

Incidents in the Eastern region in 2006

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
09/01/2006 for 13 days (THD)	Parts of Tendring peninsula of Essex 52,493	Elevated bromate concentration due to treatment chemical problem at Ardleigh works (jointly operated by Tendring Hundred Water and Anglian Water)	<p>Tendring Hundred Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Rezoned area (brought in water from different source) • Review of procedures <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inappropriate salt specification issues in previous bromate incidents involving other group companies apparently not disseminated • Salt procurement and on-site specification checks for the hypochlorite generation process at the works subsequently improved
10/01/2006 for 13 days (ANG)	Parts of Colchester, West Bergholt, Lexden and Greenstead, Essex 132,826	Elevated bromate concentration due to treatment chemical problem at Ardleigh works (jointly operated by Tendring Hundred Water and Anglian Water)	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Blended supply with another source • Flushed mains • Review of procedures <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Salt procurement and on-site specification checks for the hypochlorite generation process at the works subsequently improved

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
15/03/2006 for 24 hours (ANG)	Harleston, Norfolk 5,655	Discolouration due to planned work	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • By-passed service reservoir • Flushed mains • Issued a do not drink notice • Provided bottled water • Review of procedures • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Contractor did not follow established company procedures for swabbing of new water main • Recommended that supervision and quality assurance procedures for work carried out by contractors is reviewed <p>See 'Incidents in 2006' in the main body of the report for further details</p>
23/04/2006 for 24 hours (CAM)	Southern parts of City of Cambridge 30,000	Discolouration following replacement of trunk main valve	<p>Cambridge Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Review of procedures • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No specific issues identified

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
26/05/2006 for 25 weeks (ANG)	Twelve properties in Long Stratton, Norfolk 30	Do not drink advice due to ground contamination by hydrocarbons	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Issued a do not drink notice • Provided bottled water • Replaced mains and services in contaminated ground • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Extended duration of remedial work due to Health and Safety and highway access limitations <p>See 'Incidents in 2006' in the main body of the report for further details</p>
30/07/2006 for four days (ESK)	Laindon, Essex 43	Issue of advice to boil water following a mains burst	<p>Essex and Suffolk Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Chlorinated local main and service • Issued a boil water notice • Provided bottled water • Sampled affected area • Repaired main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No specific issues identified <p>See 'Incidents in 2006' in the main body of the report for further details</p>
31/07/2006 for 15 days (ANG)	Grimsby, Lincs 33	Issue of advice to boil water following planned work	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Chlorinated the distribution system • Issued a boil water notice • Provided bottled water • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No specific issues identified

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24/08/2006 for two days (ANG)	Buckingham, Bucks 4,835	Microbiological contamination due to leaking service reservoir	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at upstream service reservoirs • Flushed mains • Removed service reservoir from supply • Sampled affected area • Internal inspection of reservoir and roof repairs. • Company has increased frequency of internal inspections <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No specific issues identified
23/09/2006 for 12 days (ANG)	Woodend near Buckingham, Bucks 150	Evidence of microbiological contamination following planned work	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals in the local distribution system • Sampled affected area • Review of flushing frequency • Increased chlorine residuals at service reservoir <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No specific issues identified

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
02/10/2006 for five weeks (ANG)	Field Dalling near Fakenham, Norfolk 8	Taste/odour to water supply due to long residence time of water in local mains	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Review of procedures • Sampled affected area • Installed additional washouts • Provided bottled water <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No specific issues identified
29/11/2006 for four days (ANG)	Rural area around Fakenham, Norfolk 6,000	Discolouration following planned work	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No specific issues identified

Incidents in the Midlands region in 2006

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
29/12/2005 for three days (SVT)	South Sheffield, Barlborough, West Chesterfield and Higham 215,415	Microbiological contamination (<i>E.coli</i>) of treated water from Ogston new works	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Increased chlorine dose at works • Shut down treatment works on 6 January 2006 <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company failed to take adequate samples from water supply zones. Advice given about minimum representative samples to be taken • Insufficient investigation of analysis of the samples originally identifying the problem. Advice given about analytical performance checks to rule out possibility of analytical errors • Water quality data was not captured and stored electronically on site so historical data from water quality monitors at the works was not readily accessible after the event • The Inspectorate recommended that the company make improvements to ensure information is available at the site and accessible to monitor trends in the performance of the works, and help with investigations in the event of a problem. The Inspectorate has highlighted the importance of applying this learning across all of the company's works <p>See 'Incidents in 2006' in the main body of the report for further details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>19/03/2006 for 24 hours (SVT)</p>	<p>57 properties on Richmond Road, Bewdley, Worcestershire 142</p>	<p>Issue of advice to boil water following planned work</p>	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Issued advice to boil water • Flushed mains • Repaired main • Provided bottled water to all consumers affected. <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company adequately investigated the cause of the incident • Debris entering the shattered water main during planned renewal work, caused the loss of supply to 52 properties and the subsequent issue of a precautionary boil notice • The Inspectorate commended the company's prompt action to repair the main and restore supplies quickly • The issue of precautionary boil water advice helped ensure the protection of consumers • The Inspectorate welcomed the actions taken to improve working between the company and its contractors including refresher courses to ensure continued competency

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
19/05/2006 for five days (SVT)	Four properties in Oxtan Hill, Southwell, Nottinghamshire 10	Microbiological contamination, unusual taste and odour and high turbidity following a burst main repair	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Flushed mains and chlorinated mains • Repaired main • Sampled affected area • Water fittings inspection undertaken at properties in the local area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company staff failed to follow established company procedures for mains repairs, resulting in insufficient sampling to assess the safety of water supplies. The Inspectorate recommended that the company ensure that this cannot recur by putting in place a mechanism to verify that these essential samples have been taken before a water main can be returned to service • The company did not issue advice to consumers on the use of their water supplies whilst investigations were ongoing. The Inspectorate recommended a review of the triggers for issuing advice to consumers • The Inspectorate recommended that a review be made of company procedures for the risk assessment, method statements for mains repair work, and authorisations that are required before work can commence • The Inspectorate recommended that the company puts in place procedures to fully assess the impact of deviating from pre-planned activities, including a revision to any risk assessment <p>See 'Incidents in 2006' in the main body of the report for further details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
23/05/2006 for 20 hours (SVT)	Huthwaite, near Sutton in Ashfield, Nottinghamshire 5,290	Loss of supplies/ low pressure due to third party damage to water mains	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Rezoned area (brought in water from different source) • Sampled affected area • Blended supply with another source <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Mechanical excavators demolishing a redundant pumping station damaging the main, leading to a loss of supplies • The Inspectorate were critical that a full investigation was not made to identify the status and position of valves at this site, and thus actions were based on assumptions of how the local mains were configured, and led to a delayed response by the company • The Inspectorate identified that company documentation should be regularly reviewed to ensure the most up-to-date information of network status is available to staff. • The Inspectorate welcomed the review of company procedures relating to abandoned sites

