



Drinking Water Audit Report

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| County: | Co. Cavan | Date of Audit: | 26/05/2016 |
| Plant(s) visited: | Cootehill Water Treatment Plant (WTP) and lake source Scheme Code 0200PUB0110 | Date of issue of Audit Report: | 24/06/2016 |
| | | File Reference: | DW2016/54 |
| | | Auditors: | Ms Ruth Barrington |
| Audit Criteria: | <ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</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 Nos. 1 to 15. • The recommendations in the previous audit report dated 18/06/2010. | | |

MAIN FINDINGS

- i. **Free chlorine residual at the end of the network in two areas in the supply is below the minimum 0.1 mg/l required to maintain adequate disinfection.**
- ii. **Further information is required on the follow up sampling after the aluminium exceedance in March 2016 to ensure that network levels of aluminium are compliant.**
- iii. **An automatic shut down on the basis of aluminium residual has been provided in response to the aluminium exceedance in March 2016.**

1. INTRODUCTION

Under the *European Union (Drinking Water) Regulations 2014* 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 to assess the performance of Irish Water in providing clean and wholesome drinking water.

The Cootehill Water Treatment Plant (WTP) supplies approx. 500 m³/day of treated water to a population of 1,900 in Cootehill town. Treatment at the plant comprises pH adjustment, coagulation/flocculation, rapid gravity filtration, chlorination and fluoridation. The source, Coragh Lake, is spring fed and activities around the lake are chiefly low intensity agriculture. The lake was visited following the main audit by the EPA inspector, plant caretaker and two Irish Water staff.

Photographs taken by Ruth Barrington on the day of the audit are attached to this report and are referred to in the text where relevant.

The opening meeting commenced at 13.20 p.m. at Cootehill WTP. The scope and purpose of the audit were outlined at the opening meeting. The audit process consisted of interviews with staff, review of records and observations made during an inspection of the treatment plant. The audit observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Irish Water:

Ms Yvonne McMonagle – Drinking Water Compliance Analyst

Mr Brian Boylan – Compliance Analyst

Mr Pat O’Sullivan – Drinking Water Compliance

Representing Cavan County Council

Mr John McCarney - Caretaker

Mr John Denning – SEE Water Services

Mr Tom Lyons – Operations Engineer

Mr Adrian Burke – Assistant Chemist

Representing the Environmental Protection Agency:

Ms Ruth Barrington – Inspector, Office of Environmental Enforcement

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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| 1. | Source Protection a. The vicinity of Coragh Lake is mainly in low intensity agricultural use. It was observed that there is a short section of lake shore adjacent to the pump house compound where there was no fence to prevent cattle access to the lake shore. It appeared that cattle had been in this area as there was visible poaching of the ground and cattle dung close to the water’s edge (Ref. photographs Nos. 1 and 2 attached). This area of land was said to be owned by a third party and cattle drinkers and fences have been provided elsewhere in the field to keep cattle away from the lake. |
| 2. | Coagulation, Flocculation and Clarification a. Aluminium sulphate is used to achieve coagulation. b. Tube settlers were scheduled to be installed in the week following the audit and it was anticipated that these would enable the alum dose to be lowered. c. Jar tests are performed to determine the dosing regime and dosing is manually controlled. d. Soda ash is used for pH adjustment. This is due to be replaced by sodium hydroxide shortly for ease of handling. |
| 3. | Filtration a. The filter media was estimated as having been replaced 10 years ago. b. Filter backwashing was automated in March 2016 and is triggered on time or headloss. c. Filter run to waste following backwashing is not currently possible due to the pipe layout on site. d. The EPA has a file open for aluminium exceedance in the Cootehill public water supply in March 2016 during the period when the filter backwash system was being upgraded. During this time filters were being operated without backwashing resulting in a build-up of aluminium which carried over to the final treated water. Since this incident an automatic shutdown of the plant on the basis of aluminium residual has been provided. |

