



Drinking Water Audit Report

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| County: | Wexford | Date of Audit: | 12/04/2018 |
| Plant(s) visited: | Ferns Regional water treatment plant (WTP) Scheme Code: 3300PUB1498 | Date of issue of Audit Report: | 04/05/18 |
| | | File Reference: | DW2018/66 |
| | | Auditors: | Ms Pauline Gillard Ms Michelle Roche |
| Audit Criteria: | <ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014, as amended.</i> • <i>The EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)</i> • The recommendations specified in the <i>EPA Drinking Water Report.</i> • EPA Drinking Water Advice Notes No's 1 to 15. | | |

MAIN FINDINGS

- i. ***Cryptosporidium* was detected in the treated water at Ferns water treatment plant (WTP) on 15/03/18 and an *Enterococci* exceedance was detected at the sample tap at Ferns WTP on 05/04/18.**
- ii. **This audit was carried out to determine whether the *Cryptosporidium* and *Enterococci* detections were caused by a failure of the treatment processes at Ferns water treatment plant. Following investigation, it was determined that the sampling point at the WTP was not located at a point where adequate contact time for chlorine disinfection has been achieved. The sampling point is located at the inlet to the clear water tank at the point of chlorination. This is likely to have contributed to the *Enterococci* exceedance.**

1. INTRODUCTION

Under the *European Union (Drinking Water) Regulations 2014, as amended* the Environmental Protection Agency is the supervisory authority in relation to Irish Water and its role in the provision of public water supplies. This audit was carried out in response to the notification by Irish Water dated 9th April 2018 of the failure to meet the *Enterococci* parametric value in the Ferns Regional public water supply, and the issuing of a Boil Water Notice to 2 consumers served prior to the reservoir.

The Ferns public water supply is sourced from the river Bann intake at Curralane. The treatment plant at Ferns Regional is currently operating for 18 hours/day and serves a population of 1,628 people in the Ferns area. Treatment includes slow sand filtration, disinfection using sodium hypochlorite and fluoridation.

The opening meeting commenced at 11.45 am at Ferns water treatment plant. The scope and purpose of the audit were outlined at the opening meeting. For the purposes of this audit only disinfection was examined. The audit process consisted of interviews with staff, review of records and observations made during an inspection of the treatment plant. The audits observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Irish Water:

Patrick Duggan – Compliance Specialist

Brian O’Leary – Operations Lead

Representing Wexford County Council

Paul Delahunty – Executive Engineer

Fionnuala Callery – Senior Executive Engineer

Terry Moore – Senior General Services Supervisor

Tom Quirke – Area Engineer

Enda Flynn– Caretaker

Representing the Environmental Protection Agency:

Pauline Gillard – Inspector

Michelle Roche - Inspector

2. AUDIT OBSERVATIONS

The audit process is a random sample on a particular day of a facility's operation. Where an observation or recommendation against a particular issue has not been reported, this should not be construed to mean that this issue is fully addressed.

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| <p>1.</p> | <p>Source Protection</p> <ul style="list-style-type: none">a. Land use in the immediate vicinity around the Ferns water treatment plant (WTP) is agricultural.b. Ferns WTP perimeter is fenced and the site is secure.c. Wexford County Council confirmed that landowners were written to, on the week of 9/04/18 by the Water Services Section, to inform them of their obligations in relation to the requirements of the <i>European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)</i>.d. There are continuous automatic alarmed turbidity and flow meters on the raw water coming in to the plant. A Turbidity sample is taken every day by the caretaker. The raw water turbidity alarm is 25 NTU and notifies the caretaker if the alarm is triggered. |
| <p>2.</p> | <p>Disinfection</p> <ul style="list-style-type: none">a. Disinfection at Ferns WTP consists of chlorination using sodium hypochlorite. The dosing point is at the clearwater tank.b. There are duty and standby chlorine dosing pumps, and a chlorine monitor which is alarmed. The low chlorine alarm set point is 0.3 mg/l and high level alarm is 1 mg/l.c. The chlorine dosing is only active when treated water is being pumped from the clearwater tank to the reservoir. The reservoir is fitted with a level sensor and when the level of water in the reservoir drops below 2.9m, high lift pumps are triggered to pump treated water up to the reservoir.d. The flow of water from the clearwater tank to the reservoir is fixed, therefore chlorine dosing is fixed at the treatment plant. There is no automatic shutdown of the plant when the |