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
03/07/2006 for 10 hours (SVT)	Parts of Werrington, Stoke on Trent, Staffordshire 20,000	Loss of supplies/ low pressure due to pump failure	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Bypassed service reservoir • Provided an alternative supply by tanker/bowser • Provided bottled water on request • Repaired faulty equipment • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company quickly repaired failed equipment and used recorded messages and the media to inform consumers of the problem • Alternative supplies were provided to most areas when the company realised that normal supplies could not be restored quickly • There were delays in identifying the loss of supplies in two areas, and in restoring supplies to these consumers • Further delays in restoring supplies also resulted from the use of pumping equipment with insufficient pumping capacity • The Inspectorate recommended that the company reviewed these delays to identify more efficient restoration of supplies to this and other areas • A recommendation was also made to improve response times of tankers and in the provision of information regarding the use of alternative supplies

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
03/07/2006 for 1.5 hours (SVT)	Area fed by Frankley works (Birmingham, Coventry and Stourbridge) Approx. 1.37million people are supplied by this works	Failure of the disinfection system at Frankley works	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Review of procedures for reporting events • Blended supply with another source • Sampled affected area • investigation of impact/quantity of water that was below target chlorine residual level <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment ongoing
21/07/2006 for five days (SVT)	Ludlow, South Shropshire 20,000	Emergency use of alternative raw water source due to high demand from Holywaste service reservoir	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Blended supply with another source • Sampled affected area • Increased chlorine residuals at service reservoir <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment ongoing

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
25/07/2006 for 12 hours (SST)	Wimblebury, Heddesford and Chasetown, near Cannock, Staffordshire 20,000	Brown discolouration due to failure of a drain down valve on water main	<p>South Staffordshire Water actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Sampled affected area • The company is to carry out an assessment of all staff involved in electro-fusion welding, including training, competency and adherence to company procedures • There will also be a programme of testing polyethylene pipe joints to ascertain long-term structural integrity that the company has initiated <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The work carried out by the company was in accordance with company procedures and been conducted by appropriately trained staff • The cause of the burst pipe was a failure of the welded polyethylene joint • The Inspectorate welcomed the fact that the company is to carry out an assessment of all staff involved in electro-fusion welding of mains and carry out a programme of testing polyethylene pipe joints to ascertain their long-term structural integrity • The company has been requested to provide the results of this assessment and the programme of testing to the Inspectorate when completed

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
27/07/2006 for 24 hours (SVT)	Mapperley near Nottingham 51,000	Failure of the disinfection system at Lambley works	<p>Severn Trent Water actions: Actions taken by company.</p> <ul style="list-style-type: none"> • Shut down treatment works • Increased chlorine residuals at the site <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The Inspectorate found delays in responding to problems with the disinfection system because on-site water quality (chlorine residual) tests were not carried out during a routine visit and when they were subsequently done no action was taken in response to abnormal results • It was recommended that the company review training of operational staff to ensure that appropriate on-site water quality tests are carried out, and appropriate action is taken in response to abnormal results • Staff also failed to respond to alarms from water quality monitors • It was recommended that a full review be undertaken of telemetry alarms at this and other sites as well as the procedures in place to deal with responses to critical alarms including response times, actions to be taken on receipt of an alarm and appropriate escalation within the company • The Inspectorate also recommended that staff attending site to investigate operational problems should also check with the company's Operational Management centre for any outstanding water quality alarms before leaving site

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
19/08/2006 for 48 hours (SVT)	Pant, Shropshire 6,000	Loss of supplies/ low pressure due to accidental drain down of a service reservoir.	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Provided an alternative supply by tanker/bowser • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Incident caused by the failure of the company to address critical alarm notifications following a communication systems failure at Pant reservoir and a plant shutdown at Kinnersley Borehole. This occurred at the time of a company-wide IT system failure • The Inspectorate recommended that the company modifies its procedures to ensure that all important alarms are responded to quickly and includes a system for checking that alarms have been actioned • It was recommended that the company carries out a thorough review of the actions relating to the removal of air from the system, the timing of the setting up of the incident team and the deployment of response teams to identify more efficient restoration of supplies to this and other areas • The Inspectorate welcomed the company's ongoing contingency work following the failure of its IT. The Inspectorate requested a further report setting out the conclusions of the investigations and the actions taken once completed

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15/10/2006 for nine hours (SVT)	Glenfield, Leicester 44,623	Brown discolouration due to pump failure	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Repaired faulty equipment • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Discolouration was caused by the company's failure to respond to an alarm from a valve chamber on a trunk main • It was recommended that the company reviews its time limits for responding to telemetry alarms, including a system for checking that alarms have been actioned • The company met the notification requirements of the Water Undertakers (Information) Direction 2004, but did not fully meet the reporting requirements because of lack of some information. It was recommended that the company ensures that it includes in its 20-working day report all the information needed by the Inspectorate to complete its assessment
19/12/2006 for 0 hours (SVT)	Rugby, Warwickshire 85,000	<i>E.Coli</i> in treated water leaving Draycote works	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Investigated treatment performance including internal inspection of contact tank <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company's investigation was robust and appropriate, but it was unable to identify a cause • The sample facilities at the works were found to be inappropriate. The Inspectorate is disappointed to report that four months later the company had failed to take any action to ensure that appropriate sampling facilities are provided at the works, as is required by the regulations

Incidents in the Northern region in 2006

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
27/01/2006 for 12 hours (UU)	Rivington works supplying Wigan, Hindley, Parbold and Aspull areas 457,500	Failure of coagulation due to faulty valve in dosing pump	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Blended supply with another source • Increased chlorine residual • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate communication regarding status of works caused delay in response • Recommendation to improve communications to ensure that the Operational Response Centre (ORC) confirms with Operational personnel the current status of a treatment works when alarms have been received and initiate appropriate action • Recommendation to review the current failsafe systems at Rivington treatment works to determine if they are appropriate to prevent unwholesome water entering supply under all circumstances

