DRINKING WATER QUALITY REPORT 05

Water Service

INVESTOR IN PEOPLE

An Agency within the Department for Regional Development

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Gareth Maxwell

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FOREWORD

This is Water Service's Annual Drinking Water Quality report covering the calendar year 2005.

As Chief Executive of Water Service, I am very pleased to inform you that Water Service has again fully met its water quality targets. The table on page 6 of the Report illustrates that compliance at customers' taps is continuing to improve year on year.

Drinking water quality regulators throughout the United Kingdom are now moving towards Mean Zonal Compliance as a measure of quality. This will enable assessments to be made for each individual parameter, as opposed to the overall measurement produced by the former method. Because it is based upon delineated Water Supply Zones, it will allow each customer to more accurately assess the quality of drinking water in the area in which they live. Using this method of measurement, Water Service has improved its compliance from 98.65% in 2004 to 99.02% in 2005.

During 2005, Water Service invested over £74million on mains rehabilitation. Over the same period, work continued on a programme of improvements to our water treatment works, including the replacement of the existing Fofannybane Water Treatment Works in the Mourne Mountains. This modern treatment works serves the Newry and Banbridge areas and is capable of producing up to 52 million litres per day of high quality treated water.

I hope you find this report informative and interesting, and that you will be assured of Water Service's commitment to maintaining and improving the quality of the drinking water delivered to its customers throughout Northern Ireland.

K. Bryan

Katharine Bryan
Chief Executive

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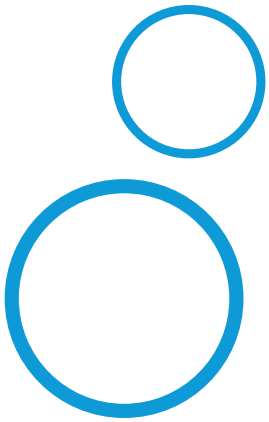


INTRODUCTION

The Department for Regional Development is responsible under the Water and Sewerage Services (Northern Ireland) Order 1973 to supply and distribute water. Water supplied for domestic or food production purposes, must meet the standards contained in "The Water Supply (Water Quality) Regulations (Northern Ireland) 2002". The Department exercises its water supply functions through Water Service, which is an Executive Agency within the Department.

Authorised Departures (ADs) from standards in Northern Ireland are authorised and administered by the Department of the Environment's Drinking Water Inspectorate (DWI) with the agreement of the Health Authorities. The standards that have been relaxed are for Aluminium and Total Trihalomethanes and apply to the water supplied to the Water Supply Zones listed in Appendix 2. These named Zones are supplied from Water Treatment Works that have an agreed fixed programme of works intended to make them fully compliant with the regulations.

Water is regularly monitored and tested for quality. This report summarises Water Service's regulatory results from 1 January 2005 to 31 December 2005. During this reporting period, 99.19% of all tests carried out on samples taken from customers' taps and authorised supply points, complied with the regulatory standards. If Authorised Departures are included in the assessment, the compliance increases to 99.73%. Including the Authorised Departures in the compliance assessment may be regarded as indicating the likely quality of water following the completion of the above programmes of work. Although not a mandatory parameter, Water Service includes total coliforms in its compliance assessment due to the bacteriological health risk potential.

Water Service aims to provide drinking water, in a cost effective manner, to meet the requirements of existing and future customers and, thereby, contribute to the health and well being of the community and the protection of the environment.

Water Service continues to meet the obligations placed upon it to comply with regulatory standards and the heightened demands from customers' expectations. Investing in the extension and upgrading of water treatment works remains a top priority and the current programme is detailed in Appendix 4.

A higher percentage of the Northern Ireland population, as compared to Great Britain, live in rural areas. As a result there is a greater length of watermain per head of population connected to the public supply. The average length of watermain per head of population served in Northern Ireland is estimated at 15.4 metres as compared to 6.2 metres in England and Wales, and 9.0 metres in Scotland. This means that Water Service's ongoing mains rehabilitation programme to restore or replace the existing water mains pipework requires more investment than the comparable process in Great Britain.

To assist in understanding the contents of this report, a glossary of technical terms is provided (Appendix 5).

DRINKING WATER QUALITY SUMMARY – YEAR ON YEAR

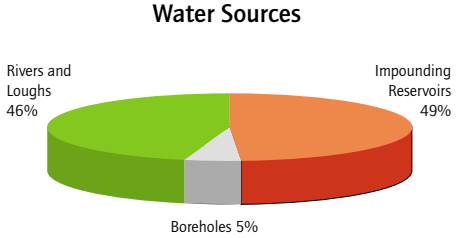
Compliance assessed against the "Water Supply (Water Quality) Regulations (Northern Ireland) 2002"		
Reporting Year	**2004**	**2005**
Customer Tap / Supply Point Water Quality (including Authorised Departures and including total coliforms)	99.63%	99.73%
Customer Tap / Supply Point Water Quality (not including Authorised Departures and including total coliforms)	98.63%	99.19%
Service Reservoirs Water Quality	99.81%	99.71%
Water Treatment Works Water Quality	99.83%	99.89%
Overall Quality (including Authorised Departures)	99.72%	99.75%
Mean Zonal Compliance	98.65%	99.02%

Sufficiency of Supply

Approximately 786,000 domestic, agricultural, commercial and business properties in Northern Ireland are connected to the public water supply and each day during the year we supplied some 625 million litres of high quality drinking water to customers. Water Service operates approximately 57 sources which comprise upland Impounding Reservoirs, Boreholes and Rivers and Loughs. Effective planning for the sufficiency of future water supplies is essential.

Water Service, through its Water Resource Strategy, plans to ensure that demand for drinking water is met for the period up to 2030. The strategy emphasises the need to rationalise existing uneconomic water sources and concentrate on the sources that can meet our needs cost-effectively and reliably.

Water supplies in Northern Ireland are obtained from three types of source, as shown: -



Leakage

Water Service currently has a Water Efficiency Plan with an associated Leakline number: -

(Freephone) 08000 282 011

The plan aims to implement and promote a range of water conservation measures that can be employed by both Water Service and its customers. The Leakline number allows customers to report leaks on roads and footpaths at no cost to themselves and Water Service is committed to the prompt investigation and repair of any leaks.

Water Safety Plans

Water Safety Plans were recently developed by the World Health Organisation for global application and the DWI considers the concept to be the most effective way of ensuring that a water supply is safe for human consumption. It is based on a comprehensive risk assessment and risk management approach to all the steps in a water supply chain from catchment to tap. Water Service has the majority of the elements required for water safety plans inherent in their systems and is now beginning to combine them in a form acceptable to the DWI.

Mean Zonal Compliance

Following the introduction of "The Water Supply (Water Quality) Regulations (Northern Ireland) 2002", assessment of the quality of water supplied to Water Service's customers are also monitored using "Mean Zonal Compliance". This provides the information to establish new baselines, in common with the rest of the United Kingdom, to assess water quality at a parameter level over the forthcoming years. It is based on water supply zones, the essential building blocks of Water Service's sampling programme. This level of reporting provides transparency as to where improvement measures are required to achieve compliance with the drinking water quality standards.

This introduces a consistent method of reporting across the UK and allows direct comparisons of results. The traditional method has also been used in this report, but in the future there will be an increased emphasis on Mean Zonal Compliance (MZC) as a consistent approach.

DRINKING WATER QUALITY STANDARDS

Drinking Water Quality in Northern Ireland is assessed against standards set in the Water Supply (Water Quality) Regulations (Northern Ireland) 2002.

The Water Supply (Water Quality) Regulations (Northern Ireland) 2002 (the "Regulations") fully incorporate the requirements of the European Commission's Drinking Water Directive 98/83/EC (the "Directive") relating to the quality of water intended for human consumption and, for certain parameters, more stringent UK national standards.

