater(River)	No	None
	Lismore	1000	Freshwater(River)	No	Secondary treatment only
	Portlaw	1250	Freshwater(River)	No	Secondary treatment only
	Ring/ Helvick/Ballinagoul	600	Coastal Water	No	None
	Tallow	1450	Freshwater(River)	No	None

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
Westmeath	Tramore	15300	Coastal Water	No	None
	Athlone	18000	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Ballynacarrigy	500	Freshwater(River)	No	Secondary treatment only
	Castlepollard	1500	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Clonmellon	500	Freshwater(River)	No	Secondary treatment only
	Delvin	600	Freshwater(River)	Yes	Secondary treatment only
	Kilbeggan	2000	Freshwater(River)	Yes	Secondary treatment only
	Killucan	500	Freshwater(River)	Yes	Secondary treatment only
	Kinnegad	2000	Freshwater(River)	Yes	Secondary treatment only
	Moate	2500	Freshwater(River)	Yes	Secondary treatment only
Wexford	Mullingar	19000	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Rochfortbridge	1500	Freshwater(River)	No	Secondary treatment only
	Tyrellspass	500	Freshwater(River)	Yes	Secondary treatment only
	Adamstown	535	Freshwater(River)	No	Primary treatment only
	Blackwater	1000	Freshwater(River)	No	Secondary treatment only
	Bridgetown	500	Freshwater(River)	No	Secondary treatment only
	Bunclody	1500	Freshwater(River)	Yes	Primary treatment only
	Campile	500	Estuarine	No	Primary treatment only
	Castlebridge	1200	Estuarine	Yes	Secondary treatment only
	Clonroche	650	Freshwater(River)	No	Primary treatment only
	Courtown/ Riverchapel	9000	Coastal Water	No	Primary treatment only
	Duncannon	600	Estuarine	No	None
	Enniscorthy	8500	Estuarine	Yes	Secondary treatment only
	Ferns	1100	Freshwater(River)	No	Secondary treatment only
	Fethard-on-Sea	1000	Estuarine	No	Primary treatment only
	Gorey	6000	Freshwater(River)	No	Secondary treatment only
	Kilmore Quay	2000	Coastal	No	None
	Kilmuckridge	800	Freshwater(River)	No	Secondary treatment only

<i>Authority</i>	<i>Agglomeration</i>	<i>PE</i>	<i>Discharging to</i>	<i>Sensitive*</i>	<i>Present Treatment</i>
Wicklow	Morriscastle	1800	Coastal	No	None
	New Ross	6000	Estuarine	No	None
	Piercetown	600	Freshwater(River)	Yes	Secondary treatment with nutrient reduction
	Rosslare Harbour	3500	Coastal Water	No	Preliminary treatment only
	Rosslare Strand	5000	Coastal Water	No	Primary treatment only
	Taghmon	800	Freshwater(River)	No	Secondary treatment only
	Wexford town	16000	Estuarine	No	None
	Arklow	15000	Freshwater(River)	No	None
	Ashford	1000	Freshwater(River)	No	Secondary treatment only
	Aughrim	750	Freshwater(River)	No	Primary treatment only
	Avoca	500	Freshwater(River)	No	Primary treatment only
	Baltinglass	3000	Freshwater(River)	Yes	Secondary treatment only
	Blessington	1900	Freshwater(Lake)	No	Secondary treatment only
	Bray	40000	Coastal Water	No	Preliminary treatment only
	Carnew	1200	Freshwater(River)	No	Secondary treatment only
	Dunlavin/Milltown	500	Freshwater(River)	No	Secondary treatment only
	Enniskerry	1800	Freshwater(River)	No	Secondary treatment only
	Greystones	13000	Coastal Water	No	Secondary treatment only
	Kilcoole	2400	Freshwater(River)	No	Secondary treatment only
	Kilpedder	600	Freshwater(River)	No	Secondary treatment only
	Newcastle	1000	Freshwater(River)	No	Secondary treatment only
	Newtownmountkennedy	2500	Freshwater(River)	No	Primary treatment only
	Rathdrum	1500	Freshwater(River)	No	Primary treatment only
	Rathnew	1530	Freshwater(River)	No	Primary treatment only
	Tinahely	900	Freshwater(River)	No	Primary treatment only
	Wicklow	8500	Coastal Water	No	Preliminary treatment only

* The outflow discharges to sensitive area or the catchment of a sensitive area

APPENDIX E1: EFFLUENT QUALITY FROM SECONDARY WASTEWATER TREATMENT PLANTS IN 2000

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Carlow									
From 500 to 999 P.E.									
Rathvilly	2	2	1	3	3	2	2	1	0
Leighinbridge	1	1	1	2	2	1	2	2	2
Hacketstown	1	1	1	2	1	1	2	1	1
Borris	4	1	0	5	1	0	4	0	0
Tinnahinch	2	0	0	3	0	0	2	1	0
From 2,000 to 10,000 P.E.									
Muinebheag	3	1	0	4	0	0	3	0	0
Tulow	4	0	0	3	0	0	4	0	0
From 15,000 to 50,000 P.E.									
Carlow	8	1	1	9	1	0	9	1	1
Cavan									
From 500 to 999 P.E.									
Ballyconnell	1	0	0	1	0	0	1	0	0
Virginia	0	0	0	1	0	0	1	0	0
From 1,000 to 1,999 P.E.									
Bailieborough	4	0	0	4	0	0	4	0	0
Ballyjamesduff	3	0	0	3	0	0	3	0	0
Cootehill	1	1	1	1	1	0	1	0	0
Kingscourt	4	0	0	5	0	0	5	0	0
From 10,001 to 15,000 P.E.									
Cavan	11	1	0	12	0	0	12	0	0
Clare									
From 500 to 999 P.E.									
Inagh	11	3	1	12	2	0	12	5	0
Kilmihil	12	1	0	13	0	0	13	2	1
Quin	13	0	0	13	0	0	13	0	0
Tulla	5	3	2	6	3	0	6	4	1
Ballycannon(Meelick)	3	2	1	3	2	2	4	4	3
From 1,000 to 1,999 P.E.									
Lisdoonvarna	10	8	5	12	9	2	11	9	3
Milltown/ Malbay W W T P	11	8	0	13	0	0	13	5	0
Newmarket-on-Fergus	15	1	1	15	2	1	15	4	2
Sixmilebridge	12	0	0	12	0	0	12	0	0
From 2,000 to 10,000 P.E.									