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31/01/2006 for four days (YKS)	Boroughbridge, near Ripon and the villages of Marton, Grafton, Lower and upper Dunsforth, Great and Little Ouseburn and Whixley 10,000	Excess phosphate in supply following equipment failure	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Treatment process on trial at time of incident • Recommended that when a treatment trial is conducted a reasonable time limit is set and then a robust permanent solution is put in place • Recommended that the company immediately put in place a solution to protect against over-dosing that meets all company engineering standards • Recommended that a review of all 'temporary' treatment processes is conducted
28/03/2006 for five hours (YKS)	Glasshoughton, Lishine Avenue and Barnes Road 13,597	Discolouration (brown) following mains damage	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Repaired main • Rezoned area (brought in water from different source) • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Satisfactory response by company

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
07/04/2006 for two days (NNE)	Jesmond and Shielfield areas of Newcastle Upon Tyne 5,702	Discolouration (brown) due to planned work	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Commended the company for the use of network modelling and operating valves at a time when demand for water would be low, minimising risk • However, any network model used to evaluate the system must be checked to ensure it is representative of the network prior to planned work being conducted

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
18/05/2006 for 24 hours (YKS)	South West Sheffield 78,000	Discolouration (brown) due to planned work	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Provided an alternative supply by tanker/bowser • Sampled affected area • Provided bottled water on request <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate procedures and instructions given to operational staff • Recommended that procedures for the valve operation and timings are agreed and communicated to each person involved in their operation • Recommended that risk assessments include an assessment of the potential consequences of the valve changes and timing of the valve changes and where sensitive customers such as hospitals and nursing homes are potentially affected then contingency arrangements should be made • Recommended a review of the procedures for checking and signing off repairs or maintenance to the telemetry system to ensure correct installation and functionality • Recommended that prior to cleaning and inspection of service reservoirs the level probes are checked and calibrated to ensure that they are functioning satisfactory • Recommended that any drain down of service reservoir or compartments is controlled and monitored • Recommended that checks are undertaken on any other work undertaken by this maintenance unit/contractor to ensure that it is safe and satisfactory • Recommended that the company install a hard wire level alarm at Hadfield service reservoir and review the policy of installing hard wire level alarms at other strategic service reservoirs <p>Continued on next page.</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
18/05/2006 for 24 hours (YKS)	South West Sheffield 78,000	Discolouration (brown) due to planned work	Continued. <ul style="list-style-type: none"> • Recommended that the company gives clear and consistent advice to consumers in respect of discoloured water and that alternative supplies should be made available to consumers who reject the discoloured water • Recommended that the company review and update the database of sensitive consumers to include nurseries and surgeries on the list
22/05/2006 for four hours (UU)	Hodder Water Treatment works, near Clitheroe. Villages of Newton and Dunsop Bridge affected 282	Loss of disinfection due to upstream process failure	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Flushed mains to increase chlorine residuals within the distribution system <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate response to alarms • Recommended that the company implement regular testing of the battery backup unit for disinfection • Recommended that the company should endeavour to carry out work on the regional telemetry system which requires a shut down within normal working hours and ensure that all relevant operational staff are aware of status of alarms during telemetry shutdown • Recommended a review of procedures for changing chlorine drums to ensure that all manual valves are checked after drums are changed to ensure that they are all correctly set and labelled as either open or closed • Recommended a review all of procedures relating to the response to alarms from the telemetry system at all levels and the provision of operational cover when the telemetry system is down

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
05/06/2006 for 200 weeks (YKS)	Huddersfield 3	Consumer complaint of phenol like taste and odour on supply	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Some sampling of area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate investigation by company, situation had been ongoing for four years when consumer contacted Inspectorate • A number of recommendations were made regarding the slow and inadequate investigation • Recommendation was made regarding inappropriate and inadequate sampling <p>See 'Incidents in 2006' in the main body of the report for details</p>
06/06/2006 for 20 hours (NNE)	Cramlington, North of Newcastle 2,500	Discolouration (brown) due to action of contractors	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company should ensure that it is made absolutely clear to the contractor and contractor's staff and workers on site that unauthorised work is not allowed • Recommended that the company ensure that any unauthorised work by a contractor is reported immediately and acted upon by senior management • Recommended that the company reviews and improves management of contractors to ensure that any work undertaken is closely supervised and monitored • Recommended that company are aware of all connections made to the distribution system and ensure that opening and closing valves is undertaken by company staff <p>See 'Incidents in 2006' in the main body of the report for details</p>

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11/06/2006 for 44 hours (YKS)	Honley and Brockholes area of Huddersfield 6,250	Discolouration (brown) following loss of power at works	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Made modifications to the generator to prevent failure on automatic start-up of works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company check all other treatment works with air operated failsafe valves to ensure that there is a method of opening the valve should the air supply fail • Apparent lack of maintenance on these compressors which allowed the incident to take place. Recommended that compressors at other works operating DAF (Dissolved Air Flotation) plants are checked to ensure that the performance meets specification • Recommended that all pressure transducers in service reservoirs and clear water tanks are checked to determine that they are reading correctly

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17/06/2006 for six days (YKS)	Keybroyds, Halifax 193	Evidence of microbiological contamination: following a mains repair	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals in the distribution system • Flushed mains • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate procedures and follow up sampling • Recommended that hydrant samples should only be taken when access to domestic properties is not possible • Recommended that the company review procedures for immediate response to microbiological failures following mains repair or rehabilitation to ensure a prompt and positive response that does not solely rely on sampling to provide additional information before a decision is made • Recommended that diagrams and information regarding status of mains and underground assets are kept up-to-date and relevant staff are kept informed • Recommended that refurbishment checks should also be made on the state of the hydrants and valves to determine whether they should be replaced or refurbished

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23/06/2006 for eight hours (UU)	Norris Green area, Liverpool 32,500	Discolouration (brown) due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Rezoned area (brought in water from different source) • Repaired main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate contingency planning and risk assessment • Recommended that a full risk assessment, including modelling, is undertaken prior to significant changes on the distribution system involving major trunk mains • Recommended that consideration should be given to the impact on water quality of: <ul style="list-style-type: none"> a) the opening and closing of the valves on the trunk mains and the potential for a build up of deposits behind closed valves, and b) potential reversal of flows in the mains
04/07/2006 for 11 hours (YKS)	Normanton, West Yorkshire 6,747	Discolouration (brown) due to planned work	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that nightline flow data is checked and taken into consideration • Recommended that checks are made to ensure accessibility of hydrants • Recommended that the company modifies its procedures to consider flushing in zones when it believes discolouration may have occurred