The Regulations set out the requirements to be met by Water Service when supplying water for domestic or food production purposes and include: -

- water quality standards for wholesomeness;
- sampling locations for monitoring purposes;
- minimum requirements for the number, frequency and types of water samples to be taken at sampling locations;
- water sample collection and testing regimes;
- maintaining records of water sample results; and
- provision and publication of information

Water Service assesses standards for water quality against the parameters as listed in Appendix 1. The standards in the Regulations are normally expressed as 'Prescribed Concentrations or Values' (PCV) and are generally specified as maximum, minimum, percentile or average concentrations for a particular substance. Standards are set to ensure that water is safe to drink and aesthetically acceptable.

The Directive and the Regulations permit standards to be relaxed in certain specified circumstances provided there is no risk to public health under a process of "Authorised Departures". These allow a time limited Authorised Departure from the regulatory limit for certain parameters, provided there is a planned programme of work at the Water Treatment Works to improve the water quality and there are no adverse health implications

The Regulations set demanding standards for the quality of drinking water but contraventions of these standards do not necessarily imply the water represents any public health risk. All contraventions are reported to the Drinking Water Inspectorate, investigated by Water Service, and prompt remedial action taken where appropriate.

DRINKING WATER INSPECTORATE - TECHNICAL AUDIT

A Drinking Water Inspectorate (DWI), established within the Environment and Heritage Service Agency, has an independent responsibility to audit drinking water quality compliance against the standards set in the Regulations.

Each year DWI undertakes a technical audit of the measures taken by Water Service to comply with the Regulations. The technical audit process includes:

- the transfer, to DWI, of analytical results of samples taken throughout the year, from water treatment works, service reservoirs and customers' taps;
- a compliance assessment of this information against the regulatory standards; and
- carrying out an inspection programme which examines the sampling, analytical, reporting, water treatment, distribution policies and relevant procedures

In 2005, the technical audit inspection programme included:

- evaluation and implementation of strategies to meet new regulatory requirements;
- audit of four service reservoirs (Antiville, Carntall, Carran and Fogart);
- audit of Lough Cowey Water Treatment Works;
- two analytical laboratory audits (Altnagelvin [*Cryptosporidium*] and Westland House);
- two sampling audits (Altnagelvin and Westland House);
- Laboratory Information Management System (LIMS) Audit (Northland House);
- a *Cryptosporidium* risk assessment and monitoring review; and
- progress on agreed follow-up action including non-trivial parameter contraventions, previous inspections and post incident analysis

DWI made a number of recommendations and observations and Water Service has followed up on these issues. DWI will report on the inspections and the quality of water supplied by Water Service in its annual report, due to be published later in the year. DWI is located at Commonwealth House, 35 Castle Street, Belfast BT1 1GH.

Incidents

In addition to DWI's audit of drinking water quality, DWI requires that it be notified whenever an incident or event occurs that has the potential to impact on drinking water quality. After investigation these may prove not to have had a detrimental effect on water quality and are classified in the "Drinking Water Inspector's Report" as "events" as opposed to "incidents".

During 2005, there were 7 notifiable incidents and 7 events.

Water Quality Incidents and Events

Date	Location	Nature of Incident / Event	Classification
February	Drumaroad WTW	Hydrogen ion exceedence at WTW caused by flooding of lime silo / mixing area.	EVENT
February	Killea WTW	Turbidity exceedence at Killea WTW (brought in as an emergency supply following major water main burst @ Caugh Hill WTW).	EVENT
June	Carmoney WTW	Plant explosion in OSEC plant. Population not affected as disinfection was maintained.	EVENT
August	Lough Ross/Carron Hill	Taste & odour problems with water supply caused by algal growth	INCIDENT
August	Nursing Home, Irvinestown	'Boil Notice' issued due to coliform exceedences – caused by uncovered storage tank at nursing home.	EVENT
August	Ballymacvea Road, Kells	'Boil Notice' issued – coliform exceedences due to an illegal connection.	EVENT
October	Doogary Road, Banbridge	'Boil Notice' issued – coliform exceedences due to water main corrosion.	EVENT
October	Mourne at Carginagh	Coliform exceedences due to chlorination failure.	INCIDENT
November	Ballinrees WTW	Aluminium dosing failure.	INCIDENT
November	Carrickaness Road, Benburb	'Boil Notice' issued – coliform exceedences. Contamination of water main during burst repair.	INCIDENT
November and December	Drumaroad WTW	Lime dosing failures on two separate occasions.	INCIDENT
December	Drumaroad WTW	Electricity failure.	EVENT
November	Ballaghanery SR	Electricity/disinfection failure.	INCIDENT
May - September	Dorisland WTW	Recurring MCPA failures. Joint Water Service / EHS investigations indicated a probable surface source.	INCIDENT

MONITORING DRINKING WATER QUALITY

The Regulations necessitate a thorough and extensive water sampling programme to be undertaken, to monitor water quality throughout the supply and distribution systems.
The sampling locations and frequencies for the monitoring of drinking water quality are specified in the Regulations. These are audited by the Drinking Water Inspectorate (DWI). The mandatory sampling programme requires water samples to be collected regularly at water treatment works, at service reservoirs and water towers used to store treated water and at customers' taps in the water supply zones.

Under the Regulations, samples to be analysed for parameters which do not change in the supply watermain may be collected from Authorised Supply Points. These samples are collected from the final distribution point of the Water Treatment Works, and are considered under the Regulations to be equivalent to samples collected from the customer tap. All samples are carefully collected, handled and transported to ensure that they accurately represent the water quality which customers receive. Water Service employs skilled and experienced sampling staff for the collection and delivery of the regulatory samples to the laboratories. All sampling staff wear uniforms and carry identity cards when they call upon customers to take a sample.

Samples collected from customers' taps are taken randomly in each water supply zone. A water supply zone is a designated area of no more than 100,000 population supplied with water by one treatment works or blended water from several works. The number and boundaries of water supply zones are subject to change according to operational requirements, as supply sources to areas are adjusted to meet demand and infrastructure developments. On this basis 69 zones were monitored during the period of this report.

The parameters for which samples are tested include: -

- microbiological, e.g. Coliform bacteria
- physical, e.g. pH (Hydrogen Ion)
- chemical, e.g. Iron, Manganese, Lead and Nitrate
- aesthetic, e.g. Taste, Odour and Colour

Compliance with the drinking water standards is determined by comparing the results of laboratory analysis of water samples with the relevant parameter PCV. Where monitoring indicates that a standard has not been met, appropriate immediate investigation and remedial action is undertaken to ensure that the water supply does not present any public health risk. Sampling programmes are adjusted and increased testing may be scheduled in the water supply zone for the parameter involved. Water Service will at all times liaise with the DWI and the relevant Health Authorities to ensure customer safety.

QUALITY ASSURANCE

The Regulations require water quality to be monitored using analytical systems which can demonstrate that appropriate accuracy is achieved and maintained. Water Service attaches great importance to the integrity of the analysis and for this reason applies stringent laboratory analytical quality control procedures. These systems and procedures are subject to external inspection and audit by the Drinking Water Inspectorate and an assessment of Water Service's performance will be included in the Inspectorate's annual report.

Water Service has achieved the requirements of the Drinking Water Testing Specification, a national scheme agreed between the Drinking Water Inspectorate and the United Kingdom Accreditation Service for quality assurance within laboratories carrying out analysis for the water industry.

In addition to this, all Water Service Testing Laboratories have attained the necessary standard of analytical excellence and have been awarded UKAS accreditation. UKAS external auditors continuously monitor this accreditation.

The importance of rapid detection of *Cryptosporidium* oocysts has resulted in a *Cryptosporidium* Analytical Unit being established at the Altnagelvin Laboratory. This Unit has Drinking Water Inspectorate approval and is instrumental in the development of new accredited methods for the water industry.

