



Drinking Water Audit Report

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| Local Authority: | Galway County Council | Date of Audit: | 8 February 2012 |
| Plant(s) visited: | Mountbellew Water Treatment Plant | Date of issue of Audit Report: | 10 February 2012 |
| | | File Reference: | DW2009/191 |
| | | Auditors: | Mr. Darragh Page Mr. Patrick McLoughlin |
| Audit Criteria: | <ul style="list-style-type: none"> • The <i>European Communities (Drinking Water) (No. 2) Regulations, 2007</i>. • The EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7) • The recommendations specified in the EPA Report on <i>The Provision and Quality of Drinking Water in Ireland</i>. • The recommendations in any previous audit reports. | | |

MAIN FINDINGS

- i. **The Mountbellew Water Treatment Plant was placed on the EPA Remedial Action List in 2008 due to “Poor turbidity removal”. The plant has been upgraded to include rapid gravity filtration plus UV treatment, however the results of online monitoring reviewed on the day of the audit indicate that the plant is not complying with the turbidity parametric value of 1.0 NTU as turbidity removal by the rapid gravity filters is inadequate.**
- ii. **Galway County Council need to review the operation of the plant and ensure that actions are implemented to ensure that the plant is capable of dealing with any turbidity spikes in the raw water.**

1. INTRODUCTION

Under the *European Communities (Drinking Water) (No. 2) Regulations 2007* the Environmental Protection Agency is the supervisory authority in relation to the local authorities and their role in the provision of public water supplies. This audit was carried out to verify the effectiveness of the remedial measures undertaken by Galway County Council to remove the Mountbellew supply from the RAL (the supply is on the RAL for poor turbidity removal).

The Mountbellew supply is sourced from a spring in an area surrounded by forestry and agriculture. The treatment plant was upgraded in August 2011 and treatment now consists of prechlorination, rapid gravity filtration, UV disinfection, chlorine disinfection and fluoridation. The plant produces approximately 2,000 m³/d.

The opening meeting commenced at 2.15 pm at the Mountbellew Water Treatment Plant. 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 following were in attendance during the audit. The audits observations and recommendations are listed in Section 2 and 4 of this report.

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| <p>Representing Local Authority: (* indicates that person was also present for the closing meeting)</p> <p>Mr. Jim Cullen – Director of Services</p> <p>Mr. Martin Lavelle – Senior Engineer*</p> <p>Mr. John McMyler – Executive Engineer Networks*</p> <p>Mr. Pat McDermott – Caretaker*</p> <p>Mr. Paddy Hughes – Caretaker*</p> <p>Mr. Diarmuid Croghan – Area Engineer*</p> <p>Mr. Brendan McDonagh – Network Management Team*</p> <p>Mr. Adrian Raferty – Executive Engineer*</p> <p>Mr. Lance Fleming - EPS*</p> <p>Representing the Environmental Protection Agency:</p> <p>Mr. Darragh Page – Inspector*</p> <p>Mr. Patrick McLoughlin - Inspector*</p> |
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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> <ol style="list-style-type: none"> a. The spring source for the Mountbellew WS is covered and the outlet has been covered to prevent unauthorised human or animal access. b. The WSA reported that the raw water sump has been cleaned out but that the spring itself needs to be cleared out. As it is a confined space it will require specialist consultants which the WSA reported will be in place shortly. |
| <p>2.</p> | <p>Filtration</p> <ol style="list-style-type: none"> a. The raw water is prechlorinated for iron and manganese removal and is then filtered via two rapid gravity sand filters. There is no coagulant added prior to the filters. b. A backwash of filter no. 2 was observed and appears to be adequate. c. There is a turbidity monitor on each of the filters and the results from the filters were examined on the SCADA. The results indicate that the majority of the time the raw water quality is good with low turbidities (<0.5 NTU). However, the raw water quality has spikes of turbidity in excess of 1 NTU which can last several days. d. The filtered water turbidities were examined in tandem with the raw water turbidity and there is an apparent correlation between the two with little removal of turbidity by the rapid gravity filters with the result that filtered water turbidity values in excess of 1.0 NTU were recorded in the final water. e. The WSA reported that the turbidity alarms (set at 1.0 NTU) had been activated but it was disconnected at the time as it had gone off a period of time at the end of January. f. At the time of the audit the raw water turbidity monitor was reading 0.213 NTU while the treated water turbidity monitor was reading 0.168 NTU. g. The results from filter no. 2 were not reading correctly on the SCADA. |

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| 3. | <p>Disinfection</p> <ol style="list-style-type: none"> a. A duty and standby UV disinfection treatment unit has been installed at the Mountbellew plant that was reported to be validated to 73% UVT. A copy of the validation cert was examined. b. The dose at the time of the audit was 43.71 J/cm² and the consultant reported that the plant is alarmed when the dose goes below 40 J/cm² resulting in a plant shut down. c. The UVT at the time of the audit was 90.5% and the alarm is set at 73% UVT. A review of the UVT results on the SCADA indicate that there was a drop in UVT from an average of 90% to approx. 86% coinciding with the elevated levels of turbidity around the 27, 28 and 29 January 2011. d. The chlorination system was examined and found to be in compliance with the recommendations of the <i>EPA Advice Note – E. coli in Drinking Water</i>. e. The chlorine dosing lines were outdoors and have not been frost proofed. |
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3. AUDITORS COMMENTS

The EPA added the Mountbellew Water Treatment Plant to the original Remedial Action List in 2008 under the heading “Poor turbidity removal” due to elevated levels of turbidity in excess of 1.0 NTU. The treatment plant has been upgraded to include the provision of two rapid gravity filters with no coagulation or other turbidity removal stage. Turbidity removal by rapid gravity filtration in the absence of coagulation or some other form of pretreatment is often poor and the raw and treated water turbidity results at the Mountbellew water treatment plant appear to indicate that the filters are not capable of removing sufficient levels of turbidity when the raw water turbidity rises.

As a consequence the EPA will not be in a position to remove the Mountbellew PWS from the RAL until such time as Galway County Council can demonstrate that there is adequate turbidity removal from the raw water and that treated water turbidity levels of less than 1.0 NTU can be secured.

4. RECOMMENDATIONS

Source Protection

1. The Water Services Authority should ensure that the spring chamber is cleaned out to reduce the potential for carryover of silt onto the filters and into supply.

Filtration

2. The Water Services Authority should review the efficiency of turbidity removal by the rapid gravity filters and ensure that measures are put in place to ensure that turbidity in the final water is kept as low as possible and does not exceed 1.0 NTU. The WSA should submit a report to the EPA outlining what actions are to be taken to ensure that any turbidity spike in the raw water does not result in turbidity levels in the final water exceeding 1.0 NTU.
3. The Water Services Authority should ensure that the turbidity alarms are responded to in an appropriate manner and are not overridden without corrective action being taken to reduce the levels of turbidity in the final water.
4. The Water Services Authority should ensure that the results from the turbidity monitor on filter no.2 are reading correctly to the SCADA.

General Management

5. The Water Services Authority should ensure that the dosing lines and associated pipework outdoors are reviewed to ensure that they are frost proof.

FOLLOW-UP ACTIONS REQUIRED BY THE LOCAL AUTHORITY

During the audit the Water Services Authority representatives were advised of the audit findings and that action must be taken as a priority by the Water Services Authority to address the issues raised.

The Water Services Authority 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 Galway County Council.

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

Report prepared by:

Inspector

Date:
