



Water Quality Report 2011

The Jersey New Waterworks Company Limited



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1 Executive Summary

During 2011 Jersey Water supplied 7,152 million litres of drinking water to its customers and I am pleased to report that 99.81% of the regulatory analyses of water carried out during the year complied with the maximum allowable concentrations set out in the Water (Jersey) Law 1972. This compliance level compares well with the average figures for the England & Wales water industry.

The following tables show the results of the treated water quality monitoring programme. The tables show the minimum, mean and maximum concentrations of physical, bacteriological and chemical quality parameters, together with the respective Maximum Allowable Concentration (MAC) and percentage compliance with the MAC.

In order to ensure that the water quality results are representative of the water we supplied during the year, a monitoring programme is adopted which ensures an optimum frequency of sampling is applied. The monitoring programme is based on the Water Supply (Water Quality) Regulations 2000 for England & Wales. The Water (Jersey) Law 1972 requires the proposed annual monitoring programme to be approved by the Planning & Environment department.

The sampling for nitrates showed that twenty eight analyses were above the 50 mg/l limit and the highest recorded figure was 56.3 mg/l. Jersey Water has no controls over the source of nitrates in water resources, consequently a dispensation has been granted, which allows 33% of regulatory analyses to be above 50 mg/l, but not greater than 70 mg/l.

During 2011 Jersey Water supplied 7,152 million litres of drinking water to its customers.

Jersey Water and our consultants carried out 18,877 analyses of the treated water supplied for compliance purposes and in addition to this, a comprehensive monitoring programme is in place for sampling and analysing the quality of water resources and water stored in our reservoir storage system. This programme, together with on-line monitoring systems, allows our operating staff to select the most suitable water to be taken for treatment and distribution to our customers.

From the information contained in this report I am pleased to report that the quality of water we supply continues to be of a very high standard. The results are comparable to water supplied by water companies in the England & Wales, which are recognised to have some of the highest quality standards in the world.

Howard N Snowden
Managing Director & Engineer

2 The Water Quality Monitoring Team

To enable monitoring and analysis of the water we supply, Jersey Water has a modern and comprehensive water quality monitoring laboratory at Millbrook Depot, St Lawrence.

Our Laboratory Manager, David Mayman is a Chartered Chemist and a Member of the Royal Society of Chemistry. David has over 27 years experience in water supply quality and is ably supported by assistant manager Sarah Le Sueur and laboratory technician Nora Treanor.

The Department has three samplers, Keith Quemard, Bob Langford and Matthew Parkin, who have taken 8156 samples of water in 2011, attended to customer queries and carried out sampling preparatory work in the laboratory.

The water quality laboratory is a purpose designed facility, consisting of a preparatory room with auto-claves for sterilisation of sample bottles and equipment, a bacteriological laboratory and chemical laboratory.



3 Raw Water Quality

Jersey Water derives the majority of its water from the collection of surface water streams. These streams either flow directly into the main reservoirs or are pumped from a number of stream abstraction stations which are remote from the reservoirs.

During 2011, 965 water samples were taken from stream sources and analysed for physical, bacteriological and chemical parameters. There were 9 herbicides and pesticides detected in water samples taken from the streams.

During 2011, 965 water samples were taken from stream sources and analysed for physical, bacteriological and chemical parameters.