WATER QUALITY SUMMARY

Water Service Sites in Service

During 2005, the numbers of Water Service sites in service were:

Location Type	Number in Service
Water Treatment Works	48
Service Reservoirs	354
Water Supply Zones	69
Authorised Supply Points (see glossary)	48

Overall Water Quality

114,858 microbiological, physical and chemical tests were carried out for Schedule 1 (and Zonal total coliforms) parameters on water samples taken from water treatment works, service reservoirs and customers' taps in the year 2005. 114,573 of these tests complied with the regulatory standards giving an overall compliance of 99.75%.

Microbiological Quality

Water leaving water treatment works is disinfected with chlorine to safeguard public health by destroying microorganisms. This is the most important part of the water treatment process and is monitored for effectiveness at water treatment works, service reservoirs and in the distribution system at customers' taps.

To ensure the wholesomeness of water supplied, treated water is regularly examined for total coliforms and faecal coliforms (E. coli). The presence of these organisms may indicate potential microbiological contamination of water supplies and if they are detected in drinking water immediate action is taken to identify the source and to minimise any risk to public health.

Many instances of microbiological failure in samples taken from customers' taps are due to contamination of the tap itself, in particular kitchen taps. For this reason if a positive result is obtained investigations are immediately carried out to identify if the positive result is due to the specific tap or the general system.

A summary of the microbiological quality of water supplied in 2005 is given below.

Water Leaving Treatment Works

- 9,886 samples were taken and examined for coliforms. Of these, total coliforms were absent from 99.88% of samples and E. coli from 99.94%.

Water in Service Reservoirs

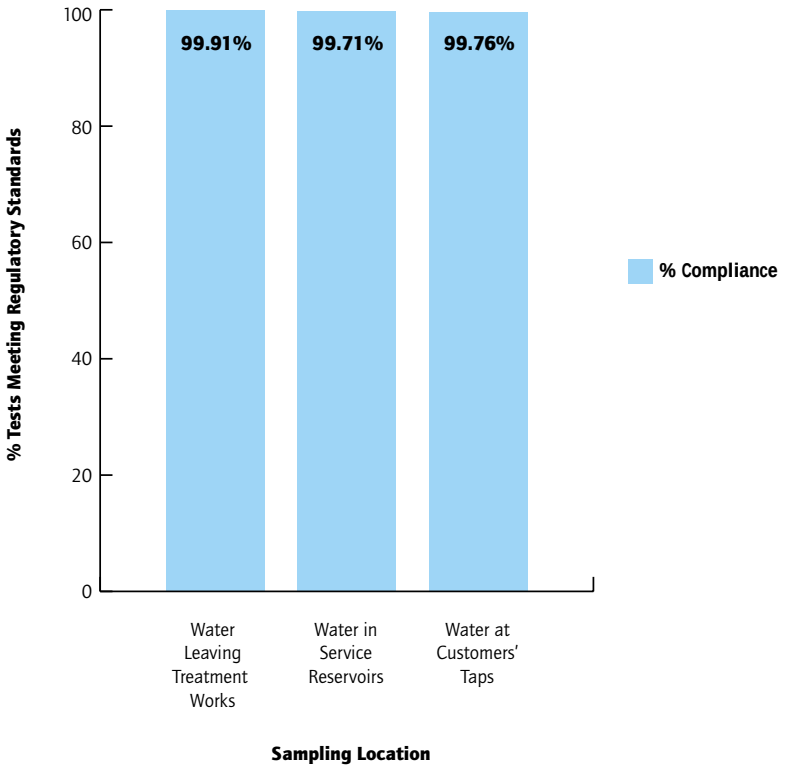
- 18,232 samples were taken and examined for coliforms. Of these, total coliforms were absent from 99.53% of samples and E. coli from 99.89%.

Water at Customers' Taps

- 5,094 samples were taken from customers' taps and examined for coliforms. Of these, total coliforms were absent from 99.53% of samples and E. coli from 99.96% of samples. 505 samples were taken from customer's taps and examined for Enterococci, and of these Enterococci was absent from all samples.

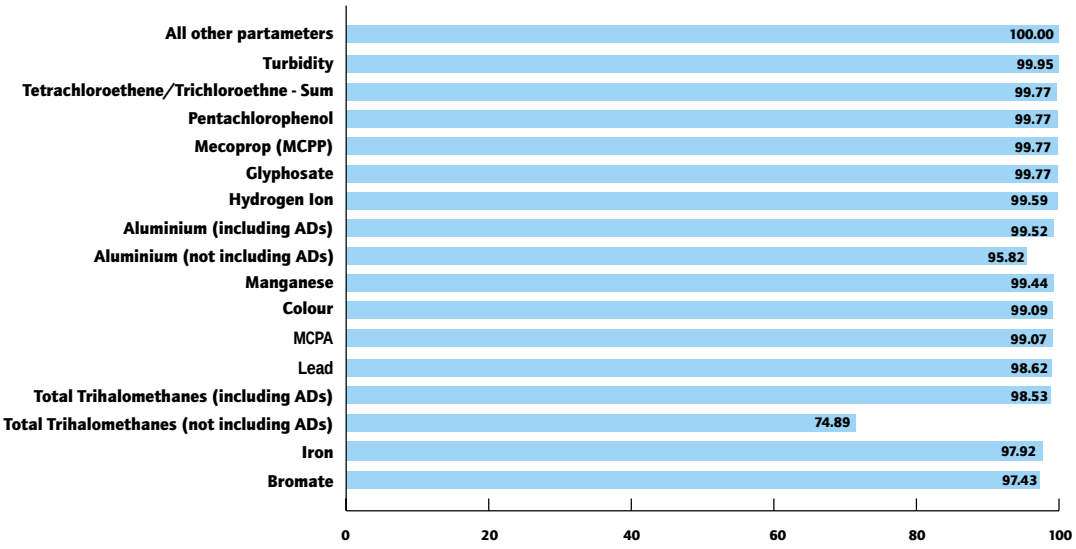
Microbiological Water Quality

% Tests meeting Regulatory Standards



Physical and Chemical Water Quality at Customer Tap or Authorised Supply Point

% of tests meeting Regulatory Standard



Overall Water Quality

	Number of Analytical Tests	Number of Tests Exceeding PCV	% Compliance with Regulatory Standards	Number of Tests Exceeding PCV or Authorised Departures	% Compliance with Regulatory Standards including Authorised Departures
Water Leaving Treatment Works					
Total coliforms	9,886	12	99.88	12	99.88
E. coli	9,886	6	99.94	6	99.94
Microbiological Total	19,772	18	99.91	18	99.91
Nitrite	864	5	99.42	5	99.42
Total	**20,636**	**23**	**99.89**	**23**	**99.89**
Water in Service Reservoirs					
Total coliforms	18,232	86	99.53	86	99.53
E. coli	18,232	20	99.89	20	99.89
Total	36,464	106	99.71	106	99.71
Water at Customers' Taps or Authorised Supply Points					
Total coliforms	5,094	24	99.53	24	99.53
E. coli	5,094	2	99.96	2	99.96
Enterococci	505	0	100.00	0	100.00
Microbiological Total	10,693	26	99.76	26	99.76
Zone Chemical Analysis	24,166	434	98.20	122	99.50
Supply Point Chemical Analysis	22,899	8	99.97	8	99.97
Total	**57,758**	**468**	**99.19**	**156**	**99.73**
Overall Water Quality Total	**114,858**	**597**	**99.48**	**285**	**99.75**