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Clare Abbey	12	4	1	12	2	0	12	1	0
Ennistymon	12	11	7	12	7	0	12	10	0
Lahinch	10	3	2	10	1	0	10	6	1
From 10,001 to 15,000 P.E.									
Shannon town	7	5	3	7	2	0	7	1	0
From 15,001 to 50,000 P.E.									
Ennis	12	0	0	12	0	0	12	0	0
Cork County North									
From 500 to 999 P.E.									
Boherbue	1	0	0	1	0	0	1	0	0
Doneraile	5	5	5	5	5	5	5	5	4
From 1,000 to 1,999 P.E.									
Buttevant	4	3	0	4	1	0	4	4	1
Kanturk	8	0	0	10	0	0	10	0	0
Millstreet	3	0	0	5	0	0	5	0	0
Newmarket	7	5	1	9	2	0	9	4	0
From 2,000 to 10,000 P.E.									
Charleville	7	0	0	10	0	0	9	0	0
Mitchelstown	13	1	0	14	0	0	14	5	0
From 15,001 to 50,000 P.E.									
Fermoy	12	0	0	17	0	0	12	0	0
Mallow	12	3	1	14	2	2	12	2	1
Cork County South									
From 500 to 999 P.E.									
Carrigrohane	3	0	0	3	0	0	3	1	0
Cloughroe	3	2	1	4	0	0	4	2	2
Cloyne	4	0	0	6	0	0	4	0	0
Dripsey	3	1	1	4	1	0	4	3	2
From 2,000 to 10,000 P.E.									
Ballincollig New	14	0	0	17	0	0	15	0	0
Ballincollig Old	12	3	1	14	1	0	14	1	0
Bandon	11	1	0	10	0	0	11	0	0
Blarney	4	0	0	4	0	0	4	1	0
Carrigtohill	12	5	4	14	7	5	14	5	2
Castlemartyr	6	2	2	5	2	1	4	1	0
Cork County West									
From 1,000 to 1,999 P.E.									
Dunmanway	5	3	2	7	4	2	7	5	2
From 10,001 to 15,000 P.E.									
Clonakilty	12	4	1	13	2	1	13	6	2
Donegal									

Plant name and population equivalent	BOD			COD			TSS		
	No.of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No.of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No.of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
From 500 to 999 P.E									
Kilmacrennan	8	3	0	5	2	0	8	1	0
Newtowncunningham	9	1	0	1	1	0	9	1	1
From 1,000 to 1,999 P.E.									
Ballyliffen	10	4	4	2	2	2	10	4	4
From 2,000 to 10,000 P.E.									
Ballybofey/ Stranorlar W W TP	33	3	1	12	1	1	29	3	2
Donegal Town	27	16	13	5	4	2	25	18	10
Milford	7	1	0	5	0	0	6	1	0
Raphoe	11	4	2	4	1	0	11	4	1
From 50,001 to 150,000 P.E.									
Letterkenny	108	108	108	9	9	9	13	13	12
Dun Laoghaire-Rathdown C.C.									
From 2,000 to 10,000 P.E									
Corke Abbey	19	12	6	34	23	12	33	25	11
Fingal									
From 500 to 999 P.E									
Toberburr	25	0	0	42	0	0	42	3	0
From 2,000 to 10,000 P.E.									
Portrane	32	24	4	40	13	2	40	37	3
From 15,001 to 50,000 P.E.									
Malahide	36	1	0	43	0	0	43	3	0
Swords	27	6	1	42	4	0	42	9	0
Galway									
From 500 to 999 P.E									
Ballygar	4	3	3	5	5	3	6	5	2
Killimor	4	2	0	5	0	0	5	1	1
Moycullen	8	7	1	8	4	1	9	5	1
From 1,000 to 1,999 P.E.									
Headford	21	7	1	23	1	1	23	7	1
Mountbellew	7	5	4	7	3	2	7	6	2
Oughterard	8	5	3	9	1	0	10	2	0
From 2,000 to 10,000 P.E.									
Athenry	30	6	0	31	2	0	32	3	0
Ballinasloe	11	2	0	11	0	0	11	1	0
Gort	22	9	4	28	7	1	28	7	1
From 10,001 to 15,000 P.E.									
Tuam	46	0	0	51	1	1	49	1	1
Kerry									

Plant name and population equivalent	BOD			COD			TSS		
	No.of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No.of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No.of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
From 1,000 to 1,999 P.E.									
Ardfert	no data submitted								
Rathmore	no data submitted								
From 2,000 to 10,000 P.E.									
Ballybunion	16	0	0	16	0	0	16	0	0
Cahersiveen	13	3	0	34	0	0	35	0	0
Castleisland	27	0	0	24	0	0	27	0	0
Dingle	12	2	2	12	2	2	11	1	0
Kenmare	29	0	0	29	0	0	29	0	0
Killorglin	44	0	0	42	0	0	44	0	0
From 15,001 to 50,000 P.E.									
Killarney	47	0	0	48	0	0	48	0	0
Listowel	38	0	0	38	0	0	38	0	0
Tralee	37	1	1	50	0	0	44	0	0
Kildare									
From 1,000 to 1,999 P.E.									
Johnstownbridge	2	2	2	3	3	3	3	3	2
Prosperous	2	2	2	2	2	2	2	2	2
From 2,000 to 10,000 P.E.									
Kildare Town	19	5	1	19	7	0	18	9	0
From 10,001, to 15,000 P.E.									
Athy	2	0	0	8	0	0	1	0	0
From 50,001 to 150,000 P.E.									
Leixlip	37	0	0	37	1	0	37	2	1
Osberstown	175	20	4	190	10	0	190	41	11
Kilkenny									
From 500 to 999 P.E.									
Clogh-Moneenroe	4	0	0	0	0	0	4	0	0
Piltown	4	1	0	0	0	0	4	0	0
Gowran	1	1	1	0	0	0	1	1	0
From 1,000 to 1,999 P.E.									
Castlecomer	2	2	2	0	0	0	2	2	0
From 2,000 to 10,000 P.E.									
Callan	4	2	0	0	0	0	4	1	0
From 50,001 to 150,000 P.E.									
Kilkenny	5	0	0	0	0	0	5	0	0
Laois									
From 1,000 to 1,999 P.E.									
Mountrath	9	6	2	9	6	0	9	6	4
Rathdowney	7	2	0	7	1	0	7	2	0

Plant name and population equivalent	BOD			COD			TSS		
	No.of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No.of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No.of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
From 2,000 to 10,000 P.E.									
Abbeyleix	12	1	1	11	2	0	12	4	2
Mountmellick	12	0	0	11	0	0	12	1	0
Portarlinton	12	0	0	12	0	0	12	2	1
Stradbally	7	3	2	6	4	0	7	4	0
From 10,001 to 15,000 P.E.									
Portlaoise	12	2	0	12	1	0	12	4	0
Leitrim									
From 1,000 to 1,999 P.E.									
Ballinamore	3	0	0	4	0	0	4	0	0
Drumshanbo	4	0	0	3	1	0	4	0	0
From 2,000 to 10,000 P.E.									
Carrick on Shannon	5	1	1	5	2	1	5	1	1
Manorhamilton	2	0	0	2	0	0	2	0	0
Mohill	5	0	0	5	2	2	4	0	0
Limerick									
From 500 to 999 P.E.									
Athea	2	2	2	2	2	2	2	2	1
Caherconlish	6	2	0	7	1	0	7	2	1
Cappamore	6	2	0	6	2	0	6	3	0
Doon	3	0	0	3	0	0	3	2	1
Dromcollagher	6	6	3	6	3	1	6	4	0
Kilfinnane	7	3	0	7	1	0	7	4	2
Murroe	3	0	0	3	0	0	3	0	0
Oola	3	0	0	3	0	0	3	0	0
From 1,000 to 1,999 P.E.									
Abbeyleix	13	0	0	13	0	0	13	1	0
Bruff	6	3	0	6	2	0	6	4	0
Castleconnell	6	2	0	7	2	0	7	6	0
Croom	8	2	2	8	2	2	8	2	2
Hospital	17	12	5	17	7	3	17	11	5
Patrickswell	6	6	6	6	6	6	6	5	5
From 2,000 to 10,000 P.E.									
Kilmallock	10	7	4	10	5	2	10	8	3
Newcastle West	13	1	0	13	0	0	13	2	2
Rathkeale	13	2	1	13	1	0	13	2	1
From 10,001 to 15,000 P.E.									
Castletroy	28	0	0	28	0	0	28	1	0
Longford									
From 1,000 to 1,999 P.E.									

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Drumlish	12	11	5	12	12	0	12	9	0
Newtownforbes	12	12	3	12	11	0	12	7	0
From 2,000 to 10,000 P.E.									
Edgeworthstown	13	3	1	13	1	1	13	3	0
Granard	12	12	1	12	12	1	12	11	0
From 15,001 to 50,000 P.E.									
Longford	15	0	0	15	1	0	15	0	0
Louth									
From 500 to 999 P.E.									
Carlingford	no data submitted								
Louth Village	no data submitted								
Tullyallen	1	1	0	1	0	0	1	1	0
From 1,000 to 1,999 P.E.									
Castlebellingham	4	1	0	4	0	0	4	0	0
Clogherhead	1	1	1	1	1	0	1	1	1
Dromiskin	2	1	0	2	1	0	2	1	0
Dunleer	2	1	1	1	0	0	2	1	1
From 2,000 to 10,000 P.E.									
Ardee	6	4	1	6	1	0	6	1	0
Blackrock	3	1	0	3	1	0	3	0	0
Mayo									
From 500 to 999 P.E.									
Ballindine	4	3	2	4	2	0	4	3	0
Bangor Erris	3	0	0	4	0	0	4	0	0
Charlestown	6	0	0	6	0	0	6	0	0
Kilkelly	6	0	0	6	0	0	6	1	0
Mallaranny	3	1	1	3	1	1	3	1	1
From 1,000 to 1,999 P.E.									
Cong	no data submitted								
Foxford	2	0	0	2	0	0	2	0	0
Knock	5	3	2	5	2	2	5	3	2
From 2,000 to 10,000 P.E.									
Achill Island Central	3	0	0	3	0	0	3	0	0
Ballinrobe	5	0	0	5	0	0	5	2	0
Claremorris	1	0	0	1	0	0	1	1	0
Crossmolina	5	5	3	5	4	1	5	5	1
Swinford	3	0	0	7	0	0	6	0	0
From 15,001 to 50,000 P.E.									
Ballina	4	3	3	4	3	0	4	3	2
Castlebar	8	0	0	8	0	0	8	0	0

Plant name and population equivalent	BOD			COD			TSS		
	No.of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No.of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No.of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Meath									
From 500 to 999 P.E									
Ballivor	13	4	0	8	0	0	13	5	1
Donore	12	1	1	10	1	0	12	1	1
Drumconrath	11	1	0	7	0	0	11	1	0
Julianstown	11	6	2	9	5	1	11	7	3
Longwood	13	0	0	8	0	0	13	0	0
Summerhill	12	0	0	8	0	0	12	1	0
From 1,000 to 1,999 P.E.									
Johnstown Bridge S T P	1	1	1	1	1	0	1	1	1
Oldcastle	17	0	0	14	0	0	17	1	0
Slane	13	2	0	10	1	0	13	1	0
From 2,000 to 10,000 P.E.									
Ashbourne	9	2	0	5	1	0	8	3	1
Athboy	15	4	1	13	4	0	14	6	0
Duleek	12	4	1	9	3	0	12	4	0
Dunshaughlin	9	3	1	7	1	0	9	5	1
Kells	16	1	0	10	0	0	16	5	2
Laytown	11	0	0	10	0	0	11	1	1
Rathoath	9	2	1	5	1	0	8	2	1
Trim	9	0	0	8	0	0	10	2	0
From 15,001 to 50,000 P.E.									
Navan	15	0	0	13	0	0	15	2	0
Monaghan									
From 500 to 999 P.E									
Emyvale	11	2	0	11	1	0	11	1	0
Glaslough	11	11	11	11	8	1	11	11	4
Inniskeen	12	0	0	12	0	0	12	0	0
Scotstown	11	0	0	11	0	0	11	1	0
From 1,000 to 1,999 P.E.									
Newbliss	12	9	5	12	7	0	12	6	2
Smithboro	no data submitted								
From 2,000 to 10,000 P.E.									
Ballybay	12	2	0	12	0	0	12	0	0
Clones	6	1	0	7	0	0	7	0	0
From 10,001 to 15,000 P.E.									
Carrickmacross	12	0	0	12	0	0	12	0	0
Castleblayney	10	0	0	11	0	0	11	1	0
From 15,001 to 50,000 P.E.									
Monaghan	10	0	0	11	0	0	11	0	0