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09/08/2006 for three days (NNE)	West Lane, Middlesbrough 10,647	Discolouration (brown) due to failure of pressure valve	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Repaired faulty equipment <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company ensures significant deviation from normal values for any parameter is immediately investigated • Recommended that the company reviews procedures to include a check by a technician on valves left unattended for 24 hours or more during valve operations
11/08/2006 for five weeks (UU)	Rochdale, Littleborough and Wardle 85,569	Musty taste and odour due to deterioration in raw water quality	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Monitored consumer contacts <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • At the time of the incident, treatment capability at Watergrove works did not include process to manage seasonal taste and odour issues • To prevent recurrence, it was recommended that the company take positive steps to minimise the possibility of seasonal taste and odour problems occurring in water supplied by consideration of the following: proactive reservoir and catchment management; provision of alternatives supplies; blending of supplies; installation of treatment capability to reduce or remove geosmin to below the taste and odour threshold level

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
16/08/2006 for one day (YKS)	York (Western part of City) 93,000	Chlorine taste and odour due to over- dosing following equipment failure	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Resolved problem with faulty equipment • Decreased chlorine dosing • Issued advice to customers through local radio <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Did not notify Inspectorate or appropriate authorities in a timely manner • Inappropriate response to initial alarm information • Inadequate follow up sampling • Operational failings and incorrect assumptions led to water with high levels of chlorine in supply <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
17/08/2006 for seven days (UU)	St Helens and Kirkby, Merseyside 4,503	Low pressure followed by consumer reports of fish in supply following planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Flushed mains and cleaned mains strainers • Increased chlorine residuals in the distribution system • Provided bottled water on request • Sampled affected area • Review of procedures • Investigated and identified cause <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate and inappropriate sampling in response to reports from three consumers of presence of small dead fish in water supply (noticed in toilet cistern) • Recommended that company reviews procedures for dealing with consumer reports of this nature • Investigation identified that fish had entered mains supply through a connection that existed to a treated water open reservoir. Company have now permanently removed this connection <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
26/08/2006 for 12 hours (YKS)	Ingbirchworth, Hoylandswaine, Silkstone and Barnsley 62,500	Loss of disinfection due to equipment failure	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Increased chlorine residuals at treatment works and service reservoir • Sampled affected area • Reviewed procedures <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate response to low chlorine alarms • Deficiencies in internal communication led to unacceptable delays • Company investigation identified a number of corrective actions • Recommendations made to ensure all actions regarding equipment, systems and procedures were completed and effective
06/09/2006 for nine hours (UU)	Rural area to east of Widnes 575	Loss of disinfection due to process failure	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that current systems are checked and, if necessary, refurbished to ensure that the works shuts down when chlorine dosing equipment fails • Recommended that alarms are reviewed and, if necessary, reconfigured to ensure that the status of the works is correctly monitored and, on failure of disinfection, alarms are activated and promptly acted upon

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
07/10/2006 for three days (UU)	Percyvale Road, Macclesfield 103	Evidence of microbiological contamination: water supply to one street	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Provided bottled water to all properties where problem had been identified • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company had failed to investigate report of illness from consumer in an appropriate timeframe or manner • Recommended that company reviews procedures for dealing with illness reports from consumers • Critical of deficiencies and inconsistencies in the detail of information provided in the company report
09/10/2006 for three days (NNE)	St Aidens Walk, Bishop Auckland 23	Issue of boil water notice following evidence of microbiological contamination in distribution	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Issued a boil water notice • Sampled affected area • Increased chlorine residuals in the distribution system • Flushed mains • Repaired main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate disinfection of mains • Inadequate follow-up sampling

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
31/10/2006 for 17 weeks (UU)	Lancaster and surrounding district 110,323	Musty taste and odour due to deterioration in raw water quality	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Reduced flow from river source and increased flow from upland catchment <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate communication with consumers and lack of awareness of consumer concerns • Inadequate contingency planning and operational procedures • To prevent recurrence it was recommended that the company take positive steps to minimise the possibility of seasonal taste and odour problems recurring in water supplied by consideration of the following: proactive catchment management: provision of alternatives supplies; blending of supplies; installation of treatment capability to reduce or remove geosmin to below the taste and odour threshold level <p>See 'Incidents in 2006' in the main body of the report for details</p>
05/11/2006 for two hours (YKS)	Large area of Yorkshire 210,000	Loss of disinfection due to process failure	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at treatment works and service reservoirs • Sampled affected area • Reset dosing pumps to alarm on low flow <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Dosing valves became blocked with crystalline deposits from substandard hypochlorite solution • Recommendation to carry out quality control checks on hypochlorite against specification • Chlorine residuals were maintained in distribution and to consumers • Some investigative samples taken in distribution demonstrated high levels of iron, although unrelated to this incident, the company have been requested to carry out remedial actions to address this

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
19/11/2006 for 36 hours (UU)	Rochdale and District 33,695	Loss of supplies due to plant failure	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Restarted treatment works and restored supplies • Provided an alternative supply by tanker/bowser • Provided bottled water on request • Reviewed procedures <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate communication caused delay in response • Inadequate operational procedures • Recommended that procedures and practices are reviewed to ensure that when remote communications are lost to a site alternative actions can be taken to establish the site is operating satisfactorily and this information is communicated to the control room and relevant operational staff
24/11/2006 for 24 hours (NNE)	Amble, Northumbria 3,000	Discolouration (brown) due to planned work	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Incident caused by a valve being left open following completion of work • Inadequate procedures and risk assessment • Highlighted potential training and/or competency issues

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
11/12/2006 for one day (UU)	Bursclough, Ormskirk 1,600	Discolouration (brown) due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Blended supply with another source • Provided bottled water on request • Review of procedures • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Incident followed the return to service of a works • Inadequate operational procedures • Recommended that procedures are reviewed and, if necessary, revised, to ensure that actions are taken to prevent air locks causing surges leading to disturbance of mains deposits within the distribution system