PHYSICAL AND CHEMICAL QUALITY

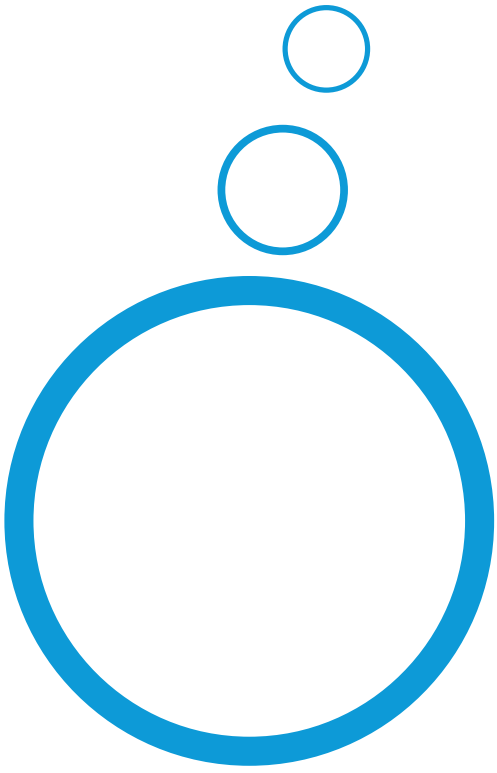
Physical and chemical quality standards apply to water supplied at customers' taps. The Regulations lay down the required sampling frequency for each parameter or group of parameters dependent on the resident population of the water supply zones.

- 47,065 tests were carried out on the physical and chemical parameters listed in Schedule 1 of Appendix 1 in 2005, and of these 46,623 complied with the regulatory standards, giving a compliance of 99.00%. If Authorised Departures are included in the assessment, the compliance increases to 99.67%. Including the Authorised Departures in the compliance assessment may be regarded as indicating the likely quality of water following the completion of the planned programmes of work at water treatment works.

Appendix 3 shows the extent of Water Service's compliance with the regulatory standards at both customer tap and authorised supply point. For most parameters, compliance is judged on the basis of the results of individual samples. If a single sample exceeds the PCV, that supply is deemed not to comply with the regulatory standards, even if the cause is outside Water Service's control, e.g. defective plumbing within premises. Improved compliance will be achieved through the water treatment works investment programme and thereafter through improvements to the distribution system. Appendix 3 also shows the Mean Zonal Compliance achieved by Water Service for 2005.

- In 2005 a total of 46,623 physical and chemical parameters analysed for, achieved 100% compliance.

Explanatory notes of exceedences of the physical and chemical quality standards with less than 100% compliance are provided in the following section.



WATER QUALITY ISSUES

Total Trihalomethanes (THMs)

THMs are chlorination by-products arising from the reaction of chlorine, used for disinfection, with natural organic material present in water. The maintenance of microbiological quality (and hence the use of chlorine) is Water Service's main priority. Northern Ireland waters are predominantly drawn from surface sources, which can contain these organic materials.

The water treatment works investment programme is designed to reduce organic matter prior to chlorination and thereby reduce Trihalomethane levels. Improved compliance is expected as improvements to water treatment works and distribution system are completed. This includes the completion this year of the new Fofanny Water Treatment Works.

Time limited Authorised Departures for THMs are in place in many of the Water Supply Zones which exceeded the THM regulatory PCV level. During the period of the report, there was 1 exceedence of the Authorised Departure level in these zones, the rest not exceeding the agreed authorised limits.

In the interim until the programmes of work are completed, Water Service is constantly reviewing its operational procedures with the aim of reducing THM levels in the distribution system, whilst maintaining microbiological quality.

Aluminium

Aluminium can be present in water supplies as a natural constituent due to the nature and structure of the ground from which the supplies are taken. Water supply zones served from the Silent Valley source in the Mourne Mountains have naturally occurring aluminium in their water supplies and the new treatment facilities at Fofanny will lower these levels to below the regulatory standard.

Aluminium compounds are used at some water treatment works as coagulants, for the removal of suspended matter and impurities. The coagulant is subsequently removed, along with the impurities, before the water leaves the treatment works.

The standard set for aluminium is based on aesthetic considerations. A number of water supplies may contain concentrations of aluminium which could exceed the standard from time to time because of changes in raw water quality or treatment process fluctuations. These treatment processes are being reviewed and modified to lower the aluminium levels to below regulatory levels.

Time limited Authorised Departures for aluminium are in place in many of the Water Supply Zones which exceeded the aluminium regulatory PCV level. During the period of the report, there were 3 exceedences of the Authorised Departure level in these zones, the rest falling within the agreed authorised limits.

Iron

The iron standard has been set for aesthetic reasons as levels persistently above the standard can give rise to discoloured water and occurrence of particles. Where the standard for iron has not been met, this may be due to problems of corrosion of cast iron watermains. There is an ongoing programme of scouring and cleaning of the distribution system to minimise the problem. In addition, Water Service has ongoing Water Mains Rehabilitation Programme in which supply zones that experience water quality and other supply problems are subjected to a detailed zonal study. These detailed zonal studies include the analysis of historic water quality data (including iron) and the implementation of targeted water sampling and analysis programmes to determine the nature and extent of the water quality problems. Appropriate solutions to the problems are then developed which include mains cleaning and renovation and replacement of parts of the distribution system. Implementation of the solutions is undertaken either by Water Service or its contractors.

Hydrogen Ion Concentration (pH)

Hydrogen Ion Concentration (pH) is used as a measure of the acidity or alkalinity of water supplies. In Northern Ireland many upland waters used for water supply contain organic matter derived from peat which is acidic by nature.

The pH of water supplied is adjusted to control the corrosion of watermains and as a preventative measure to reduce the uptake of metals such as lead, copper and zinc from customers' plumbing.

Where the standard for pH has not been met in treated water, this may be related to a problem at a water treatment works, or occasionally from newly installed cement lined water mains in the distribution systems. As water treatment works are upgraded the number of exceedences arising from this source should decrease.

Lead

Water leaving treatment works and in the distribution systems contains only trace amounts of lead. However, where lead has been used for service pipes between the watermain and the kitchen tap or for domestic plumbing, there may be a risk of concentrations at the customers' tap exceeding the lead standard.

Many older properties still have service pipes and internal plumbing wholly or partly comprised of lead. If a sample is found to exceed the limit for lead in drinking water, both the customer and the local Environmental Health Officer are notified. Water Service will replace free of charge, any of its lead pipes supplying a property, if it receives a written request from a customer who has replaced the portion of lead service pipe for which the householder is responsible. A leaflet on lead in drinking water "Have you got lead pipes?" is available, free of charge, from Water Service's Customer Service Units.

The majority of supplies in Northern Ireland are now being treated with orthophosphoric acid to minimise levels of lead in the water supply.

The Water Mains Rehabilitation Programme detailed Zonal studies referred to earlier includes sampling and testing for lead and aims to identify the presence of lead communication pipes in a zone. Also, where water mains are being rehabilitated, Water Service requires any lead communication pipes encountered to be replaced to the edge of the property.

Manganese

Manganese occurs naturally in many water sources. Concentrations can vary seasonally or be attributed to the disturbance of accumulated deposits at the bottom of reservoirs when the water is drawn down or when water circulation occurs. The standard for manganese has been set for aesthetic reasons to prevent unpleasant tastes, staining or discoloured water.

Pesticides

Pesticides include insecticides, herbicides, fungicides and algicides. These can find their way into watercourses from a variety of sources, mainly from use in agriculture or weed control. Water Service has an ongoing pesticide monitoring programme and currently analyses samples for 46 individual pesticides. Water Service constantly liaises with other regulatory bodies in Northern Ireland regarding pesticide usage and control.

The pesticide exceedences were for some of the more commonly used pesticides – in particular MCPA at Dorisland WTW. Water Service has now installed a Powder Activated Carbon (PAC) plant to remove trace pesticides at this works when required.