Plant name and population equivalent	BOD			COD			TSS		
	No.of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No.of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No.of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Offaly									
From 500 to 999 P.E									
Cloghan	8	0	0	8	0	0	8	0	0
Daingean	no data submitted								
From 1,000 to 1,999 P.E.									
Banagher	11	1	0	11	0	0	11	0	0
Kilcormac	8	0	0	8	0	0	8	0	0
From 2,000 to 10,000 P.E.									
Birr	11	0	0	11	0	0	11	0	0
Edenderry	8	1	1	8	1	1	8	1	1
From 10,001 to 15,000 P.E.									
Tullamore	17	1	0	17	0	0	17	0	0
Roscommon									
From 2,000 to 10,000 P.E.									
Ballaghaderreen	10	3	0	10	0	0	10	6	1
Boyle	25	0	0	25	0	0	25	1	0
Castlerea	8	0	0	9	0	0	9	1	0
Monksland	31	19	13	32	16	9	32	7	0
From 10,001 to 15,000 P.E.									
Roscommon	47	14	9	49	8	2	48	15	5
Sligo									
From 500 to 999 P.E									
Collooney	9	0	0	10	0	0	9	1	0
Gurteen	6	4	3	7	3	2	7	4	2
From 1,000 to 1,999 P.E.									
Strandhill	8	6	5	8	3	3	8	5	2
From 2,000 to 10,000 P.E.									
Ballymote	6	4	0	8	0	0	8	2	0
Enniscrone	22	11	2	22	5	2	23	8	4
Tubbercurry	7	2	1	7	1	0	7	1	1
South Dublin									
From 1,000 to 1,999 P.E.									
Newcastle	10	7	1	14	8	2	14	8	1
From 2,000 to 10,000 P.E.									
Saggart	10	6	0	13	1	0	13	4	0
Tipperary N.R. Co. Co.									
From 500 to 999 P.E									
Borrisokane	6	0	0	6	0	0	6	0	0
Holycross	6	0	0	6	0	0	6	0	0

Plant name and population equivalent	BOD			COD			TSS		
	No.of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No.of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No.of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Littleton	3	0	0	5	0	0	5	1	0
Newport	6	0	0	6	0	0	6	1	0
From 1,000 to 1,999 P.E.									
Borrisoleigh	11	3	0	12	1	0	12	5	3
From 2,000 to 10,000 P.E.									
Ballina	11	0	0	12	0	0	12	0	0
From 10,001 to 15,000 P.E.									
Roscrea	11	0	0	11	3	1	12	2	0
Thurles	11	0	0	13	2	0	13	1	0
From 15,001 to 50,000 P.E.									
Old Nenagh	12	0	0	12	0	0	11	0	0
Tipperary S.R. Co. Co.									
From 500 to 999 P.E.									
Killenaule	4	3	0	4	0	0	4	1	0
From 1,000 to 1,999 P.E.									
Fethard	7	4	2	7	2	1	7	3	1
From 2,000 to 10,000 P.E.									
Cahir	4	1	0	4	0	0	4	0	0
Cashel	10	4	0	10	2	0	10	3	0
Tipperary	8	2	0	6	0	0	8	0	0
From 15,001 to 50,000 P.E.									
Clonmel	1	0	0	1	0	0	1	0	0
Waterford									
From 1,000 to 1,999 P.E.									
Lismore	2	0	0	2	0	0	2	0	0
Portlaw	1	0	0	1	0	0	1	0	0
Westmeath									
From 500 to 999 P.E.									
Ballynacarrigy	16	0	0	1	0	0	15	0	0
Clonmellon	11	0	0	1	0	0	11	1	0
Delvin	12	1	0	2	0	0	12	1	0
Rochfortbridge	12	11	0	13	0	0	11	0	0
Tyrellspass	22	12	0	22	1	0	19	9	0
From 1,000 to 1,999 P.E.									
Castlepollard	11	0	0	2	0	0	9	0	0
From 2,000 to 10,000 P.E.									
Kilbeggan	14	4	0	14	0	0	14	2	0
Kinnegad	14	0	0	3	0	0	12	0	0
Moate	12	0	0	12	0	0	11	0	0
From 15,001 to 50,000 P.E.									

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Athlone	12	0	0	11	0	0	12	1	0
Mullingar	17	0	0	10	0	0	18	0	0
Wexford									
From 500 to 999 P.E.									
Bridgetown	4	1	0	5	0	0	5	0	0
Piercetown	2	0	0	2	0	0	2	0	0
From 1,000 to 1,999 P.E.									
Blackwater	3	0	0	4	0	0	4	0	0
Castlebridge	no data submitted								
Ferns	4	3	0	5	1	0	5	2	0
Kilmuckridge	2	0	0	4	0	0	4	0	0
Taghmon	3	3	3	4	4	0	4	3	1
From 2,000 to 10,000 P.E.									
Enniscorthy	6	0	0	6	0	0	6	0	0
Gorey	3	0	0	4	0	0	4	0	0
Wicklow									
From 500 to 999 P.E.									
Dunlavin Milltown	2	2	2	2	2	2	2	2	2
Kilpedder	2	2	1	2	1	1	2	2	1
From 1,000 to 1,999 P.E.									
Ashford	4	0	0	4	0	0	4	0	0
Blessington	4	2	1	4	0	0	4	3	0
Carnew	3	1	0	3	0	0	3	1	0
Newcastle	2	1	0	2	0	0	2	1	0
From 2,000 to 10,000 P.E.									
Baltinglass	3	0	0	3	0	0	3	0	0
Kilcoole	2	1	1	2	1	1	2	1	1

APPENDIX E2: EFFLUENT QUALITY FROM SECONDARY WASTEWATER TREATMENT PLANTS IN 2001

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Carlow									
From 500 to 999 P.E.									
Hacketstown	3	3	1	4	4	0	4	1	0
Leighinbridge	2	2	1	2	1	0	0	0	0
Rathvilly	3	3	3	4	4	3	4	4	1
Tinnahinch	1	0	0	1	0	0	0	0	0
From 1,000 to 1,999 P.E.									
Borris	1	0	0	1	0	0	0	0	0
From 2,000 to 10,000 P.E.									
Muinebheag	3	1	1	3	1	0	3	1	1
Tullow	2	0	0	2	0	0	2	1	0
From 15,000 to 50,000 P.E.									
Carlow	5	4	2	10	3	2	10	2	2
Cavan									
From 500 to 999 P.E.									
Ballyconnell	1	0	0	1	0	0	1	0	0
Killeshandra	1	1	1	1	0	0	2	1	0
Virginia	2	0	0	2	0	0	2	0	0
From 1,000 to 1,999 P.E.									
Bailieborough	4	0	0	4	0	0	6	0	0
Ballyjamesduff	4	0	0	4	0	0	4	0	0
Cootehill	5	0	0	6	0	0	8	0	0
Kingscourt	4	0	0	5	0	0	6	0	0
From 10,001 to 15,000 P.E.									
Cavan	8	1	1	11	1	0	12	0	0
Clare									
From 500 to 999 P.E.									
Inagh	9	6	3	10	2	1	10	6	1
Kilmihil	9	0	0	9	0	0	9	4	0
Quin	6	0	0	7	0	0	7	0	0
Tulla	5	2	0	6	2	1	6	4	0
From 1,000 to 1,999 P.E.									
Lisdoonvarna	11	8	5	12	6	2	11	9	4
Milltown/ Malbay W W T P	10	4	0	12	2	0	11	7	3
Newmarket-on-Fergus	8	0	0	8	0	0	9	0	0
Sixmilebridge	10	0	0	10	0	0	10	0	0