Incidents in the Southern region in 2006

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
7/2/2006 for 14 hours (Southern Water)	Balsdean, Brighton, East Sussex 130,400	Balsdean works: UV plant failure and consequential increase in chlorine residual	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Works taken out of supply for a short period • Water transferred from Newmarket works • Increased chlorine residual to 0.5mg/l and enhanced sampling • Advice sought from equipment supplier which enabled pump to be restarted on ultra violet (UV) • Following second UV plant failure, supplier called to site to adjust settings. Action taken to remedy incorrect operation of air release valves which had caused units to overheat and cut out • Maintenance agreement established for all UV installations • Comprehensive training programme for staff to be provided by equipment supplier <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Full sample results not reported • No samples taken when UV disinfection plant was down • Problems should have been anticipated and contingencies made • Adequate chlorine disinfection not consistently maintained <p>See 'Incidents in 2006' and Figure 16 in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
17/3/2006 for nine hours (Southern Water)	Not applicable	Otterbourne surface water works; loss of coagulant dosing	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Reviewed procedures • Sampled downstream reservoir • Grab samples for <i>Cryptosporidium</i> (including raw water). No oocysts were detected in the treated water or in the sample from the inlet to the filters • Reviewed alarm system • Commissioned an independent review by consultants <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • DWI audit of coagulation process and company response to incident assessment undertaken on 5 December. The audit confirmed that most actions had been completed • DWI recommendations related to the need to complete a review of the clarification process, to thoroughly clean the sedimentation tanks, to carry out a process review for the sedimentation process, to ensure removal of redundant plant and dosing lines, to review the requirements for maintenance of coagulant dosing control unit, to establish an effective method of recording plant defects, to ensure that further improvements to the site alarm system are progressed in a timely manner • In February 2007, the works was taken out of supply to enable the clarifiers and sedimentation tanks to be cleaned <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
13/4/2006 for 12 hours (Southern Water)	Woodingdean area near Brighton 2,000	Balsdean works and Warren Reservoir: Loss of supplies and low poor pressure	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Zone supported from another source • Flushed mains • Increased chlorine residual • Repaired faulty equipment <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • High Voltage (HV) qualified technicians need to be available on a standby rota • Alarm notification procedure to be reviewed for critical sources • Monitoring of reservoir levels needs to be reviewed • DWI must be notified of any UV process bypassing (water quality event procedure) <p>See 'Incidents in 2006' and Figure 16 in the main body of the report for details</p>
4/5/2006 for 48 hours (South East Water)	Bexhill near Eastbourne 30,919	Discolouration: due to planned work on the network	<p>South East Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Partially sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company triggers for water quality investigation inadequate • Unwholesome water was supplied <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>8/6/2006 for one day (Southern Water)</p>	<p>Two zones in the Southampton area of Hampshire 100,300</p>	<p>Otterbourne ground water works: raw water quality deterioration and pesticides detected in treated water</p>	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Sampling of well, works (treated water), downstream reservoir and in distribution. Also tested river source close by in case that had been affected. • Notified Environment Agency (EA) • Noted herbicide used recently on railway line close to well, EA investigated but Network Rail indicated they had not been using the herbicides found in the raw water • In August, EA advised they had not been able to locate the source of the contamination <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Unwholesome water supplied • Critical of the company for not responding with comprehensive enhanced monitoring following a sudden and unexplained detection of pesticide in the raw water, especially given that the source of the contamination was not subsequently found. Company agreed in October to update its procedures to ensure that this is done in future • Concluded that the company should not have removed 2,4-D from the regulatory pesticide monitoring strategy for 2006. Critical that the company did not fully follow its own procedures or the guidance on the regulations issued by the Inspectorate in relation to pesticide risk assessment • Required the company to include the 2,4-D zonal failure in May and all other results for 2,4-D and total pesticides in the public register

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
11/8/2006 for three hours (South East Water)	Hindhead 11,684	Discolouration due to pump failure	<p>South East Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Flushed mains • Provided bottled water on request <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company required to state how it will prevent a recurrence
24/8/2006 for 22 days (Folkestone Water)	New Romney, Littlestone, Lydd-on-Sea near Folkestone 11,995	Discolouration burst main	<p>Folkestone Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Provided bottled water on request • Repaired main • Rezoned area (brought in water from different source) • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company to review flushing programme for the area in response to the lessons learnt from this incident <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
26/10/2006 for 32 days (Southern Water)	Southampton area, Hampshire 150,000	Earthy and musty taste or odour due to algal growth in the Testwood Lake source	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Increased dosing of powdered activated carbon • Blended supply with another source. Stopped work on the river inlet to allow river source to be returned to service. Blended river water with lake water at a ratio of three to one to enable the lake water quality to improve • Stopped water transfer from this works to other areas to limit consumer exposure • Company investigation identified two learning points. The ‘permits to impinge’ allowing contractors to work on key items of plant generally worked well but need to be kept fully up-to-date. A process scientist needs to be involved in the decision making stage for any work affecting the treatment process to ensure local circumstances, such as the weather, are taken into account regarding timing of works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Prompt action by company call centre in reporting increased consumer contacts enabled the company to confirm the nature of the problem by sampling and take appropriate action • The company must ensure that the potential for algal blooms and taste/odour problems arising from the lake source are considered as part of the risk assessment before reconfiguring the supply arrangements (for any reason)

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
1/11/2006 for seven hours (South East Water)	Petersfield, Hants 12,500	Discolouration due to scouring of deposits within service reservoir	<p>South East Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Unwholesome water supplied • Lack of understanding of reservoir supply configuration • Improved procedures put in place post-event <p>See 'Incidents in 2006' in the main body of the report for details</p>
20/11/2006 for six hours (Mid Kent Water)	Hartley, Kent near Dartford 30,000	Discolouration due to planned work on network	<p>Mid Kent Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Opened pressure reducing valve <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate procedures – method statement for test but not for actual work • Unwholesome water supplied
8/12/2006 for 48 hours (South East Water)	Blackhill Reservoir (Reservoir does not feed any zones directly).	Microbiological contamination: <i>E.coli</i> due to structural failure of reservoir	<p>South East Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residual at service reservoir • Sampled affected area • Reservoir taken out of service 11 December for cleaning and inspection <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate investigation of root cause following original <i>E.coli</i> exceedance at this reservoir in June 2006 • Unwholesome water supplied • Reservoir to remain out of service until deficiencies rectified <p>Due for completion end of April 2007</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
22/12/2006 for six hours (Southern Water)	Winchester area, including Abbots Bottom, St. Cross, Bar End, Town Centre and Highcliffe 14,607	Easton works and West Hill reservoir: loss of supplies and low pressure	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Rezoned area (brought in water from different source) • Installed bubble traps on works turbidity meters to avoid shutdown from entrained air • Improved output from turbidity alarm on telemetry system and made reservoir level alarm more sensitive • Reservoir to be inspected in autumn 2007 <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Critical of company for not responding to reservoir low level alarm in accordance with its own procedures • Company did not have a robust monitoring system for reservoir level in place but noted improvements being put in place to address this • Noted sampling was appropriate to area affected