Water Service is currently engaged on a series of catchment management plans which include looking at pesticide usage and control.

Ammonium

The two marginal exceedences of the ammonium parameter in different supply zones were investigated and no repeat exceedences were recorded.

Turbidity

Particulate matter, usually the re-suspension of sediments present in the distribution system, affects the turbidity of drinking water. Systematic flushing of the local pipe work usually restores water quality.

Bromate

Bromate exceedences were as a result of higher than usual bromate levels in the hypochlorite supplied to Water Service treatment works for disinfection. Water Service, after consultation with the DWI, is now moving to a low bromate product.

Other Parameter

A single exceedence was recorded for nitrate. This was investigated and no repeat exceedences were recorded.

Summary

Exceedences of the regulatory standard are investigated following procedures agreed with the Health Authorities and the Drinking Water Inspectorate. Closure of an event cannot take place without their approval.

INVESTING FOR THE FUTURE

Water Treatment and the Distribution System

During the period of this report work continued on the on-going programme of improvements to our water treatment works (WTW). Water Service has completed the replacement of the existing Fofannybane WTW located in the Mourne Mountains, close to the Fofanny Dam. This modern works is capable of producing up to 52 million litres of high quality treated water per day. The construction of the new works has incorporated advanced engineering skills and sustainable environmental technology and has been sympathetically designed to minimise any visual impact on the surrounding countryside. A £9.6 million contract to upgrade the water treatment works at Carron Hill, near Crossmaglen, is due for completion during 2006. In addition, the £4million contract to improve the treatment process at Clay Lake WTW which serves Keady and the surrounding area has been continuing during 2005 and completion is expected in the second half of 2006.

Water Service also continued with its detailed studies of the watermain network system throughout Northern Ireland. Eighteen ongoing and newly commenced contracts resulting from these studies are improving the watermain network system at locations throughout the province. Depending on the availability of funding, these detailed studies will feed further extensive watermain rehabilitation projects into the work programme over the next 9 to 12 years

Expenditure on the trunk and distribution watermain network continued throughout the year, including work on the Newcastle Trunk Main. This main will transfer water to the new Newcastle Service Reservoir at Tullybrannigan and will provide security of supply to the Newcastle, Downpatrick and Clough areas.
The provision of new or replacement distribution watermains continued to take place across Northern Ireland.

Work continued throughout the year to develop the recommendations of the Water Resource Strategy. The Strategy provides Water Service with a robust basis for the development and management of secure and sustainable water resources in Northern Ireland.

The output from our second Asset Management Plan (NIAMP2), which was completed in 2003, is equivalent to a draft Business Plan. This will allow a number of possible expenditure profiles to be considered; inform decisions in relation to monetary allocation; and allow a final review of the context of the Capital Works Programme taking into account budgetary constraints.

Asset management is being developed as an on-going element within Water Service following completion of the NIAMP2 project.

Water Service's programming of improvements is dependent on the level of funding it receives. The current status of Water Service's water treatment investment for water quality improvements is set out in Appendix 4.

RESEARCH AND DEVELOPMENT

Water Service through its Asset Management R&D section undertakes a programme of applied research and technology development to support the development of standards and best practice and promote technical innovation. This programme is driven by the need to improve quality, whilst making efficiency gains, and contains several projects aimed at improving our compliance with drinking water quality standards and consented discharges, service to our customers and protecting our environment.

Water Service is a member of United Kingdom Water Industry Research Ltd. (UKWIR), an organisation that provides a framework for the procurement of a common research programme for UK water operators on "one-voice" issues. Projects undertaken by UKWIR during 2005 included research in such areas as:

- Climate Change
- Developing a framework for drinking water safety plans
- Customer Issues
- Regulation
- Environment & Quality
- Drinking Water
- Sewage Sludge

Water Service participates with other utilities in a programme of collaborative research managed by WRc. This programme covers a wide range of topics including:

- Asset Management
- Leakage
- Sewerage
- Drinking Water Quality
- Wastewater treatment.
- Sustainability

PUBLIC INFORMATION

Drinking Water Register

Water Service maintains a Drinking Water Register recording detailed water quality results for each water supply zone.

The Register is available for inspection, free of charge, during normal working office hours at Water Service offices listed below. Customers can examine any record on the register and obtain a free copy of the information for the water supply zone they live in. A charge may be made for printed information on other zones.

Customers, who wish to receive information about the quality of water in their water supply zone by post, can write to the appropriate nearest address listed, or alternatively contact Water Service's Customer Services on: 08457 440088

There is also a text number for customers who have hearing difficulties: 08457 023206

Calls to these numbers are charged at the local rate.

Water Service Customer Services
Marlborough House
Central Way
Craigavon BT64 1AD

Water Service Customer Services
Westland House
Old Westland Road
Belfast BT14 6TE

Water Service Customer Services
1a Belt Road
Altnagelvin
Londonderry BT47 2LL

Water Service Customer Services
Academy House
121a Broughshane Street
Ballymena BT43 6BA

Customers may also contact Customer Services by email on: waterline@waterni.gov.uk

Further information for customers may be obtained at the Water Service website:

http://www.waterni.gov.uk

This site also contains electronic versions of Water Service's recent reports.

Customer Services

Staff in Customer Services record details and the nature of all enquiries, requests for services, emergencies and complaints. All enquiries etc. are logged and routed directly to staff who will investigate the matter and resolve the problem as quickly as possible.

Water Service produces a range of leaflets about its services, including those designed to provide customers with the opportunity to learn more about water quality standards, water efficiency and the need to use water wisely. The leaflets can be obtained from Customer Service Units or may be viewed on the Water Service Website.

To assist its visually impaired customers, Water Service also prepares a Braille version of this report.

APPENDIX 1

DRINKING WATER QUALITY STANDARDS

SCHEDULE 1 PRESCRIBED CONCENTRATIONS AND VALUES

TABLE A.

MICROBIOLOGICAL PARAMETERS

Part I: Directive requirements

Parameters	*Concentration or Value (maximum)*	*Units of Measurement*	*Point of compliance*
Enterococci	0	number/100ml	Customers' taps
Escherichia coli (E. coli)	0	number/100ml	Customers' taps
Coliform bacteria	0	number/100ml	Customers' taps **(i)**

TABLE B.

CHEMICAL PARAMETERS

Part I: Directive requirement

Parameters	*Concentration or Value (maximum)*	*Units of Measurement*	*Point of compliance*
Acrylamide	0.10	µg/l	**(ii)**
Antimony	5	µg Sb/l	Customers' taps
Arsenic	10	µg As/l	Customers' taps
Benzene	1	µg/l	Customers' taps
Benzo 3 4 pyrene	0.01	µg/l	Customers' taps
Boron	1	Mg B/l	Customers' taps
Bromate	10	µg BrO_3/l	Customers' taps
Cadmium	5	µg Cd/l	Customers' taps
Chromium	50	µg Cr/l	Customers' taps
Copper	2	Mg Cu/l	Customers' taps
Cyanide	50	µg CN/l	Customers' taps
1.2 Dichloroethane	3	µg/l	Customers' taps*
Fluoride	1.5	Mg F/l	Customers' taps
Lead	(a) 25, from 25th December 2003 until immediately before 25th December 2013	µg Pb/l	Customers' taps
	(b) 10, on and after 25th December 2013	µg Pb/l	Customers' taps
Mercury	1	µg Hg/l	Customers' taps
Nickel	20	µg Ni/l	Customers' taps

Parameters	*Concentration or Value (maximum)*	*Units of Measurement*	*Point of compliance*
Nitrate	50	Mg NO_3/l	Customers' taps
Nitrite	0.5	Mg NO_2/l	Customers' taps
Aldrin	0.03	µg/l	Customers' taps*
Dieldrin	0.03	µg/l	Customers' taps*
Heptachlor	0.03	µg/l	Customers' taps*
Heptachlor epoxide	0.03	µg/l	Customers' taps*
Other pesticides	0.1	µg/l	Customers' taps*
Total Pesticides **(iii)**	0.5	µg/l	Customers' taps*
PAH - Sum of four substances **(iv)**	0.1	µg/l	Customers' taps
Selenium	10	µg Se/l	Customers' taps
Tetrachloroethene/Trichloroethene – Sum **(v)**	10	µg/l	Customers' taps*
Total Trihalomethanes **(vi)**	100	µg/l	Customers' taps
Vinyl chloride	0.50	µg/l	**(ii)**

Notes:

(i) Water Service, with the agreement of the Drinking Water Inspectorate, includes Total Coliforms within the Part I: Directive Requirements table for statistical purposes.