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
From 2,000 to 10,000 P.E.									
Clare Abbey	12	3	2	12	0	0	12	0	0
Ennistymon	9	7	3	9	4	0	9	5	0
Lahinch	10	2	1	10	1	0	10	3	1
From 10,001 to 15,000 P.E.									
Shannon Town	11	11	11	11	11	6	11	11	2
From 15,001 to 50,000 P.E.									
Ennis	12	4	1	12	2	0	12	3	0
Cork County North									
From 500 to 999 P.E									
Boherbue	1	1	0	1	0	0	1	1	0
Doneraile	7	7	5	7	7	4	8	8	6
From 1,000 to 1,999 P.E.									
Buttevant	8	5	3	8	4	3	8	7	2
Kanturk	8	0	0	8	0	0	8	0	0
Millstreet	3	0	0	4	0	0	4	0	0
Newmarket	9	8	2	10	4	0	10	4	0
From 2,000 to 10,000 P.E.									
Charleville	6	0	0	7	0	0	7	0	0
Mitchelstown	12	1	0	13	0	0	13	6	0
From 15,001 to 50,000 P.E.									
Fermoy	11	0	0	16	0	0	16	2	0
Mallow	14	1	1	15	1	1	15	3	1
Cork County South									
From 500 to 999 P.E									
Carrigrohane	2	0	0	2	0	0	2	0	0
Castlemartyr	11	7	5	13	3	1	13	9	1
Cloughroe	8	6	4	10	6	4	9	6	3
Dripsey	9	0	0	10	0	0	10	4	0
Cloyne	5	0	0	6	0	0	6	0	0
From 2,000 to 10,000 P.E.									
Blarney/ Tower W W T P	9	1	0	10	0	0	9	1	0
Carrigtohill	11	2	1	14	7	5	14	5	2
Macroon U.D.C.	7	0	0	7	0	0	7	0	0
Midleton	12	0	0	14	1	0	14	2	1
From 10,001 to 15,000 P.E.									
Bandon	14	0	0	14	0	0	14	1	0
From 15,001 to 50,000 P.E.									
Ballincollig New	12	0	0	14	5	0	14	0	0
Cork County West									

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
From 1,000 to 1,999 P.E.									
Schull	3	3	2	4	3	2	4	4	2
Dunmanway	12	8	7	12	8	6	12	8	6
From 10,001 to 15,000 P.E.									
Clonakilty	13	2	0	16	2	1	14	3	1
Donegal									
From 500 to 999 P.E.									
Kilmacrennan	9	5	0	6	3	0	9	4	0
Newtowncunningham	10	2	1	5	0	0	10	5	2
From 1,000 to 1,999 P.E.									
Ballyliffen	9	5	4	7	5	4	9	7	4
From 2,000 to 10,000 P.E.									
Ballybofey/ Stranorlar W W TP	13	0	0	7	0	0	13	2	0
Donegal Town	19	11	10	14	10	5	19	13	7
Milford	9	1	0	9	0	0	9	2	0
Raphoe	11	5	0	7	3	0	11	5	1
From 50,001 to 150,000 P.E.									
Letterkenny	112	112	110	9	8	8	21	20	14
Dun Laoghaire-Rathdown C.C.									
From 2,000 to 10,000 P.E.									
Corke Abbey	21	21	7	28	24	0	27	21	2
Fingal									
From 500 to 999 P.E.									
Toberburr	6	0	0	6	0	0	6	1	0
From 2,000 to 10,000 P.E.									
Portrane	13	12	2	14	3	1	14	12	1
From 15,001 to 50,000 P.E.									
Malahide	9	0	0	10	1	1	10	1	1
Swords	12	2	0	14	1	0	14	1	0
Galway									
From 500 to 999 P.E.									
Ballygar	8	7	0	8	2	0	8	4	0
Killimor	6	0	0	6	0	0	6	0	0
Moycullen	8	5	2	8	3	0	8	5	0
From 1,000 to 1,999 P.E.									
Headford	10	4	2	10	1	0	11	4	0
Mountbellew	7	6	4	6	4	1	7	5	1
Oughterard	7	6	2	7	3	0	7	4	0
From 2,000 to 10,000 P.E.									

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Athenry	16	12	1	15	3	0	17	10	1
Ballinasloe	8	0	0	8	0	0	8	0	0
Gort	13	9	3	14	6	2	14	6	3
From 10,001 to 15,000 P.E.									
Tuam	23	0	0	23	0	0	24	0	0
Kerry									
From 1,000 to 1,999 P.E.									
Ardfert	1	0	0	1	0	0	1	0	0
Rathmore	3	3	1	3	2	0	3	2	0
From 2,000 to 10,000 P.E.									
Ballybunion	16	0	0	16	0	0	16	0	0
Cahersiveen	49	0	0	49	0	0	49	0	0
Castleisland	23	1	1	23	0	0	23	0	0
Dingle	12	1	0	11	0	0	12	0	0
Kenmare	9	0	0	9	0	0	9	0	0
Killorglin	46	0	0	45	0	0	47	0	0
Listowel	17	1	0	17	0	0	17	0	0
From 15,001 to 50,000 P.E.									
Killarney	51	0	0	51	0	0	51	0	0
Tralee	45	0	0	51	0	0	44	0	0
Kildare									
From 2,000 to 10,000 P.E.									
Athy	4	0	0	7	0	0	3	0	0
Kildare Town	8	7	4	8	3	2	7	2	0
From 50,001 to 150,000 P.E.									
Leixlip	37	0	0	38	0	0	38	0	0
Osberstown	341	9	2	347	3	0	348	89	57
Kilkenny									
From 500 to 999 P.E.									
Piltown	4	0	0	4	0	0	4	0	0
Gowran	2	2	2	2	2	0	2	2	0
From 1,000 to 1,999 P.E.									
Castlecomer	4	2	2	3	1	1	4	2	0
From 2,000 to 10,000 P.E.									
Callan	4	0	0	4	0	0	4	0	0
From 50,001 to 150,000 P.E.									
Kilkenny	93	2	1	92	2	1	71	2	1
Laois									
From 1,000 to 1,999 P.E.									
Mountrath	8	7	3	9	4	0	9	8	1