Incidents in the Thames region in 2006

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
09/02/2006 for 15 days (TMS)	Chigwell north London 175	Complaint of a petrol taste and odour in drinking water at a primary school	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Replaced main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Taste and odour caused by disturbance of coal tar lining following burst main • Cause was outside of company's control • Company acted appropriately in response • No recommendations for improvement made
05/06/2006 for four hours (TVW)	Iver works, Buckinghamshire 1,250	Partial failure of coagulation process at Iver works	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Sampled affected area • Shut down treatment stream while repairs undertaken <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate treatment process (dosing) due to equipment failure • Alarms not set appropriately and critical pump alarm not routed to the Control Centre • Advice given on flow meter maintenance

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
04/08/2006 for five weeks (SES)	Featherstone, Blindley Heath 275	Microbiological contamination	<p>Sutton and East Surrey Water actions:</p> <ul style="list-style-type: none"> • Issued a boil water notice • Provided bottled water on request • Flushed mains • Re-chlorinated main • Swabbed main • Replaced supply and communication pipe • Took advice from medical consultant <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No recommendations made
11/08/2006 for 34 days (TMS)	Buckingham Road, Hampton, London 3	Petrol odour caused by cross-connection of mains	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Flushed mains • Rerouted supply to different main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Unacceptable delay in identifying resolving the cause of odour • Company records were inaccurate and delayed response • Recommended changes to the way in which data was input and maintained on corporate record systems <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
15/09/2006 for two days (TMS)	Putney, London 14,000	Brown discolouration following planned work	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Planned work to change valve configuration in network • Customers affected were pre-warned of potential for discoloured water • Sampled and flushed affected area • Advised customers to flush taps and not drink water until discolouration cleared • Supplied bottled water <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Affected area was known by company to be high risk due to repeated discolouration incidents • Company identified potential discolouration in risk assessment • Operation was well planned with clear method statement • Discolouration was caused by increase in velocity and partially open valve • Response to deterioration in water quality was planned • Advice given on timeliness of sampling • Recommended improvements in notification of relevant external bodies (CCWater)

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
28/09/2006 for four weeks (TVW)	Redbourn Village, Herts 88	Discolouration due to change in water source	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • returned blended supply to original configuration • Sampled affected area • Review of procedures for changing water sources • Surveyed views of customers <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Unacceptable delay in notifying Inspectorate and local/health authorities • Company could not have reasonably predicted the effect of the change of supply on consumers galvanised service pipes • Highlighted importance of proper research into potential effects of changes in water source on drinking water quality <p>See 'Incidents in 2006' in the main body of the report for details</p>
28/09/2006 for four days (SES)	Woldingham 10	Microbiological contamination related to a temporary overland main	<p>Sutton and East Surrey Water actions:</p> <ul style="list-style-type: none"> • Issued a boil water notice • Provided bottled water <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended company ensure contractors follow basic hygiene practices <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
03/10/2006 for four days (TVW)	Bovingdon Village 150	Issue of advice to boil water following mains replacement	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Issued a boil water notice • Rezoned area (brought in water from different source) • Sampled affected area • Provided supply through un-disinfected main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • None
09/10/2006 for two days (TVW)	Chertsey works, Surrey Works supplies approx. 120,000	Elevated bromate levels	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • modifications were made to the treatment process and in particular the pre-ozone dose. • Additional sampling of treatment process and distribution system • Reviewed of the operation of the treatment works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment ongoing
15/10/2006 for 12 days (TVW)	Herga Court, Sudbury Hill, Harrow, Middlesex 200	Microbiological contamination following burst main	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Increased chlorine residuals in the distribution system • Repaired faulty valve <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • None

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
13/11/2006 for 0 hours (TMS)	Ashford Common works 0	Failure of disinfection control	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Elevated residual chlorine levels in water leaving works • Water was isolated in a section of London ring main and did not reach consumers <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment ongoing
29/11/2006 for 0 hours (TVW)	Colney Heath, near Hatfield, Herts 8	Discolouration due to mains cross-connection	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water • Moved mains connections • Chlorinated supply pipes, internal plumbing and sampled • Sought medical advice <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment ongoing

Incidents in Wales in 2006

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
23/01/2006 for three days (DWR)	Merthyr Tydfil area 11,000	Loss of supplies, low pressure and discolouration. Due to repeated unplanned shutdown of Pontstcill works	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Replaced faulty equipment at works • Increased chlorine residuals at works • Provided bottled water on request • Provided an alternative supply by tanker/bowser for local hospital • Flushed mains and rezoned area where appropriate • Sampled affected area • Have made modifications to emergency shutdown system to enable better identification of cause of alarms <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Once problem was recognised the company managed the incident well and acted promptly to minimise the impact on consumers • A number of assumptions were made as to why the works had shut down unexpectedly and this initially delayed resolution of the problem • Recommended that any changes to telemetry configuration should be documented on site and be readily available <p>See 'Incidents in 2006' in the main body of the report for further details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
16/02/2006 for two days (DWR)	Parts of Central Cardiff (Llandaff, Maindy, Whitchurch) 1,069	Discolouration (brown) following planned work by company.	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Provided bottled water on request • Sampled affected area • Relabelled on site valves at Rhiwbina SR • Retrained staff in correct procedures for escalation of water quality issues at Llwynon WTW <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate labelling of on-site valves resulted in incorrect valve being operated in error • Inadequate communication of operators at Llwynon WTW meant that water quality issues were not escalated appropriately and caused a delay in response <p>See 'Incidents in 2006' in the main body of the report for further details</p>
02/04/2006 for two days (DWR)	Magor area 5,941	Discolouration (brown) following mains burst	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Flushed mains; repaired main • Provided bottled water on request; sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company commended for speed of response following identification of burst main • Inadequate flushing resulted in repaired main being returned to supply containing residual iron deposits