(ii) The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This is controlled by product specification.

(iii) Total Pesticides: means the sum of the concentrations of the individual pesticides detected and quantified in the monitoring procedure.

(iv) The specified compounds are:

- benzo(b)fluoranthene
- benzo(k)fluoranthene
- benzo(ghi)perylene
- indeno (1,2,3-cd) pyrene.

(vi) The specified compounds are:

- chloroform
- bromoform
- dibromochloromethane
- bromodichloromethane.

***** May be monitored from samples of water leaving treatment works or other supply point, as no significant change during distribution.

Part II: National requirements

Parameters	*Concentration or Value (maximum unless otherwise stated)*	*Units of Measurement*	*Point of compliance*
Aluminium	200	µg Al/l	Customers' taps
Colour	20	mg/l Pt/Co	Customers' taps
Hydrogen Ion	10	pH value	Customers' taps
	6.5 (minimum)	pH value	
Iron	200	µg Fe/l	Customers' taps
Manganese	50	µg Mn/l	Customers' taps
Odour	3 at 25°C	Dilution number	Customers' taps
Sodium	200	mg Na/l	Customers' taps
Taste	3 at 25°C	Dilution number	Customers' taps
Tetrachloromethane	3	µg/l	Customers' taps
Turbidity	4	NTU	Customers' taps

Notes:

(i) The water should not be aggressive.

(ii) Excluding tritium, potassium-40, radon and radon decay products.

***** May be monitored from samples of water leaving treatment works or other supply point, as no significant change during distribution.

SCHEDULE 2
INDICATOR PARAMETERS

Parameters	*Specification Concentration or Value (maximum) or State*	*Units of Measurement*	*Point of monitoring*
Ammonium	0.5	mg NH_4/l	Customers' taps
Chloride **(i)**	250	mg Cl/l	Supply point*
Clostridium perfringens (including spores)	0	Number/100ml	Supply point*
Colony counts	No abnormal change	Number/1ml at 22°C Number/1ml at 37°C	Customers' taps, service reservoirs and treatment works
Conductivity **(i)**	2500	µS/cm at 20°C	Supply point*
Hydrogen Ion	9.5	pH value	Customers' taps
Sulphate **(i)**	250	mg SO_4/l	Supply point*
Total indicative dose (for radioactivity) **(ii)**	0.1	mSv/year	Supply point*
Total organic carbon (TOC)	No abnormal change	mg C/l	Supply point*
Tritium (for radioactivity)	100	Bq/l	Supply point*
Turbidity	1	NTU	Treatment works

* May be monitored from samples of water leaving treatment works or other supply point, as no significant change during distribution.

EXPLANATORY NOTES

Measurement Units:

mg/l means one part in a million.

µg/l means one part in a thousand million.

Parameter:

A parameter refers to any substance, organism or property listed above.

APPENDIX 2

YEAR 2005 AUTHORISED DEPARTURES BY WATER SUPPLY ZONES UNDER REGULATION 37

Zone Code	Zone Name	Aluminium (µg/l)	Total Trihalomethanes (µg/l)	Authorised Departure Start	Authorised Departure End
Z104	Ballymena Borough Zone	–	150	01-Jan-04	31-Dec-06
Z109	Dunore North Zone	–	150	01-Jan-04	31-Dec-06
Z113	Moyola Zone	–	150	01-Jan-04	31-Dec-06
Z201	Altmore Zone	300	200	01-Jan-04	31-Dec-06
Z202	Altmore-Gortlenaghan Zone	300	200	01-Jan-04	31-Dec-06
Z203	Babylon Hill Zone	–	200	01-Jan-04	31-Dec-06
Z205	Ballydougan Zone	–	200	01-Jan-04	31-Dec-06
Z206	Ballyhannon Zone	–	200	01-Jan-04	31-Dec-06
Z207	Banbridge Zone	–	200	01-Jan-04	31-Dec-06
Z208	Castor Bay Zone	–	200	01-Jan-04	31-Dec-06
Z209	Castor Bay-Shanmoy Zone	–	200	01-Jan-04	31-Dec-06
Z211	Fofanny-Ballymaconaghy Zone	400	250	01-Jan-04	31-Dec-06
Z212	Fofanny-Banbridge Zone	400	250	01-Jan-04	31-Dec-06
Z213	Fofanny-Newry Zone	400	250	01-Jan-04	31-Dec-06
Z214	Lough Ross Zone	–	250	01-Jan-04	31-Oct-06
Z215	Lurgan Zone	–	200	01-Jan-04	31-Dec-06
Z216	Magheraliskmisk Zone	–	200	01-Jan-04	31-Dec-06
Z217	Newry Zone	400	250	01-Jan-04	31-Dec-06
Z218	Richhill Zone	–	200	01-Jan-04	31-Dec-06
Z219	Seagahan Zone	–	250	01-Jan-04	31-Dec-06
Z220	Silent Valley South Zone	400	250	01-Jan-04	31-Dec-06
Z301	Ballyhanwood Zone	400	250	01-Jan-04	31-Dec-05
Z302	Ballysallagh Zone	400	250	01-Jan-04	31-Dec-05
Z303	Breda East Zone	400	250	01-Jan-04	31-Dec-05
Z304	Breda West Zone	400	250	01-Jan-04	31-Dec-05
Z305	Clandeboye Zone	400	250	01-Jan-04	31-Dec-05
Z306	Conlig Zone	400	250	01-Jan-04	31-Dec-05
Z308	Downpatrick Zone	400	250	01-Jan-04	31-Dec-05
Z309	Dunmurry Zone	400	250	01-Jan-04	31-Dec-05
Z310	Dunore East Zone	–	150	01-Jan-04	31-Dec-06
Z311	Holywood Zone	400	250	01-Jan-04	31-Dec-05
Z312	Kilkeel-Annalong Zone	400	250	01-Jan-04	31-Dec-06
Z313	Lisbane Zone	400	250	01-Jan-04	31-Dec-05

Zone Code	Zone Name	Aluminium (µg/l)	Total Trihalomethanes (µg/l)	Authorised Departure Start	Authorised Departure End
Z314	Lisburn North Zone	400	250	01-Jan-04	31-Dec-05
Z315	Lisnabreeny Zone	400	250	01-Jan-04	31-Dec-05
Z316	Lough Cowey Zone	–	150	01-Jan-04	31-Dec-06
Z317	North Peninsula Zone	400	250	01-Jan-04	31-Dec-05
Z318	Oldpark Zone	–	250	01-Jan-04	31-Dec-06
Z319	Purdysburn South Zone	400	250	01-Jan-04	31-Dec-05
Z320	Stoneyford Zone	400	250	01-Jan-04	31-Dec-05
Z321	Woodvale Zone	400	250	01-Jan-04	31-Dec-05
Z322	Purdysburn North Zone	400	250	01-Jan-04	31-Dec-05
Z405	Glenhordial Zone	250	150	01-Jan-04	30-Nov-05
Z408	Lenamore Springs Zone	250	150	01-Jan-04	30-Nov-05
Z410	Lough Braden Zone	250	150	01-Jan-04	30-Nov-05
Z411	Lough Macrory Zone	250	150	01-Jan-04	30-Nov-05