Val de la Mare Reservoir



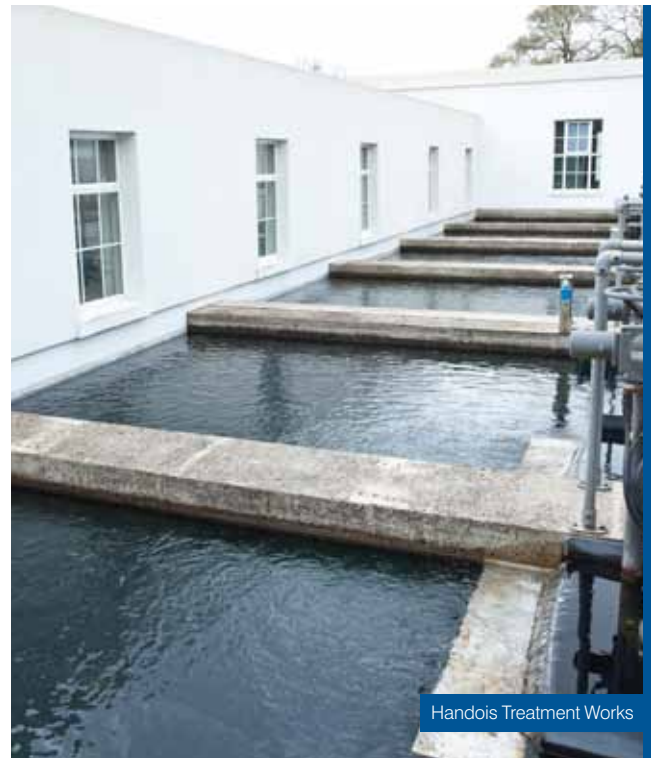
Collecting water sample from a stream source

4 Treatment Works and Service Reservoir Performance

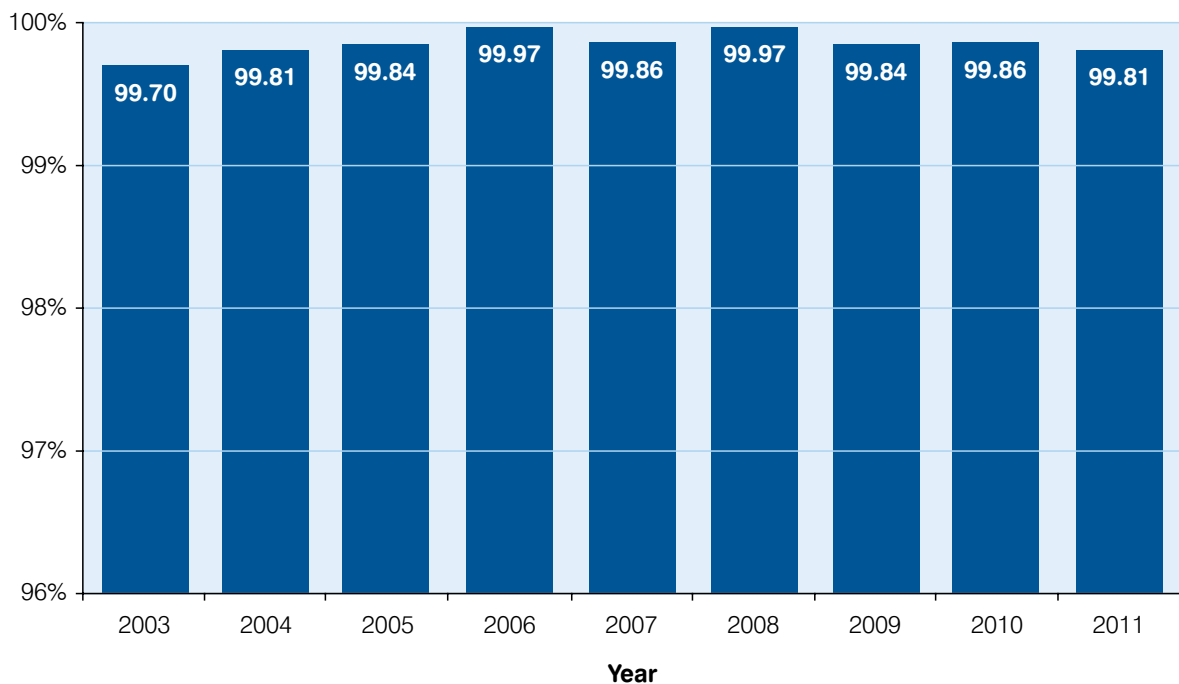
Jersey Water operates two treatment works located at Handois, St Lawrence and Augres, Trinity. Both treatment works have identical treatment processes, which use a chemically-assisted primary treatment system, using aluminium sulphate, followed by dual media rapid gravity filtration using sand and anthracite.

Disinfection is the key to a safe water supply. The use of chlorine in the water industry has been mandatory in England and Wales since the 1945 Water Act and has resulted in the eradication of diseases which were caused by waterborne pathogens. Disinfection of the water in Jersey is carried out by the use of chlorine and ammonia, which provides a compound called chloramine. This process ensures a residual concentration of chlorine exists in the water throughout the relatively long and radial type distribution system to ensure bacteriological standards are maintained.

Thirty five non-compliant analyses were found in samples taken from the supply points and the supply zone during 2011, out of 18,877 analyses taken for compliance purposes. This gives a percentage compliance of 99.81%, slightly down on last years figure of 99.86%.



Percentage Compliance



4 Treatment Works and Service Reservoir Performance - continued

The water quality regulations stipulate that two kinds of monitoring are required - check and audit monitoring. The check monitoring is done on a more frequent basis to ensure that the treatment works and the water in distribution is suitable for supply, whereas the audit monitoring is used to investigate the quality of the water more thoroughly.

The results of the check monitoring of treated water leaving the treatment works, their respective maximum allowable concentrations and compliance levels are shown in the following tables (the results of the audit monitoring programme can be found in the appendix section).

Check Monitoring: Handois WTW

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	311	100
Coliform bacteria	0 per 100ml	0	0	0	311	100
Colony counts	No abnormal change	No abnormal change			311	100
Nitrite	0.1 mg NO ₂ /l	<0.003	0.005	0.010	104	100
Residual disinfectant	No value mg Cl ₂ /l	0.44	0.56	0.74	311	
Turbidity	4 NTU	0.06	0.11	0.18	245	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 µS/cm at 20°C	554	589	643	52	100

Check Monitoring: Augrès WTW

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	311	100
Coliform bacteria	0 per 100ml	0	0	0	311	100
Colony counts	No abnormal change	No abnormal change			311	100
Nitrite	0.1 mg NO ₂ /l	<0.003	0.003	0.006	104	100
Residual disinfectant	No value mg Cl ₂ /l	0.34	0.43	0.52	311	
Turbidity	4 NTU	0.05	0.07	0.15	245	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 µS/cm at 20°C	541	599	766	52	100

4 Treatment Works and Service Reservoir Performance - continued

Treated water reservoirs are located at Les Platons, Trinity and Westmount Road, above St Helier. These reservoirs are provided to ensure adequate treated water is on-hand to supply our customers at periods of peak daily demand, which are normally 0700 to 0900 and 1700 to 1900 hours.

Check Monitoring: Les Platons Service Reservoir, East Compartment

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	311	100
Coliform bacteria	0 per 100ml (95% of samples)	0	0	1	311	99.7
Colony counts	No abnormal change	No abnormal change			311	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 μ S/cm at 20°C	550	590	641	52	100

Check Monitoring: Les Platons Service Reservoir, West Compartment

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	311	100
Coliform bacteria	0 per 100ml (95% of samples)	0	0	0	311	100
Colony counts	No abnormal change	No abnormal change			311	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 μ S/cm at 20°C	552	590	641	52	100

Check Monitoring: Westmount Service Reservoir

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	311	100
Coliform bacteria	0 per 100ml (95% of samples)	0	0	0	311	100
Colony counts	No abnormal change	No abnormal change			311	100
Clostridium perfringens	0 per 100ml	0	0	2	52	98.1
Conductivity	2500 μ S/cm at 20°C	541	592	642	52	100