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
12/04/2006 for one day (DWR)	Pontypridd, Tonypandy area 23,000	Discolouration (brown) following planned work by company staff	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Flushed mains • Sampled affected area • Reversed the valving operation that had caused the discolouration <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate risk assessment carried out prior to conducting the trial • Company have revised procedures to include notification of consumers prior to carrying out such operations in the future
21/04/2006 for three days (DWR)	Merthyr Tydfil area 100,000	Elevated iron concentration in water supplied by Pontsticill works. Due to dosing pump failure	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Replaced faulty equipment • Blended supply with other sources • Increased chlorine residuals in final water tanks as precautionary measure • Sampled affected area • Provided an alternative supply by tanker/bowser for local hospital • Isolated service reservoirs in the system where appropriate <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Partial failure of the dosing pump led to sub-optimal performance of the treatment process resulting in elevated iron levels in water supplied • Had appropriate systems been in place and/or operating satisfactorily this incident could have been prevented or at least reduced in duration • On recognition of this incident the company managed the incident well to minimise impact on consumers and no contacts from consumers were received

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
12/07/2006 for two days (DWR)	Pontardulais, Hendy, Llangennech, Pontlliw and Llanelli 20,000	Discolouration (brown) following planned work by company staff	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Undertook risk assessment prior to planned work • Warned potentially affected consumers • Flushing and hydrant checks undertaken to check for discoloration following recharge • Flushed mains • Sampled affected area • Provided bottled water on request <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Contacts were received from consumers that had not been pre-warned of planned work • Recommendation made regarding improvements to risk assessment to ensure information is updated to inform risk assessments on this system in the future • Recommendation made regarding improvements to the information used to assess water quality on completion of planned work

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
16/07/2006 for two days (DWR)	Carmarthen area 27,000	Elevated iron concentration in water supplied by Capel Dewi. Due to problems with clarifier desludging process	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Valve opened to allow the clarifier to desludge for an hour • Monitored iron and turbidity levels in the final water • Monitored consumer complaints from the affected area (none were received). • <i>Cryptosporidium</i> sample filter from Capel Dewi works analysed • Sampled affected area • Repaired faulty equipment once spare parts available <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Incident occurred following inadequate clarifier desludging. This was usually an automated procedure, but during the time of the incident was being carried out manually, due to the failure of a automated valve which had been awaiting replacement since May 2006 • Recommended that the company review the local instructions given for desludging at this site and ensure they are adequate and are followed correctly • Recommendation made regarding lack of spare parts for equipment maintenance. The desludging valve was eventually replaced on 9 August 2006 as it was non-standard and had to be manufactured • Recommended that a review is conducted as to the appropriateness of the delays built into the telemetry system before alarms are triggered, paying particular attention to alarms on final supply and that sites classified by the company as at significant risk of <i>Cryptosporidium</i> be prioritised in this review

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
06/09/2006 for two days (DWR)	Aberbeeg, Trinant, Kendon Llanhileth in Gwent 10,000	Evidence of microbiological contamination. Detection of coliforms at Penyfan service reservoir and distribution samples. Due to operational change resulting in decrease in service reservoir turnover	<p>Dŵr Cymru Welsh Water:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir • Flushed mains to draw chlorinated water through the system • Sampled affected area • Made further operational changes to improve turnover and chlorine residual in Penyfan service reservoir <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Risk assessment inadequate – recommended that the company implement a risk assessment process to take into account the impact of operational changes on water quality. This process should ensure that any relevant factors such as significant increases in retention time in service reservoirs are reviewed and any remedial actions implemented as appropriate. See ‘Incidents in 2006’ in the main body of the report for further details
12/10/2006 for three days (DWR)	Phillipstown, New Tredegar 8	Evidence of microbiological contamination. Detection of coliforms at three properties and <i>E.coli</i> at a single property in the same distribution system	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals in the distribution system • Flushed mains • Sampled affected area • Carried out water fittings inspections and disinfected consumers’ taps following positive swab samples • Inspected service reservoir supplying the area to ensure that the tank was not in any way contributory <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Suggested that company review the local supply arrangements to optimise chlorine residuals

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
14/10/2006 for two days (DWR)	Bryngwyn supply area, West Glamorgan 50,000	Discolouration (brown) due to malfunction of a flow control valve	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Sampled affected area • Inspection and maintenance of faulty control valve <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that company review the maintenance schedules for such valves and other important control mechanisms to ensure the frequency is appropriate and in line with manufacturers recommendations
01/12/2006 for one day (DWR)	Cwrt Farm, Henllys, Torfaen 3	Evidence of microbiological contamination. <i>E.coli</i> detected in sample from single property fed by a concessionary supply	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Supplied bottled water to property • Advised consumer to boil water for drinking and cooking • Inspected and repaired 'point of use' treatment unit thought to have malfunctioned following a power surge • Undertook further sampling at the site <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company required to formalise medium and longer term plans for concessionary supplies <p>See 'Incidents in 2006' in the main body of the report for further details</p>
04/12/2006 for one day (DWR)	Cefn Golau Farm, Myddfai, Camarthenshire 3	Evidence of microbiological contamination. <i>E.coli</i> detected in sample taken from single property fed by a concessionary supply	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Supplied bottled water to property • Advised consumer to boil water for drinking and cooking • Inspected and repaired 'point of use' treatment unit that had developed an electrical fault following a leak on the unit. • Undertook further sampling at the site <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company required to formalise medium and longer term plans for concessionary supplies <p>See 'Incidents in 2006' in the main body of the report for further details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
12/12/2006 for 13 hours (DWR)	Merthyr Tydfil area 100,000	Elevated aluminium concentration in water supplied by Pontsticill works following power failure	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Restored power and restarted treatment process • Sampled affected area • Reduced flow through works to allow filters to be washed <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment ongoing. Incident linked to treatment process problems and filter washing at Pontsticill works. Further related incident occurred 19/12/2006 (see below)
20/12/2006 for one day (DWR)	Parts of Merthyr Tydfil and Bedlinog 8,000	Discolouration (brown) following loss of supplies from Pengarnddu service reservoir	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Provided tankered supply to local hospital and food premises • Provided bottled water on request • Rectified hydraulic fault at Pontsticill works to restore flow to Pengarnddu service reservoir <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment ongoing. Incident linked to treatment process problems and filter washing at Pontsticill works. Related to incident on 12/12/2006 (see above)

