Site Visit Report

Under the *European Union (Drinking Water) Regulations 2023*, the Environmental Protection Agency (EPA) is the supervisory authority in relation to Uisce Éireann and its role in the provision of public drinking water supplies. This audit was carried out to assess the performance of Uisce Éireann in providing clean and wholesome water to the public water supply named below.

The audit process is a sample of the performance of a water treatment plant and public water supply on a given date.

Water Supply Zone

Name of Installation	North Leitrim Regional Water Supply
Organisation	Uisce Éireann
Scheme Code	1700PUB0012
County	Leitrim
Site Visit Reference No.	SV29672

Report Detail

Issue Date	05/07/2024
Prepared By	Veronica Boland

Site Visit Detail

Date Of Inspection	05/06/2024	**Announced**	Yes
Time In	10:30	**Time Out**	13:55
EPA Inspector(s) **Additional Visitors**	Veronica Boland		
Company Personnel	Uisce Eireann: Vinny McGrath. Leitrim County Council (working in partnership with Uisce Éireann): Finnian Travers, Maeve Coultry, Padraig Meehan, Kieran McGuire.		

Summary of Key Findings

1. The audit found that the North Leitrim Regional water treatment plant (WTP) was operating and performing well in providing clean and wholesome water to the public supply

2. Anomalies were identified between the two chlorine contact time calculation sheets submitted pre audit.

3. The alarm and shutdown setpoint time delay for final water turbidity at the WTP is not in accordance with the *EPA Drinking Water Manual: Filtration.*

4. The time delays in place for high and low chlorine do not meet the 5 minute time delay recommended in the *EPA Water Treatment Manual: Disinfection*.

5. The monitors and chemical dosing pump calibration/service stickers indicated that they were all outside of their calibration due dates.

Introduction

The North Leitrim Regional Water Supply (NLRWS) WTP serves a population of approximately 6,056 people. The design capacity of the plant is 6,000 m3/day. An average of 3,000 m3/day (3,500 m3/day peak season) of treated water is produced at the NLRWSS WTP. The WTP is operational 20 hours per day. The raw water abstraction is from Lough Gill. The treatment comprises pH correction, coagulation, flocculation, dissolved air flotation (DAF), rapid gravity filtration, chlorination and fluoridation. There are two reservoirs at Cornalaughta, with a combined storage capacity of approximately 1.5 days (1,500 m3 and 3,800 m3). There are 13 reservoirs on the network and 5 chlorine booster stations.

This audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the alarms and inhibits in place at the treatment plant to ensure the appropriate oversight of treatment processes.

Supply Zones Areas Inspected

The audit included a site visit of the treatment processes at NLRWSS WTP. The abstraction source and treated water reservoir were not visited as part of the audit.

1. Disinfection

		Answer
1.1	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	Yes

Comment

1. Network chlorine residuals are monitored in the North Leitrim rural water supply several times per week, however the extremities of the network are less frequently monitored (twice per month).

2. Alarms, Inhibits & Oversight Audits 2024

		Answer
2.1	Is there a documented site specific incident response and incident escalation process?	No

Comment

1. The Uisce Eireann incident escalation flowchart displayed at the WTP did not contain information on site specific alarm time delay setpoints.

		Answer
2.2	Were online monitors operational?	No

Comment

1. The online aluminium residual monitor was not working on the day of the audit. Staff advised that the monitor was installed but has never worked properly since installation and they were trying to source a contractor located in the area to service the monitor. There was a sticker on the monitor 'Service/Calibration 20.09.23, Next service/calibration March 24'.

2. The staff test aluminium residual levels on a daily basis on site. Records of the aluminum residual levels in the final water were inspected on the day of the audit and were between the ranges of 0.005 and 0.05 mg/l.

3. The aluminium monitor is not linked to any of the automatic dosing processes at the WTP and does not impact on the treatment provided at the plant.

4. During the audit staff advised that the raw water turbidity monitor was working but there is a signal issue with sending the readings from the monitor to SCADA. There is a raw water sample line directly into the on-site laboratory and the raw water turbidity results are recorded in a log book.

		Answer
2.3	Was there a plan in place for repair of any monitor not in operation during the audit?	Yes

Comment

1. Refer to Section 2.2 above.

		Answer
2.4	Were online monitors within their calibration dates?	No

Comment

1. At the audit staff advised that all monitors are serviced on a six monthly basis by external contractors. All the online monitors calibration stickers indicated that the 'next service/calibration date was 27/01/2024' (previous service/calibration 27/07/2023). Calibration/Service records for the monitors were reviewed during the audit and were within date.