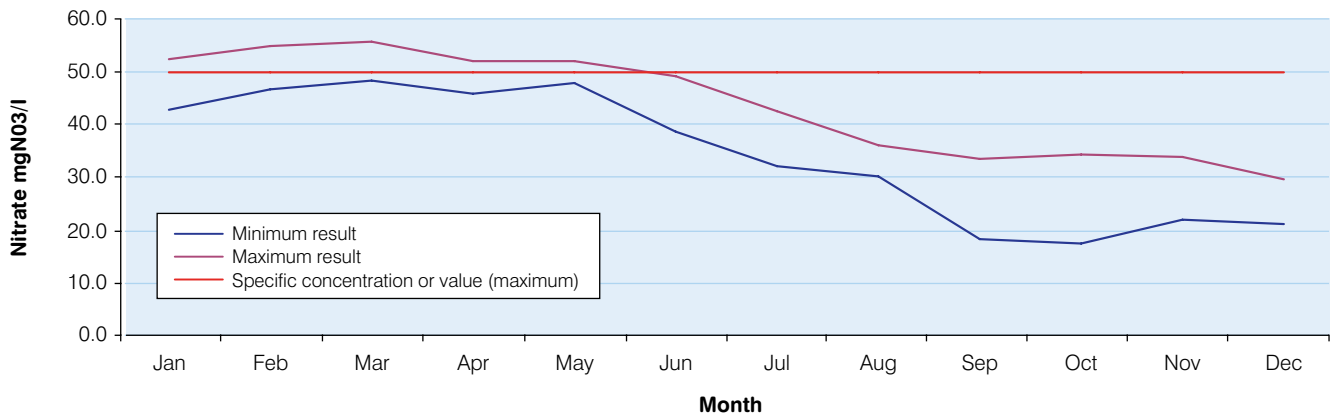
5 Water Quality in the Distribution System

During 2011, 1,468 water samples were taken from all parts of the distribution system and analysed for physical, bacteriological and chemical standards. The following tables show the results of the check and audit monitoring programmes and the percentage compliance of samples taken from the distribution system.

Check Monitoring: Supply Zone

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	734	100
Coliform bacteria	0 per 100ml	0	0	1	734	99.9
Residual disinfectant	No value mg Cl ₂ /l	<0.02	0.11	0.56	634	
Aluminium	200 µg Al/l	<6	17	56	100	100
Ammonium	0.50 mg NH ₄ /l	<0.04	<0.04	0.18	100	100
Clostridium perfringens	0 per 100ml	0	0	0	100	100
Colony counts	No abnormal change	No abnormal change			634	100
Colour	20 mg/l Pt/Co	<0.69	1.95	12.70	100	100
Conductivity	2500 µS/cm at 20°C	553	595	669	100	100
Hydrogen ion	10.0 pH value 6.5(min)	7.03	7.48	7.92	100	100
Iron	200 µg Fe/l	<4	13	62	100	100
Manganese	50 µg Mn/l	<2.0	5.2	23.0	100	100
Nitrate	50 mg NO ₃ /l	14.8	39.6	56.3	100	72
Nitrite	0.5 mg NO ₂ /l	<0.010	0.024	0.164	100	100
Odour	3 at 25°C Dilution number	1	1	2	100	100
Taste	3 at 25°C Dilution number	1	1	3	99	100
Turbidity	4 NTU	0.10	0.19	0.52	100	100