Incidents in the Western region in 2006

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
06/02/2006 for six days (SWT)	Pensylvannia, Stoke Hill and Beacon Health, North Exeter 6,250	Taste and odour caused by diesel contamination	<p>South West Water actions:</p> <ul style="list-style-type: none"> • By-passed service reservoir • Flushed mains • Issued a do not drink notice • Provided an alternative supply by tanker/bowser • Provided bottled water on request • Removed service reservoir from supply • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Prosecution proceedings initiated • Critical of lack of secure storage of full and empty hypochlorite drums at depot • Procedures within the company's Distribution Manual should be reviewed and updated • Company issues procedure for processing or disposing of unaccounted for drums of chemicals • Drums of out of date chemicals and those intended for use are not stored in the same area, and that a robust system be implemented for distinguishing between out of date chemicals and those intended for use • Company implements a robust system for recording the occurrence and nature of its staff visits to unmanned sites <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
17/02/2006 for 24 hours (WSX)	Sparkford and Queens Calmel, Somerset 3,150	Discolouration due to planned work	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Provided bottled water on request • Information statement released to two local radio stations <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Account of system pressures taken and included in risk assessments and reports • Company agreed to review its risk assessment procedure to verify diurnal water flow patterns <p>See 'Incidents in 2006' in the main body of the report for details</p>
13/03/2006 for 18 hours (WSX)	West and East Coker areas of Yeovil, Somerset 500	Discolouration due to failed pressure reducing valve	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Provided bottled water on request • Information statement released to two local radio stations <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Account of system pressures taken and included in risk assessments and reports • Company agreed to review its risk assessment procedure to verify diurnal water flow patterns <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
05/05/2006 for 48 hours (SWT)	Cattedown, Plymouth 1,000	Salt water intrusion into mains supply following illegal filling of a ship while seawater ballasting from a private hydrant	<p>South West Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Issued a do not drink (DND) notice • Provided an alternative supply by tanker/bowser • Supported DND notice with loud hailers and media statements/interviews <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Early consumer callers were not called back to inform of DND advice • Did not call many consumers back when promised to • Took too long (two hours) to open incident room after the incident had been identified • Took too long (seven hours) to distribute DND notices and alternative water supplies • Callers not on affected area list were just dismissed, no matter where they called from <p>See 'Issues of local interest' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
15/06/2006 for 22 hours (WSX)	Castle Cary and Galhampton near Wincanton, Somerset 3,865	Discolouration arising from a repair to a burst main	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Rezoned area (brought in water from different source) • Repaired main • Flushed mains • Provided bottled water on request <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • DWI critical that company assumed entrained air would migrate up gradient against peak morning water flow direction • Third incident in area this year so company asked to investigate common factors and inform DWI of what action it intends to implement to prevent similar recurrences – enforcement action threatened <p>See 'Incidents in 2006' in the main body of the report for details</p>
30/06/2006 for two days (BWH)	Tregonwell Road, Bournemouth 25	Issue of boil water advice due to microbiological contamination	<p>Bournemouth and West Hampshire Water actions:</p> <ul style="list-style-type: none"> • Issued a boil water notice • Provided bottled water • Sampled affected area • Chlorinated supply and internal plumbing <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Wrong service pipe connected which led to occupied properties being affected rather than unoccupied properties • Inadequate communication caused delay in response • Inadequate procedures • Supplied unwholesome water in breach of regulations • No recommendations made as appropriate steps taken to address the issue <p>See 'Incidents in 2006' in the main body of the report for details</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
18/07/2006 for five hours (SWT)	Greatwell works 57,500	Disinfection failure due to breakdown of chlorinator	<p>South West Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir • Replaced faulty equipment • Sampled affected area • Shut down treatment works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No recommendations made because company responded effectively to incident and it could not have prevented equipment failure
03/08/2006 for 12 hours (SWT)	Downderry, near Seaton, Cornwall 5	Consumer suffered from skin and eye irritation following contact chlorination of a service reservoir	<p>South West Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Increased chlorine residuals • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Did not notify Inspectorate • Lack of accurate information and detail in Company's reports • Lack of action and response to irregular chlorine residuals • Review of chlorination unit maintenance required • Failure of disinfection processes • Lack of a system to verify site visits and activities of staff

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
06/08/2006 for two days (SWT)	Bathpool and nearby hamlets near Liskard, Cornwall 175	Issue of boil water advice due to microbiological contamination	<p>South West Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Increased chlorine residuals at service reservoir • Issued a boil water notice • Sampled affected area <p>DWI comments and findings</p> <ul style="list-style-type: none"> • Company to review its risk assessment process for mains relining activities • Company to review its response to failing mains rehabilitation clearance samples and low chlorine results • Company to review its management of chlorine residuals in service reservoirs
18/08/2006 for one week (WSX)	Fulwood near Taunton 13,600	Algal bloom in raw water source	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Blended supply with another source • Increased chlorine residuals at treatment works • Rezoned area (brought in water from different source) • Increased GAC EBCT <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company took all reasonable actions in an attempt to reduce Microcystin concentrations • The Microcystin analysis appears to have been unreliable • Microcystin concentrations above WHO guide value for several weeks • CCDC was content that there was no immediate health risk

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
25/09/2006 for four days (WSX)	Ashbourne Crescent, Taunton, Somerset 5	Boil water advice issued due to microbiological contamination.	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Issued a boil water notice (BWN) • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • A water meter was installed, but because of the type of boundary box, grit got into supply • The consumer's tap had a gauze trap fitted which blocked with debris, stopping the water flow, resulting in a call of complaint from the consumer • Upon unblocking the tap, a network inspector mistook the grit for fish and issued a BWN • The tap was sampled the next day, but with the gauze trap still fitted, resulted in 18 <i>E.coli</i> and 28 coliforms • A coliform was also found upon resampling at a neighbours house and thus a second BWN was issued • incident caused by a series of mistakes but actions were undertaken with the best of intentions

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
31/12/06 for 48 hours (CHO)	Shipton Bellinger 1,500	Chlorine taste/odour following flooding of borehole by heavy rainfall	<p>Cholderton Water actions:</p> <ul style="list-style-type: none"> • Issued a do not drink notice • Provided bottled water • Removed service reservoir from supply and drained • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate contingency planning • Inadequate follow-up sampling • Inadequate procedures <p>See 'Incidents in 2006' in the main body of the report for details</p>

Note: A complete table of incidents in England and Wales in 2006 can be found on the CD in the folder. It is named **Incidents in England and Wales 2006.pdf**. It is also available on the DWI website at <http://www.dwi.gov>.