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Rathdowney	6	4	0	4	1	0	6	4	1
From 2,000 to 10,000 P.E.									
Abbeyleix	16	2	2	17	3	2	19	11	1
Mountmellick	20	1	1	24	2	1	25	5	2
Portarlinton	18	0	0	19	0	0	20	4	1
Stradbally	5	0	0	4	0	0	4	2	0
From 15,001 to 50,000									
Portlaoise	20	2	0	21	0	0	22	10	3
Leitrim									
From 1,000 to 1,999 P.E.									
Ballinamore	3	0	0	3	0	0	3	1	1
Drumshanbo	1	0	0	1	0	0	2	0	0
From 2,000 to 10,000 P.E.									
Carrick on Shannon	3	2	2	3	2	2	3	2	1
Manorhamilton	1	0	0	1	0	0	1	0	0
Mohill	2	0	0	2	0	0	2	0	0
Limerick									
From 500 to 999 P.E.									
Athea	4	4	4	4	4	3	4	4	3
Caherconlish	6	2	0	6	0	0	6	2	0
Cappamore	5	5	1	5	3	0	5	4	0
Doon	2	2	2	2	2	1	2	2	1
Dromcollagher	7	3	0	7	0	0	7	4	0
Kilfinnane	5	4	1	5	2	0	5	5	1
Murroe	3	0	0	3	0	0	3	0	0
Oola	3	0	0	3	0	0	3	1	0
From 1,000 to 1,999 P.E.									
Abbeyfeale	12	0	0	12	0	0	12	1	1
Bruff	6	6	2	6	3	2	6	6	3
Castleconnell	6	0	0	6	0	0	6	3	1
Croom	6	0	0	6	0	0	6	2	0
Hospital	6	3	0	6	2	0	6	4	0
Patrickswell	4	4	4	4	4	3	4	4	4
From 2,000 to 10,000 P.E.									
Kilmallock	11	11	4	11	6	1	11	10	0
Newcastle West	12	2	0	13	1	0	13	3	2
Rathkeale	12	2	0	12	0	0	12	2	0
From 10,001 to 15,000 P.E.									
Castletroy	14	0	0	13	0	0	14	0	0
Longford									

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
From 1,000 to 1,999 P.E.									
Drumlsh	12	10	0	12	10	0	12	6	0
Newtownforbes	12	12	3	12	9	0	12	10	0
From 2,000 to 10,000 P.E.									
Edgeworthstown	15	8	3	15	0	0	15	13	5
Granard	12	12	8	12	12	0	12	10	0
From 15,001 to 50,000 P.E.									
Longford	12	0	0	12	0	0	12	0	0
Louth									
From 500 to 999 P.E									
Carlingford	2	1	1	2	2	1	2	1	1
Louth Village	3	0	0	3	0	0	3	0	0
Tullyallen	3	2	1	3	1	0	3	1	0
From 1,000 to 1,999 P.E.									
Castlebellingham	5	3	0	5	2	0	5	1	0
Clogherhead	3	2	1	3	1	1	3	1	1
Dromiskin	2	2	1	2	1	1	2	1	1
Dunleer	3	0	0	3	0	0	3	0	0
From 2,000 to 10,000 P.E.									
Ardee	4	2	2	4	1	1	4	1	1
Blackrock	2	0	0	2	0	0	2	0	0
From 50,000 to 150,000 P.E.									
Drogheda *	10	0	0	10	0	0	10	0	0
Dundalk *	12	2	0	20	2	1	22	4	0
Mayo									
From 500 to 999 P.E									
Ballindine	3	3	2	3	3	0	3	3	0
Kilkelly	3	0	0	3	0	0	3	0	0
From 1,000 to 1,999 P.E.									
Bangor Erris	2	0	0	3	0	0	3	0	0
Charlestown	1	1	1	1	1	1	1	1	1
Cong	2	2	2	3	3	3	3	3	3
Foxford	1	1	1	1	1	1	1	1	0
From 2,000 to 10,000 P.E.									
Achill Island Central	1	0	0	1	0	0	1	0	0
Ballinrobe	2	0	0	2	0	0	2	0	0
Claremorris	1	0	0	1	0	0	1	0	0
Crossmolina	4	4	3	4	4	2	4	4	4
Knock	3	2	1	3	2	0	3	2	0
Swinford	2	0	0	2	0	0	2	0	0

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
From 10,001 to 15,000 P.E.									
Ballina	4	2	0	4	1	0	4	1	0
From 15,001 to 50,000 P.E.									
Castlebar	4	1	1	4	0	0	4	1	0
Meath									
From 500 to 999 P.E									
Ballivor	10	10	10	10	10	3	10	10	4
Donore	10	2	2	10	1	1	10	2	2
Drumconrath	7	2	1	8	0	0	8	5	2
Julianstown	7	1	1	7	1	0	7	4	1
Longwood	11	2	0	11	1	0	10	4	0
Summerhill	10	1	0	9	1	0	10	6	1
From 1,000 to 1,999 P.E.									
Kilmessan	7	1	1	7	1	0	7	5	1
Johnstown Bridge S T P	9	5	4	8	5	2	9	8	6
Oldcastle	10	3	2	9	1	0	9	3	2
Slane	11	1	0	11	0	0	11	1	1
From 2,000 to 10,000 P.E.									
Athboy	11	3	0	10	0	0	11	3	1
Duleek	12	6	6	12	5	1	12	7	5
Dunshaughlin	5	0	0	5	0	0	5	3	1
Kells	12	1	1	10	1	1	12	2	1
Laytown	7	0	0	7	0	0	7	3	2
From 10,001 to 15,000 P.E.									
Trim	12	0	0	11	0	0	12	1	0
From 15,001 to 50,000 P.E.									
Navan	11	0	0	11	0	0	11	0	0
Monaghan									
From 500 to 999 P.E									
Inniskeen	10	1	1	11	1	1	11	1	1
Scotstown	12	2	0	12	0	0	12	1	0
From 1,000 to 1,999 P.E.									
Smithboro	12	0	0	12	0	0	12	0	0
From 2,000 to 10,000 P.E.									
Ballybay	12	2	0	12	0	0	12	0	0
Castleblayney	11	0	0	12	0	0	12	0	0
Clones	12	4	1	12	3	0	12	2	0
Emyvale	12	2	0	12	1	0	12	2	0
From 15,001 to 50,000 P.E.									
Carrickmacross	13	0	0	13	0	0	13	0	0