Nitrate levels in distribution 2011



5 Water Quality in the Distribution System - continued

Audit Monitoring: Supply Zone

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Antimony	5.0 µg Sb/l	<0.009	0.084	0.280	12	100
Arsenic	10 µg As/l	<0.015	0.047	0.310	12	100
Benzene	1.0 µg/l	<0.07	<0.07	<0.07	12	100
Benzo(a)pyrene	10.0 ng/l	<0.5	<0.5	<0.5	12	100
Boron	1.0 mg B/l	0.052	0.081	0.230	12	100
Cadmium	5.0 µg Cd/l	<0.02	<0.02	<0.02	12	100
Chromium	50 µg Cr/l	<0.15	<0.15	0.17	12	100
Copper	2.0 mg Cu/l	<0.003	0.005	0.029	12	100
Cyanide	50 µg CN/l	<1.0	<1.0	8.0	12	100
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	12	100
Enterococci	0 per 100ml	0	0	0	12	100
Fluoride	1.5 mg F/l	<0.020	0.050	0.065	12	100
Lead	25 µg Pb/l ¹	<0.03	<0.03	0.04	12	100
Mercury	1.0 µg Hg/l	<0.002	0.006	0.019	12	100
Nickel	20 µg Ni/l	<0.20	0.63	1.40	12	100
Linuron ¹	0.1 µg/l	<0.004	<0.004	0.008	12	100
2,4-D ¹	0.1 µg/l	<0.011	<0.011	0.048	12	100
Propyzamide ¹	0.1 µg/l	<0.006	<0.006	0.008	11	100
Pesticides total	0.5 µg/l	<0.010	0.010	0.048	12	100
Polycyclic aromatic hydrocarbons	0.10 µg/l	<0.010	<0.010	<0.010	11	100
Selenium	10 µg Se/l	<0.08	<0.08	0.21	12	100
Sodium	200 mg Na/l	46.0	52.7	60.0	12	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	<0.1	12	100
Tetrachloromethane	3.0 µg/l	<0.1	<0.1	<0.1	12	100
Trihalomethanes	100 µg/l	3.6	11.0	20.8	12	100
Chloride	250 mg Cl/l	62.0	67.1	72.2	12	100
Sulphate	250 mg SO ₄ /l	89.7	97.9	114.0	12	100
Total Organic Carbon	No abnormal change	1.26	2.03	3.84	11	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	12	100
Gross alpha	0.1 Bq/l	<0.024	<0.024	0.027	12	100
Gross beta	1.0 Bq/l	0.11	0.16	0.20	12	100

¹ Detected pesticide - 86 other pesticides analysed for and not detected.

6 Water Quality Complaints

Jersey Water received 69 queries from customers relating to water quality. The following table shows a break-down of these queries, from which it can be seen that the majority of these complaints were due to discolouration of the water resulting from old corroded steel and unlined cast iron pipes, some of which were privately owned pipe work which is not the responsibility of Jersey Water.

Bacteriological and chemical samples were taken at the premises where the consumer had suspected the water supply to be causing illness. Examinations showed the supply to be satisfactory.

The Planning & Environment department are responsible for the administration of the Water (Jersey) Law 1972 and their officers make quarterly visits to our laboratory to examine analytical results of samples derived from water quality complaints from our customers.



Type of query	No	Bacteriological compliance %
Discoloured water	56	100
Taste/odour	8	100
Air in supply	1	100
Illness	4	100
Total	69	100

In 2011, 3.8km of old water pipes were replaced with modern lined pipes, which have improved water quality for customers in these areas.

Since the year 2000 Jersey Water has had an extensive programme to replace old unlined cast iron and steel pipe work in areas where water is becoming discoloured. In 2011, 3.8km of old water pipes were replaced with modern lined pipes, which have improved water quality for customers in these areas.

The Company plans further investment in the renewal of old water pipes in future years.

7 New Water Mains

Where new and replacement water mains are installed, they are disinfected, flushed and sampled to ensure that no E.coli and Coliforms are present and the pipe work is bacteriologically fit for operation. The water main is subjected to 3 separate samples, each 24 hours apart, to ensure bacteriological standards are satisfactory before the main is passed for operation.

During 2011, 234 samples from new and replacement water mains were taken for analysis.