PROGRAMMES OF WORK TO MEET AUTHORISED DEPARTURE REQUIREMENTS

During 2005, certain planned and remedial programmes of work to meet Authorised Departure requirements were completed. These were:

Water Treatment Works	Zone code affected	Zone name affected
Drumaroad WTW	Z301	Ballyhanwood Zone
	Z302	Ballysallagh Zone
	Z303	Breda East Zone
	Z304	Breda West Zone
	Z305	Clandeboye Zone
	Z306	Conlig Zone
	Z308	Downpatrick Zone
	Z309	Dunmurry Zone
	Z311	Holywood Zone
	Z313	Lisbane Zone
	Z314	Lisburn North Zone
	Z315	Lisnabreeny Zone
	Z317	North Peninsula Zone
	Z319	Purdysburn South Zone
	Z320	Stoneyford Zone
	Z321	Woodvale Zone
	Z322	Purdysburn North Zone
Lough Macrory WTW	Z405	Glenhordial Zone
	Z408	Lenamore Springs Zone
	Z410	Lough Braden Zone
	Z411	Lough Macrory Zone

APPENDIX 3

WATER QUALITY REPORT FOR WATER SUPPLY ZONES

Schedule 1 parameters	2005 Samples	No > PCV	% > PCV	No > AD	% > AD
Enterococci	505	0	0.00%	–	–
E Coli	5094	2	0.04%	–	–
Aluminium	2298	96	4.18%	3	0.13%
Antimony	506	0	0.00%	–	–
Arsenic	506	0	0.00%	–	–
Benzo 3 4 pyrene	506	0	0.00%	–	–
Bromate	506	13	2.57%	–	–
Cadmium	506	0	0.00%	–	–
Chromium	506	0	0.00%	–	–
Colour	1969	18	0.91%	–	–
Copper	509	0	0.00%	–	–
Hydrogen Ion	1970	8	0.41%	–	–
Iron	1971	41	2.08%	–	–
Lead	506	7	1.38%	–	–
Manganese	1971	11	0.56%	–	–
Nickel	506	0	0.00%	–	–
Nitrate	525	0	0.00%	–	–
Nitrite	525	0	0.00%	–	–
Odour	1969	0	0.00%	–	–
Selenium	506	0	0.00%	–	–
Sodium	507	0	0.00%	–	–
Taste	1969	0	0.00%	–	–
PAH - Sum of four substances	506	0	0.00%	–	–
Total Trihalomethanes	952	239	25.11%	1	0.11%
Turbidity	1971	1	0.05%	–	–

Indicator parameters	2005 Samples	No > SPEC	% > SPEC
Total Coliforms	5094	24	0.47%
Total - Residual disinfectant	5087	0	0.00%
Free - Residual disinfectant	5086	0	0.00%
Colony Counts 37 (48hrs)	1971	0	0.00%
Colony Counts 22	1971	0	0.00%
Hydrogen Ion (indicator) pH value	1970	4	0.20%
Ammonium	1970	2	0.10%

WATER QUALITY REPORT FOR AUTHORISED SUPPLY POINTS

Schedule 1 parameters	2005 Samples	No > PCV	% > PCV	No > AD	% > AD
Benzene	433	0	0.00%	–	–
Boron	432	0	0.00%	–	–
Cyanide	432	0	0.00%	–	–
1.2 Dichloroethane	433	0	0.00%	–	–
Fluoride	431	0	0.00%	–	–
Mercury	432	0	0.00%	–	–
Aldrin	432	0	0.00%	–	–
Dieldrin	432	0	0.00%	–	–
Heptachlor	432	0	0.00%	–	–
Heptachlor Epoxide	432	0	0.00%	–	–
Total Pesticides	432	0	0.00%	–	–
All other analysed Pesticides	17280	7	0.04%	–	–
Tetrachloroethene/Trichloroethene - Sum	433	1	0.23%	–	–
Tetrachloromethane	433	0	0.00%	–	–

Indicator parameters	2005 Samples	No > SPEC	% > SPEC
Clostridium perfringens	3192	19	0.60%
Chloride	433	0	0.00%
Conductivity	3225	0	0.00%
Sulphate	430	0	0.00%
Total Organic Carbon	435	0	0.00%
Total Indicative Dose	432	0	0.00%
Tritium	432	0	0.00%

WATER QUALITY REPORT FOR WATER TREATMENT WORKS

Schedule 1 parameters	2005 Samples	No > PCV	% > PCV
Total Coliforms	9886	12	0.12%
E Coli	9886	6	0.06%
Nitrite	864	5	0.58%

Indicator parameters	2005 Samples	No > SPEC	% > SPEC
Turbidity	9884	153	1.55%
Total - Residual disinfectant	9875	0	0.00%
Free - Residual disinfectant	9875	0	0.00%
Colony Counts 37 (48hrs)	9888	0	0.00%
Colony Counts 22	9885	0	0.00%

WATER QUALITY REPORT FOR *CRYPTOSPORIDIUM* OOCYSTS

Parameter	2005 Samples	No > Reporting Level	% > Reporting Level
Cryptosporidium Oocysts	1495	0	0.00%

WATER QUALITY REPORT FOR SERVICE RESERVOIRS

Schedule 1 parameters	2005 Samples	No > PCV	% > PCV
Total Coliforms	18232	86	0.47%
E Coli	18232	20	0.11%

Indicator parameters	2005 Samples	No > SPEC	% > SPEC
Colony Counts 22	18225	0	0.00%
Colony Counts 37 (48hrs)	18225	0	0.00%
Total - Residual disinfectant	18231	0	0.00%
Free - Residual disinfectant	18232	0	0.00%

2005 MEAN ZONAL COMPLIANCE

Parameter	Number of Samples	No of fails at zone / supply point	No of zones / supply points with fails	% Zonal Compliance
Colour	1969	18	14	**98.18**
Turbidity	1971	1	1	**99.94**
Odour	1969	0	0	**100.00**
Taste	1969	0	0	**100.00**
Hydrogen Ion	1970	8	5	**99.44**
Sodium	507	0	0	**100.00**
Nitrate	525	0	0	**100.00**
Nitrite	525	0	0	**100.00**
Nitrite/Nitrate Formula	525	0	0	**100.00**
Aluminium	2298	96	21	**96.29**
Iron	1971	41	26	**97.75**
Manganese	1971	11	10	**98.86**
Copper	509	0	0	**100.00**
Fluoride	431	0	0	**100.00**
Arsenic	506	0	0	**100.00**
Cadmium	506	0	0	**100.00**
Cyanide	432	0	0	**100.00**
Chromium	506	0	0	**100.00**
Mercury	432	0	0	**100.00**
Nickel	506	0	0	**100.00**
Lead	506	7	6	**98.55**
Antimony	506	0	0	**100.00**
Selenium	506	0	0	**100.00**
Pesticides - total substances	432	0	0	**100.00**
Total PAH (sum of 4 substances)	506	0	0	**100.00**
E.coli	5094	2	2	**99.97**
Enterococci	505	0	0	**100.00**
Boron	432	0	0	**100.00**
Benzo 3 4 pyrene	506	0	0	**100.00**
Tetrachloromethane	433	0	0	**100.00**
Tetrachloroethene/Trichloroethene - Sum	433	1	1	**99.47**
Total Trihalomethanes	952	239	45	**75.37**
1,2 Dichloroethane	433	0	0	**100.00**
Benzene	433	0	0	**100.00**
Bromate	506	13	7	**97.10**
Aldrin	432	0	0	**100.00**
Dieldrin	432	0	0	**100.00**
Heptachlor	432	0	0	**100.00**
Heptachlor epoxide	432	0	0	**100.00**
Pesticides - other substances (P999)	17280	7	5	**99.96**
Total Number of Samples / Fails	**53189**	**444**		
Mean Zonal Compliance %				**99.02**