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| | <p>chlorine alarm is triggered.</p> <ul style="list-style-type: none"> e. When the chlorine alarm is triggered there is a documented cascade system in place for responding to the alarm. f. Two consumers are served between the treatment plant and the reservoir before adequate chlorine contact time of 15mg/min/l is achieved. Since the audit chlorine levels have been adjusted and contact time is now adequate before the first consumer. g. Since the audit, Irish Water have installed a new sampling point which has adequate contact time. h. There is no chlorine analyser at the reservoir. i. Irish Water stated that Ferns Regional WTP will be upgraded under the National Disinfection Programme. |
| 3. | <p>Treated Water Storage and Distribution Network</p> <ul style="list-style-type: none"> a. The double celled reservoir was not inspected during the audit. Wexford County Council advised that the reservoir had not been cleaned but is on Irish Water’s reservoir cleaning programme. |
| 4. | <p>Exceedances of the Parametric Values</p> <ul style="list-style-type: none"> a. On 09/04/18 a BWN was issued to 2 consumers served by Ferns Regional WTP. The BWN was rescinded on 17/04/18. b. All <i>Cryptosporidium</i> samples has been clear since Irish Water became aware of the detection of <i>Cryptosporidium</i>. 4 consecutive samples taken since 15/04/18 of final treated water at the plant had no <i>Cryptosporidium</i> detections. c. A failure to meet the <i>Enterococci</i> parametric value on 5th April 2018 was notified to the EPA on 9th April 2018. Follow up samples at two locations in the supply zone, and two at the WTP were taken on 9th ,10th & 11th April. All results were compliant with the microbiological standards and contained adequate levels of free residual chlorine. d. The SCADA records for chlorine residual levels at the treatment plant were reviewed from the 1st April through to the date of the exceedance on 5th April 2018 and post exceedance. The chlorine residuals were adequate. e. Records of the raw water and final water turbidity at the plant were examined on the date of the exceedance and the week prior to the sample being taken. All were in expected ranges prior to the exceedance. |

3. AUDITORS COMMENTS

The audit was carried out to determine whether *Cryptosporidium* and *Enterococci* detections were caused by a failure of the treatment processes at Ferns water treatment plant. Following investigation, it was determined that the sampling point at the WTP was not located at a point where adequate contact time for chlorine disinfection has been achieved. The sampling point was located at the inlet to the clear water tank at the point of chlorination. This may have contributed to the exceedances.

4. RECOMMENDATIONS

Disinfection

1. Irish Water should review the contact time for chlorine disinfection to ensure that the effective contact time achieved is 15mg.min/l and that the first connections are receiving appropriately disinfected drinking water. Irish Water should submit a calculation of the effective contact time to the Agency.

2. Irish Water should ensure that dosing of chlorine is flow proportional or is linked to the residual chlorine monitor. Where the dosing pump is fixed Irish Water should replace the pump(s) with flow proportional pumps or pumps capable of dosing based on the residual chlorine monitor.

Treated Water Storage

3. Irish Water should ensure that the service reservoir is inspected and cleaned out on a regular basis and any maintenance and repairs completed as soon as possible after the need has been identified.

FOLLOW-UP ACTIONS REQUIRED BY IRISH WATER

During the audit, Irish Water representatives were advised of the audit findings and that action must be taken as a priority by Irish Water to address the issues raised. This report has been reviewed and approved by Aoife Loughnane, Drinking Water Team Leader.

Irish Water should submit a report to the Agency within one month of the date of this audit report detailing how it has dealt with the issues of concern identified during this audit. The report should include details on the action taken and planned to address the various recommendations, including timeframe for commencement and completion of any planned work.

The EPA also advises that the findings and recommendations from this audit report should, where relevant, be addressed at all other treatment plants operated and managed by Irish Water.

Please quote the File Reference Number in any future correspondence in relation to this Report.

Report prepared by:



Date:

Pauline Gillard

04/05/18

Inspector