Water main renewal, David Place

8 Appendices

Appendix A

Audit Monitoring: Handois TW

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.07	<0.07	<0.07	10	100
Boron	1.0 mg B/l	0.056	0.081	0.210	10	100
Bromate	10 µg BrO ₃ /l	<0.2	<0.2	<0.2	10	100
Cyanide	50 µg CN/l	<1.0	<1.0	<1.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	10	100
Fluoride	1.5 mg F/l	0.030	0.048	0.060	10	100
Mercury	1.0 µg Hg/l	<0.002	0.005	0.017	10	100
Linuron ¹	0.1 µg/l	<0.004	<0.004	0.008	26	100
M.C.P.A. ¹	0.1 µg/l	<0.009	<0.009	0.012	26	100
2,4-D ¹	0.1 µg/l	<0.011	<0.011	0.026	26	100
Mecoprop ¹	0.1 µg/l	<0.010	<0.010	0.021	26	100
2,4,5-T ¹	0.1 µg/l	<0.015	<0.015	0.031	26	100
Pesticides total	0.5 µg/l	<0.010	<0.010	0.033	26	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	<0.1	10	100
Tetrachloromethane	3.0 µg/l	<0.07	<0.07	<0.07	10	100
Chloride	250 mg Cl/l	62.4	67.7	71.3	10	100
Sulphate	250 mg SO ₄ /l	86.7	97.7	111.0	10	100
Total Organic Carbon	No abnormal change	1.34	1.89	2.59	10	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha	0.1 Bq/l	<0.024	<0.024	<0.024	10	100
Gross beta	1.0 Bq/l	0.13	0.17	0.23	10	100

¹ Detected pesticide - 84 other pesticides analysed for and not detected.

8 Appendices - continued

Appendix B

Audit Monitoring: Augrès TW

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	10	100
Boron	1.0 mg B/l	0.053	0.073	0.120	10	100
Bromate	10 µg BrO ₃ /l	<0.2	<0.2	<0.2	10	100
Cyanide	50 µg CN/l	<1.0	<1.0	<1.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	10	100
Fluoride	1.5 mg F/l	0.023	0.041	0.060	10	100
Mercury	1.0 µg Hg/l	<0.002	0.004	0.014	10	100
Linuron ¹	0.1 µg/l	<0.004	<0.004	0.008	43	100
M.C.P.B. ¹	0.1 µg/l	<0.011	<0.011	0.012	44	100
2,4-D ¹	0.1 µg/l	<0.011	0.023	0.131	44	90.9
Mecoprop ¹	0.1 µg/l	<0.010	<0.010	0.011	44	100
Atrazine ¹	0.1 µg/l	<0.002	<0.002	0.010	43	100
Tebuconazole ¹	0.1 µg/l	<0.003	<0.003	0.006	27	100
Pesticides total	0.5 µg/l	<0.010	0.025	0.131	44	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	0.10	9	100
Tetrachloromethane	3.0 µg/l	<0.1	<0.1	<0.1	10	100
Chloride	250 mg Cl/l	60.5	65.0	70.0	10	100
Sulphate	250 mg SO ₄ /l	94.1	101.5	108.0	10	100
Total Organic Carbon	No abnormal change	1.61	1.83	2.12	10	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha	0.1 Bq/l	<0.024	<0.024	0.030	10	100
Gross beta	1.0 Bq/l	0.16	0.18	0.21	10	100

¹ Detected pesticide - 83 other pesticides analysed for and not detected.

8 Appendices - continued

Appendix C

Audit Monitoring: Les Platons Service Reservoir, East Compartment

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	10	100
Boron	1.0 mg B/l	0.053	0.075	0.160	10	100
Bromate	10 µg BrO ₃ /l	<1.0	<1.0	1.7	10	100
Cyanide	50 µg CN/l	<1.0	<1.0	<1.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.1	<0.1	<0.1	10	100
Fluoride	1.5 mg F/l	0.034	0.050	0.070	10	100
Mercury	1.0 µg Hg/l	<0.002	0.004	0.015	10	100
Linuron ¹	0.1 µg/l	<0.004	<0.004	0.012	10	100
2,4-D ¹	0.1 µg/l	<0.011	<0.011	0.015	10	100
Atrazine ¹	0.1 µg/l	<0.002	<0.002	0.007	10	100
Tebuconazole ¹	0.1 µg/l	<0.003	<0.003	0.003	10	100
Pesticides total	0.5 µg/l	<0.010	<0.010	0.015	10	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	0.13	9	100
Tetrachloromethane	3.0 µg/l	<0.1	<0.1	<0.1	10	100
Chloride	250 mg Cl/l	62.1	66.5	71.0	10	100
Sulphate	250 mg SO ₄ /l	82.1	96.4	106.0	10	100
Total Organic Carbon	No abnormal change	1.31	1.99	2.96	10	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha ²	0.1 Bq/l	<0.024	<0.024	0.036	10	100
Gross beta ²	1.0 Bq/l	0.14	0.20	0.48	10	100