APPENDIX 4

INVESTMENT PROGRAMME

Over the last nine years improvement work has been completed at the following water treatment works:

Altnahinch WTW	Ballysallagh WTW	Carmoney WTW	Caugh Hill WTW
Derg WTW	Drumaroad WTW	Dungonnel WTW	Killyhevlin WTW
Lough Bradan WTW	Lough Fea WTW	Lough Macrory WTW	Rathlin Island WTW
Woodburn WTW			

In 2005 Water Service completed the construction and commenced the operation of:
Fofanny WTW

For 2006 Water Service anticipates the completion of construction and commencement of operation at:

Clay Lake WTW	Castor Bay WTW	Carron Hill WTW

Looking towards the future, as well as any necessary enhancement to the above water treatment works, further improvement work is scheduled for the following:

Ballinrees WTW	Dunore Point WTW	Moyola WTW	Seagahan WTW

As the programme for improvement / replacement of WTWs nears completion Water Service is shifting the emphasis of upgrading work into the distribution system:

- Coroddy to Prehen Trunk Water Main was completed in 2005;
- Newcastle Trunk Water Main Phase 2 construction completed in 2005 but not yet commissioned;
- North Down Strategic Water Main commenced in Dec 2005;
- Dunore to Hydepark Pumping Main Replacement will commence in 2006; and
- Ballinrees to Limavady Water Main will commence in 2006

Work is planned for the rehabilitation of pipe work in more than 70 rehabilitation zones throughout the province. Construction is in progress at 18 of these zones. Two zones commenced in 2004, 16 zones commenced in 2005 and subject to available funding the remainder will follow as the programme develops.

Alongside the rehabilitation programme upgrading of water pipe work through framework contracts includes 102 projects at construction stage during 2005. Fourteen of these were commenced before 2005, 88 commenced in 2005 and 76 were completed in 2005.

APPENDIX 5

GLOSSARY OF TECHNICAL TERMS

Aesthetic	Associated with the senses of taste, smell and sight.
Authorised Departure (AD)	A time limited authorised departure from the regulatory limit for certain parameters, provided that there is a planned programme of work at the water treatment works to improve the water quality and that there are no adverse health implications.
Authorised Supply Point	A sampling point within the distribution system authorised by the DWI for certain parameters, because the results of the analysis of such samples are unlikely to differ in any material respect from the results of the analysis of samples taken from customers' taps.
Catchment	The area of land that drains into a watercourse.
Chloramination	An alternative form of disinfectant, based on chlorine and ammonia, which provides a longer lasting residual disinfectant in the distribution system compared to free chlorine.
Coagulation	The process of aggregating colloidal and fine particulate matter into a settleable material.
Coliforms	A group of bacteria which may be faecal or environmental in origin.
Compliance assessment	A comparison made by the DWI of data (gathered by Water Service) against standards and other regulatory requirements.
Contravention	A breach of the regulatory requirement.
Cryptosporidiosis	The illness produced by infection with *Cryptosporidium*.
Cryptosporidium	A protozoan parasite.

Determination	A single analytical result for a specific parameter.
Distribution systems	Water Service's network of mains, pipes, pumping stations and service reservoirs through which treated water is conveyed to customers.
Drinking Water Directive	European Council Directive (98/83/EC) relating to the quality of water intended for human consumption.
DWI	Northern Ireland Drinking Water Inspectorate - has an independent responsibility to audit drinking water quality compliance against the standards set in the Regulations.
Event	A situation affecting or threatening to affect drinking water quality.
Exceedence	Synonym for contravention (see above).
Faecal coliforms	A sub-group of coliforms, almost exclusively faecal in origin.
Filtration	The separation of suspended particulate matter from a fluid.
Groundwater	Water from aquifers or other underground sources.
Hydrogen Ion	A measure of the acidity or basicity related to the concentration of the hydrogen ion (also referred to as pH).
Incident	An event where there has been a demonstrable deterioration in the quality of drinking water.
Investment programme	Investment in improvement works to water treatment works and distribution systems.

Mains rehabilitation	Restoration or replacement of water mains pipework to a proper condition.
Mean Zonal Compliance	The assessment of water quality at a parameter level based on water supply zones.
Microbiological	Associated with the study of microbes.
m^3/d	Cubic metres per day.
mg/l	Milligrammes per litre.
ml	Millilitre.
Ml/d	Megalitres per day (one Ml/d is equivalent to 1,000 m3/d or 220,000 gallon/d).
Oocyst	The resistant form in which *Cryptosporidium* occurs in the environment, and which is capable of causing infection.
Orthophosphoric acid	A chemical dosed in low concentrations at water treatment works to minimise the uptake of lead from old pipework into customers' water.
PAHs	A group of organic compounds known as polycyclic aromatic hydrocarbons, comprising, for the purposes of the Regulations, four substances: benzo(b)fluoranthene, benzo(k)fluoranthene benzo(ghi)perylene and indeno (1,2,3-cd) pyrene,
Parameter	A parameter is any substance, organism or property listed in the regulations.
Pathogen	An organism which causes disease.

PCV	See 'Prescribed concentration or value'.
Pesticides	Any fungicide, herbicide or insecticide or related product (excluding medicines) used for the control of pests or diseases.
Plumbosolvency	The tendency for lead to dissolve in water.
Prescribed Concentration or Value	The numerical value assigned to water quality standards (PCV), defining the maximum or minimum legal concentration or value of a parameter. In certain circumstances, the DWI may authorise a time limited departure from the regulatory value. See 'Authorised Departure'.
Protozoan parasites	A single celled organism that can only survive by infecting a host.
Public register	The information made available by Water Service to the public as required by regulation 34.
Regulations	The Water Supply (Water Quality) Regulations (Northern Ireland) 2002 S.R. No.331 ISBN 0-337-94388-5.
Remedial action	Action taken to improve a situation.
Service reservoir (SR)	A water tower, tank or other reservoir used for the storage of treated water within the distribution system.
Springs	Groundwater appearing at the surface at the outcrop of the junction of an impermeable stratum.
Surface water	Water from rivers, impounding reservoirs or other surface water sources.

Technical audit	The means of checking by the DWI that Water Service is complying with its statutory obligations.
Toxicology	The study of the health effects of substances.
Treated water	Water treated for use for domestic purposes as defined in the Regulations.
Trihalomethanes (THMs)	A group of organic substances comprising, for the purposes of the Regulations, four substances: trichloromethane (also known as chloroform), dichlorobromomethane, dibromochloromethane and tribromomethane.
µg/l	Microgrammes per litre.
UKAS	The sole national accreditation body recognized by government to assess, against internationally agreed standards, organizations that provide certification, testing, inspection and calibration services.
Water Safety Plan	A means of ensuring that a water supply is safe for human consumption based on a comprehensive risk assessment and risk management approach to all the steps in a water supply chain from catchment to tap.
Water Supply Zone (Zone)	The basic unit of supply for establishing sampling frequencies, compliance with standards and information to be made publicly available.
Website	Location of information on the Internet. Water Service's website is: http://www.WaterNI.gov.uk
Wholesomeness	A concept of water quality which is defined by reference to standards and other requirements set out in the Regulations.


Water
Service

Design: **Page** Setup Belfast. tel. 028 9032 6200

Water Service

Water Service
Northland House
3 Frederick Street
Belfast BT1 2NR

Tel. 028 9024 4711
Fax. 028 9035 4888
Email. waterline@waterni.gov.uk
Website. www.waterni.gov.uk