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| 4. | <p>Disinfection</p> <p>a. There are two areas in the network where chlorine residuals are inadequate to maintain disinfection. These are the end of the lines at Cavan Road and Old Bridge Road, where chlorine residuals were <0.1 mg/l on 23/05/2016. These areas are supplied by cast iron mains. In the case of Old Bridge Road where there are also problems with leaks and pressure complaints, there is an Asset Needs Brief submitted to Irish Water for the replacement of this section of mains.</p> |
| 5. | <p>Exceedances of the Parametric Values</p> <p>a. The follow up to the aluminium exceedance of 410 µg/l on 10/03/2016 was discussed during the audit. Results which were presented to the EPA in an email dated 04/05/2016 as those of samples taken in the network were in fact (from the plant log book) taken in final treated water. Thus the EPA request for three consecutive compliant results from samples taken in the network remains outstanding.</p> |
| 6. | <p>Chemical storage and bunds</p> <p>a. Drums of sodium hypochlorite were stored unbundled in the chlorine room. These were stated to be for the booster chlorination in the Shercock public water supply.</p> |
| 7. | <p>Hygiene and Housekeeping</p> <p>a. The on-site reservoir hatch where there is access to treated water was cracked and not lockable.</p> |
| 8. | <p>Management and Control</p> <p>a. Access to turbidity and chlorine residual results and trends was limited at the time of the audit. These have not been incorporated on the county wide SCADA system so cannot be accessed remotely by operators.</p> |

3. AUDITOR'S COMMENTS

In general Cootehill water treatment plant appeared to be well managed and operated. The auditor appreciated that the plant is older and a number of improvements would be beneficial to assist in the optimisation of treatment for the Cootehill supply.

4. RECOMMENDATIONS

Source Protection

1. Irish Water should liaise with Cavan County Council to minimise the risk posed to the quality of raw water near the abstraction point from cattle access to Coragh Lake adjacent to the pumphouse.

Coagulation, Flocculation and Clarification

2. Irish Water should provide an update on the installation of the tube settlers and the switch to sodium hydroxide for pH adjustment, including completion timeframes. Following the installation of the tube settlers the aluminium sulphate dose should be reviewed and amended as necessary.

Filtration

3. Irish Water should evaluate the operation of the filters given the 10 years since the media was

last replaced.

Disinfection

4. Irish Water should establish a programme to ensure that free residual chlorine levels at the end of the distribution network are maintained at a minimum of 0.1mg/l, with particular attention to those areas of the network where an inadequate residual has been identified (Cavan Road and Old Bridge Road). The programme should set out timescales for the replacement of the relevant cast iron mains and interim actions to ensure adequate disinfection in the short term.

Exceedances of the Parametric Values

5. Irish Water should provide three follow up analysis results for aluminium as requested by the EPA. These should be results of samples taken in the network, not of final treated water leaving the plant.

Chemical Storage and Bunds

6. Irish Water should review chemical storage arrangements at the treatment plant including the storage of chemicals destined for use in another location (e.g. the drums of sodium hypochlorite in the chlorination room). Chemicals must be stored in banded areas capable of containing at least 110% of the volume of chemicals stored therein. Refer to EPA guidance document –“*IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities*”.

Hygiene and Housekeeping

7. Irish Water should ensure that sealed and lockable hatches are installed on all inspection points and valve access points where there is access to treated water (after filtration and before the final treated water is distributed), specifically the hatch at the reservoir which is cracked and in need of replacement.

Management and Control

8. Irish Water should ensure that suitable trended data is available for use by plant operators (e.g. through the county wide SCADA) to assess and respond to water quality trends by adjusting plant operations.

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 Ms 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:

24/06/2016

Ruth Barrington

Inspector

Photograph No. 1: Unfenced area of Coragh Lake shoreline adjacent to pumphouse palisade fence, showing cattle poaching and dung in foreground



Photograph No. 2: Close-up of lake shoreline showing the proximity of poached area to the water's edge.