¹ Detected pesticide - 85 other pesticides analysed for and not detected.

8 Appendices - continued

Appendix D

Audit Monitoring: Les Platons Service Reservoir, West Compartment

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	10	100
Boron	1.0 mg B/l	0.025	0.073	0.170	10	100
Bromate	10 µg BrO ₃ /l	<0.2	<0.2	<0.2	10	100
Cyanide	50 µg CN/l	<1.0	<1.0	3.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	10	100
Fluoride	1.5 mg F/l	<0.020	0.045	0.068	10	100
Mercury	1.0 µg Hg/l	<0.002	0.003	0.008	10	100
Linuron ¹	0.1 µg/l	<0.004	<0.004	0.011	10	100
2,4-D ¹	0.1 µg/l	<0.011	<0.011	0.018	10	100
Propyzamide ¹	0.1 µg/l	<0.006	<0.006	0.007	10	100
Pesticides total	0.5 µg/l	<0.010	<0.010	0.025	10	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	0.12	10	100
Tetrachloromethane	3.0 µg/l	<0.1	<0.1	<0.1	10	100
Chloride	250 mg Cl/l	62.2	67.1	70.6	10	100
Sulphate	250 mg SO ₄ /l	89.3	97.0	104.0	10	100
Total Organic Carbon	No abnormal change	1.25	1.92	2.73	10	100
Tritium	100 Bq/l	<10.0	<10.0	12.0	10	100
Gross alpha	0.1 Bq/l	<0.024	<0.024	0.030	10	100
Gross beta	1.0 Bq/l	<0.02	0.16	0.21	10	100

¹ Detected pesticide - 86 other pesticides analysed for and not detected.

8 Appendices - continued

Appendix E

Audit Monitoring: Westmount Service Reservoir

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	10	100
Boron	1.0 mg B/l	0.041	0.087	0.270	10	100
Bromate	10 µg BrO ₃ /l	<1.0	<1.0	<1.0	10	100
Cyanide	50 µg CN/l	<1.0	1.5	9.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.1	<0.1	<0.1	10	100
Fluoride	1.5 mg F/l	0.032	0.044	0.060	10	100
Mercury	1.0 µg Hg/l	<0.002	0.004	0.008	10	100
Linuron ¹	0.1 µg/l	<0.004	<0.004	0.012	9	100
2,4-D ¹	0.1 µg/l	<0.011	0.013	0.085	10	100
Pesticides total	0.5 µg/l	<0.010	0.015	0.085	10	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	<0.1	9	100
Tetrachloromethane	3.0 µg/l	<0.1	<0.1	<0.1	10	100
Chloride	250 mg Cl/l	59.8	66.7	74.9	10	100
Sulphate	250 mg SO ₄ /l	86.0	99.2	107.0	10	100
Total Organic Carbon	No abnormal change	<1.00	1.64	2.45	10	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha	0.1 Bq/l	<0.024	<0.024	0.030	10	100
Gross beta	1.0 Bq/l	0.13	0.17	0.21	10	100

¹ Detected pesticide - 87 other pesticides analysed for and not detected.



Mulcaster House, Westmount Road,
St. Helier, Jersey, JE1 1DG

Telephone: 01534 707300
Facsimile: 01534 707400

Email: info@jerseywater.je
Website: www.jerseywater.je

Jersey Water is the trading name of
The Jersey New Waterworks Company Limited.