		Answer
2.5	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No

Comment

1. The CHLRE202 monitor (dosing point) warning alarm of 0.5 mg/l (Low) is lower than the shutdown alarm of 0.70 mg/l (Low) with a time delay of 900 settings. At the audit the staff changed the alarm time delay from 900 seconds to 300 seconds.

2. The 'free chlorine residual' monitor (verification point) CHLRe201 has shutdown alarms of 2.0 mg/l (High) and 0.5 mg/l (Low) with 900 second time delay. This time delay is not in accordance with the 5 minute time delay in the *EPA Treatment Manual: Disinfection*.

3. A final water turbidity shutdown setpoint of 0.5 NTU was in place at the WTP and had a time delay of 15 minutes (and a 'High' warning alarm of 2 NTU). This shutdown time delay is not in accordance with the three consecutive minutes time delay (at a turbidity in excess of 1 NTU) as specified in section 3.4.3 of the *EPA Water Treatment Manual: Filtration*. This could potentially lead to water above 1 NTU leaving the treatment plant in certain circumstances for a period of time in excess of three minutes.

		Answer
2.6	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	No

Comment

1. Refer to section 2.5 above.

		Answer
2.7	Are plant performance trends accessible remotely?	Yes

Comment

1. The countywide SCADA system is accessible to staff remotely via laptop, however staff advised that they come into the office to view trends and critical alarms on the 'EPS plant computer' on site as they find it provides more accurate and reliable information.

		Answer

2.8	Is the chlorine contact time calculation correct?	No

Comment

1. The pre audit information submitted for NLRWSS included two different chlorine contact calculations (first dated May 2014 and second one in the Uisce Eireann format dated 17/06/2022).

3. There were differences between the two chlorine contact calculation sheets submitted including contact tank size, maximum flow, and base line Ct. At the audit staff advised that they thought the contact tank had larger dimensions than what was in the chlorine contact calculation for the site dated 17/06/2022.

3. Site Specific Issues

		Answer
3.1	Are chemical dosing pumps within their calibration dates?	No

Comment

1. At the audit staff advised that the chemical dosing pumps are serviced annually by external contractors but the contractors put 6 monthly service due dates on the pumps. All calibration/service records are kept on a staff laptop but on the day of the audit the chemical dosing pump calibration/service records were not available for inspection.

2. All the chemical dosing pumps have duty and standby pumps and automatically switch over at a preset time every 24 hours (not based on working hours).

Recommendations

Subject	North Leitrim RWSS Audit 2024 Recommendations	**Due Date**	02/08/2024
Action Text	**Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.** 1. Review (i) the chlorine contact time (Ct) calculations for the supply to ensure that the correct chlorine contact factors including Ct baseline value and contact tank size is included in the calculation and if relevant, change the low chlorine alarm setpoint to protect this requirement and submit a copy to the EPA. 2. Ensure that all alarm and shutdown time delay set points for turbidity and chlorine are in accordance with site specific requirements and the *EPA Water Treatment Manuals: Filtration and Disinfection.* Ensure operational staff are briefed on amendments to the alarm and inhibit settings. 3. Update the Uisce Éireann Incident Communication Response Guidance chart displayed at the WTP with the correct site specific alarm and time delay setpoints protecting critical processes at the WTP. 4. (i) Ensure all plant monitors and chemical dosing pumps are calibrated and serviced in accordance with manufacturers instructions, and clearly and correctly labelled to show the 'calibration due by' or 'service due by' date. (ii) Submit the most recent calibration and servicing records for critical process instruments: (a) turbidity, chlorine dose, residual chlorine (b) chemical dosing duty and standby pumps. 5. Review the feasibility of returning the aluminium residual monitor to service. 6. Investigate the signal issue linking the raw water turbidity monitor to the SCADA system and review the feasibility of repairing the issue. 7. Carry out monitoring of residual chlorine several (two to three) times per week at different points of the network to include network extremities. **Actions required by Uisce Éireann** During the audit, Uisce Éireann representatives were advised of the audit findings and that action must be taken by Uisce Éireann to address the issues raised. Uisce Éireann should submit a report to the EPA on or before 02/08/2024 detailing the actions taken and planned, with timescales, to close out the above recommendations. The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.		