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Monaghan	12	0	0	12	0	0	12	0	0
Offaly									
From 500 to 999 P.E.									
Cloghan	10	0	0	10	0	0	10	0	0
Daingean	12	1	1	12	1	0	12	1	1
From 1,000 to 1,999 P.E.									
Banagher	11	0	0	11	0	0	11	0	0
Kilcormac	12	0	0	12	0	0	12	0	0
From 2,000 to 10,000 P.E.									
Birr	12	1	1	12	0	0	12	1	1
Edenderry	11	6	5	11	6	4	11	9	5
From 15,001 to 50,000 P.E.									
Tullamore	15	0	0	15	0	0	15	0	0
Roscommon									
From 2,000 to 10,000 P.E.									
Ballaghaderreen	13	3	0	13	0	0	13	1	0
Boyle	19	1	1	19	3	1	19	3	3
Castlerea	14	1	0	14	1	0	14	2	0
Monksland	27	1	0	27	0	0	27	0	0
From 10,001 to 15,000 P.E.									
Roscommon	93	22	13	95	19	11	95	29	20
Sligo									
From 500 to 999 P.E.									
Collooney	9	0	0	8	0	0	9	0	0
Gurteen	3	1	0	2	0	0	3	2	0
From 1,000 to 1,999 P.E.									
Strandhill	4	3	2	6	2	0	6	2	0
From 2,000 to 10,000 P.E.									
Ballymote	6	5	0	6	2	1	6	5	0
Enniscrone	3	0	0	3	0	0	2	0	0
Tubbercurry	8	0	0	7	0	0	8	1	0
South Dublin									
From 1,000 to 1,999 P.E.									
Newcastle	1	1	1	3	2	1	3	2	1
From 2,000 to 10,000 P.E.									
Saggart	5	3	0	5	1	0	5	3	0
Tipperary N.R. Co. Co.									
From 500 to 999 P.E.									
Borrisokane	6	0	0	6	0	0	6	1	0
Holycross	6	0	0	6	0	0	6	1	1

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Littleton	6	1	1	6	1	0	6	2	0
From 1,000 to 1,999 P.E.									
Borrisoleigh	12	0	0	12	0	0	12	0	0
From 2,000 to 10,000 P.E.									
Ballina	14	0	0	14	0	0	14	1	0
From 10,001 to 15,000 P.E.									
Roscrea	15	0	0	15	1	0	15	1	0
Thurles	12	0	0	12	1	0	12	2	0
From 15,001 to 50,000 P.E.									
Old Nenagh	12	0	0	13	0	0	13	7	1
Tipperary S.R. Co. Co.									
From 500 to 999 P.E.									
Killenaule	3	0	0	3	0	0	3	1	0
From 1,000 to 1,999 P.E.									
Fethard	7	3	2	7	3	0	7	3	1
From 2,000 to 10,000 P.E.									
Cahir	3	0	0	3	0	0	3	0	0
Cashel	4	3	0	4	1	0	4	3	0
Tipperary	4	0	0	4	0	0	7	0	0
From 15,001 to 50,000 P.E.									
Clonmel	75	2	0	219	5	0	218	13	0
Waterford									
From 1,000 to 1,999 P.E.									
Lismore	3	0	0	3	0	0	3	1	0
Portlaoise	4	0	0	4	0	0	4	0	0
Westmeath									
From 500 to 999 P.E.									
Ballynacarrigy	11	0	0	1	0	0	9	1	0
Clonmellon	16	1	1	0	0	0	16	2	0
Killucan	13	2	1	1	0	0	14	2	0
Rochfortbridge	6	6	0	9	0	0	11	7	0
Tyrellspass	6	6	0	10	1	0	11	8	0
From 1,000 to 1,999 P.E.									
Castlepollard	12	0	0	0	0	0	12	0	0
From 2,000 to 10,000 P.E.									
Kinnegad	12	3	1	0	0	0	12	3	1
Moate	6	0	0	12	0	0	12	0	0
From 15,001 to 50,000 P.E.									
Athlone	5	0	0	14	0	0	12	0	0

Plant name and population equivalent	BOD			COD			TSS		
	No. of Samples	Number of Samples > 25 mg/l	Number of Samples > 50 mg/l	No. of Samples	Number of Samples > 125 mg/l	Number of Samples > 250 mg/l	No. of Samples	Number of Samples > 35 mg/l	Number of Samples > 87.5 mg/l
Mullingar	17	0	0	11	0	0	19	0	0
Wexford									
From 500 to 999 P.E.									
Kilmuckridge	0	0	0	2	0	0	2	0	0
Piercetown	1	0	0	3	0	0	3	0	0
Taghmon	2	1	0	2	1	0	2	1	0
From 1,000 to 1,999 P.E.									
Blackwater	6	0	0	8	0	0	8	0	0
Castlebridge	6	0	0	6	0	0	6	0	0
Ferns	5	0	0	5	0	0	5	0	0
From 2,000 to 10,000 P.E.									
Enniscorthy	6	0	0	6	0	0	6	0	0
Gorey	6	0	0	8	0	0	8	0	0
Wicklow									
From 500 to 999 P.E.									
Dunlavin Milltown	1	1	1	1	1	1	1	1	1
Kilpedder	1	1	1	1	1	0	1	1	1
From 1,000 to 1,999 P.E.									
Blessington	1	1	0	1	0	0	1	1	0
Newcastle	1	0	0	1	0	0	1	0	0
From 2,000 to 10,000 P.E.									
Baltinglass	1	0	0	1	0	0	1	0	0
Kilcoole	1	0	0	1	0	0	1	0	0

* Droghed / Dundalk treatment plants under commission during 2001

Appendix F1: Sludge Generated at Waste Water Treatment Plants 2000

<i>Local Authority</i>	<i>Quantity of Sludge</i>
	tds/year
<i>Carlow County Council</i>	710
<i>Cavan County Council</i>	183
<i>Clare County Council</i>	1,100
<i>Cork County North</i>	4,500
<i>Cork County South</i>	659
<i>Cork County West</i>	193
<i>Donegal County Council</i>	723
<i>Dublin Corporation</i>	8,078
<i>South Dublin County Council</i>	76
<i>Fingal County Council</i>	1,690
<i>Dun Laoghaire-Rathdown C.C.</i>	142
<i>Galway County Council</i>	951
<i>Kerry County Council</i>	731
<i>Kildare County Council</i>	1,961
<i>Kilkenny County Council</i>	1,468
<i>Laois County Council</i>	389
<i>Leitrim County Council</i>	193
<i>Limerick County Council</i>	642
<i>Louth County Council</i>	230
<i>Mayo County Council</i>	860
<i>Meath County Council</i>	1,013
<i>Monaghan County Council</i>	825
<i>Offaly County Council</i>	249
<i>Roscommon County Council</i>	617
<i>Sligo County Council</i>	138
<i>Tipperary N.R. Co. Co.</i>	1,174
<i>Tipperary S.R. Co. Co.</i>	2,123
<i>Waterford County Council</i>	57
<i>Westmeath County Council</i>	1,070
<i>Wexford County Council</i>	749
<i>Wicklow County Council</i>	186
<i>Total</i>	33,679

Appendix F2: Sludge Generated at Waste Water Treatment Plants 2001

<i>Local Authority</i>	<i>Quantity of Sludge</i>
	tds/year
<i>Carlow County Council</i>	710
<i>Cavan County Council</i>	183
<i>Clare County Council</i>	5,29
<i>Cork County North</i>	4,665
<i>Cork County South</i>	872
<i>Cork County West</i>	184
<i>Donegal County Council</i>	481
<i>Dublin Corporation</i>	6,962
<i>Fingal County Council</i>	842
<i>Galway County Council</i>	579
<i>Kerry County Council</i>	809
<i>Kildare County Council</i>	3,626
<i>Kilkenny County Council</i>	1,468
<i>Laois County Council</i>	709
<i>Leitrim County Council</i>	94
<i>Limerick County Council</i>	642
<i>Longford County Council</i>	900
<i>Louth County Council</i>	2,026
<i>Mayo County Council</i>	1,130
<i>Meath County Council</i>	1,250
<i>Monaghan County Council</i>	995
<i>Offaly County Council</i>	1,547
<i>Roscommon County Council</i>	165
<i>Sligo County Council</i>	138
<i>Tipperary N.R. Co. Co.</i>	1,205
<i>Tipperary S.R. Co. Co.</i>	2,312
<i>Waterford County Council</i>	57
<i>Westmeath County Council</i>	1,055
<i>Wexford County Council</i>	749
<i>Wicklow County Council</i>	186
<i>Total</i>	37,559

USER COMMENT FORM

NOTE: Completed comments to be forwarded to: The Office of Environmental Enforcement,
Environmental Protection Agency, P.O. Box 3000, Johnstown Castle Estate, Wexford.

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An Ghníomhaireacht um Chaomhnú Comhshaoil

Bunú

Achtaíodh an tAcht fán nGníomhaireacht um Chaomhnú Comhshaoil ar an 23ú lá d’Aibreán, 1992 agus faoin reachtaíocht seo bunaíodh an Ghníomhaireacht go hoifigiúil ar an 26ú lá d’Iúil, 1993.

Cúraimí

Tá réimse leathan de dhualgais reachtúla ar an nGníomhaireacht agus de chumhachtaí reachtúla aici faoin Acht. Tá na nithe seo a leanas san áireamh i bpríomhfhreagrachtaí na Gníomhaireachta:

- ceadúnú agus rialáil próiseas mór/ilchasta tionsclaíoch agus próiseas eile a d’fhéadfadh a bheith an-truaillitheach, ar bhonn rialú comhtháite ar thruailliú (Integrated Pollution Control-IPC) agus cur chun feidhme na dteicneolaíochtaí is fearr atá ar fáil chun na críche sin;
- faireachán a dhéanamh ar cháilíocht comhshaoil, lena n-áirítear bunachair sonraí a chur ar bun a mbeidh rochtain ag an bpobal orthu, agus foilsiú tuarascálacha treimhsiúla ar staid an chomhshaoil;
- comhairle a chur ar údaráis phoiblí maidir le feidhmeanna comhshaoil agus cuidiú le húdaráis áitiúla a bhfeidhmeannas caomhnaithe a chomhlíonadh;
- cleachtais atá fóna ó thaobh an chomhshaoil de a chur chun cinn, mar shampla, trí úsáid iniúchtaí comhshaoil a spreagadh, cuspóirí cáilíochta comhshaoil a leagan síos agus cóid chleachtais a eisiúint maidir le nithe a théann i bhfeidhm ar an gcomhshaol;
- taighde comhshaoil a chur chun cinn agus a chomhordú;
- gach gníomhaíocht thábhachtach diúscartha agus aisghabhála dramhaíola, lena n-áirítear líontaí talún, a cheadúnú agus a rialáil agus plean náisiúnta bainistíochta um dhramháil ghuaiseach, a bheidh le cur i ngníomh ag comhlachtaí eile, a ullmhú agus a thabhairt cothrom le dáta go tréimhsiúil;
- córas a fheidhmiú a chuirfidh ar ár gcumas astúcháin COS (Comhdhúiligh Orgánacha Sho-ghalaithe) a rialú de bharr cáinníochtaí suntasacha peitril a bheith á stóráil i dteirminéil;
- na rialúcháin OMG (Orgánaigh a Mionathraíodh go Géiniteach) a fheidhmiú agus a ghníomhú maidir le húseaid shrianta a leithéad seo d’orgánaigh agus iad a scaoileadh d’aon turas isteach sa timpeallacht;

- clár hidriméadach náisiúnta a ullmhú agus a chur i ngníomh chun faisnéis maidir le leibhéil, toirteanna agus sruthanna uisce in aibhneacha, i lochanna agus i screamhuiscí a bhailiú, a anailisiú agus a fhoilsiú; agus
- maoirseacht i gcoitinne a dhéanamh ar chomhlíonadh a bhfeidhmeanna reachtúla caomhnaithe comhshaoil ag údarás áitiúla.

Stádas

Is eagrais poiblí neamhspleách í an Ghníomhaireacht. Is í an Roinn Comhshaoil agus Rialtais Áitiúil an coimirceoir rialtais atá aici. Cinntítear a neamhspleáchas trí na modhanna a úsáidtear chun an tArd-Stiúrthóir agus na Stiúrthóirí a roghnú, agus tríd an tsaoirse a dhearbhaíonn an reachtaíocht di gníomhú ar a conlán féin. Tá freagracht dhíreach faoin reachtaíocht aici as réimse leathan feidhmeannas agus cuireann sé seo taca breise lena neamhspleáchas. Faoin reachtaíocht, is coir é iarracht a dhéanamh dul i gcion go míchuí ar an nGníomhaireacht nó ar aon duine atá ag gníomhú thar a ceann.

Eagrú

Tá ceanncheathrú na Gníornhaireachta lonnaithe i Loch Garman agus tá cúig fhoireann chigireachta aici, atá lonnaithe i mBaile Átha Cliath, Corcaigh, Cill Chainnigh, Caisleán an Bharraigh agus Muineachán.

Bainistíocht

Riarann Bord Feidhmiúcháin lánaimseartha an Ghníomhaireacht. Tá Ard-Stiúrthóir agus ceathrar Stiúrthóirí ar an mBord. Ceapann an Rialtas an Bord Feidhmi úcháin de réir mionrialacha atá leagtha síos san Acht.

Coiste Comhairleach

Tugann Coiste Comhairleach ar a bhfuil dáréag ball cunamh don Ghníomhaireacht. Ceapann an tAire Comhshaoil agus Rialtais Áitiúil na baill agus roghnaítear iad, den chuid is mó, ó dhaoine a ainmníonn eagraíochtaí a bhfuil suim acu i gcúrsaí comhshaoil nó forbartha. Tá réimse fairsing feidhmeannas comhairleach ag an gCoiste faoin Acht, i leith na Gníomhaireachta agus i leith an Aire araon.



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