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	Tibbotstown
Organisation	Uisce Éireann
Scheme Code	0500PUB2408
County	Cork
Site Visit Reference No.	SV29537

Report Detail

Issue Date	19/03/2024
Prepared By	Paul Buckley

Site Visit Detail

Date Of Inspection	06/03/2024	**Announced**	No
Time In	09:50	**Time Out**	12:15
EPA Inspector(s) **Additional Visitors**	Paul Buckley Regina Campbell		
Company Personnel	Uisce Éireann: Cormac Bergin, Claire Hurley, Sam Heinen Cork County Council (working in partnership with Uisce Éireann): Pauline McAree, Eimer O'Riordan, Padraig Griffin, Tony Sheehan.		

Summary of Key Findings

1. There are no high turbidity alarms or shutdowns associated with the individual filters or the final water at the Tibbotstown water treatment plant and these are required to verify the protozoal barrier and to prevent the entry of inadequately treated water into the supply. *Cryptosporidum* monitoring is ongoing within the supply and there have been no detections to date.

2. There is no residual chlorine monitor located after contact time to verify that contact time has been achieved within the pipeline that is currently in operation.

3. The filters at the water treatment plant are not designed or operated in accordance with the guidance provided in the *EPA Water Treatment Manual: Filtration.*

Introduction

The Tibbotstown Public Water Supply (PWS) supplies an average of 1,140 m3/day of water, serving a population of 5,800 people. These figures are not reflective of the volume supplied and population served on the EPA EDEN system.

During the audit it was stated that there are two supply pipelines originating from the plant, and at present only one of those pipelines is operational. The pipeline supplying the greater Tibbotstown agglomeration was taken out of service on the 03/05/2022, and it is proposed to restore the pipeline by the end of Q3 2024. On the day of the audit the plant was producing an average of 30 m3/hour of water, serving a population of approximately 40 people. The remaining population in the greater Tibbotstown agglomeration is currently being served by the Glashaboy Public Water Supply.

The source of the supply is the Tibbotstown reservoir which is served by 3 no. springs, located adjacent to the water treatment plant (WTP). Treatment consists of coagulation, flocculation, rapid gravity filtration and chlorination. The supply for the plant is supplemented by the Ownenacurra River as required.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the protozoal barriers in place at the water treatment plant.

Supply Zones Areas Inspected

The raw water intake, coagulant injection point, clarifier tanks, rapid gravity filters and the chlorine dosing system at the water treatment plant were inspected.

1. Protozoal Barriers Audits 2024

		Answer
1.1	Is there a chlorine residual monitor located after contact time for verification of primary disinfection?	No

Comment

1. There is no chlorine residual monitor located after contact time on the currently active distribution line from the plant for verification of primary disinfection. There is a chlorine monitor located after the dosing point and there is a chlorine residual monitor located after contact time on the supply line which services the greater Tibbotstown agglomeration.

		Answer
1.2	Are the filters designed and managed in accordance with EPA guidance?	No

Comment

1. The filter media depth for the 3 no. individual filters was confirmed to be 700 mm which is below the recommended minimum depth of 1000 mm as per the *EPA Water Treatment Manual; Filtration*.

2. There are no filter media depth gauges in place for the individual filters.

3. There are no automatic backwash facilities based on turbidity, headloss, or time, in place. Filter backwashing is triggered manually at the plant and each filter is routinely backwashed every third day, or more frequently as required.

		Answer
1.3	Are coagulant residual monitoring results compliant in final water?	No

Comment

1. 8% Aluminium sulphate is used as the coagulant at the water treatment plant. There is no routine coagulant residual monitoring ongoing at the plant. Plant operators indicated during the audit that the facilities for testing the coagulant residuals were in the process of being established.

		Answer
1.4	Are there suitable plant controls to prevent inadequately treated water entering the distribution network?	No

Comment

1. There are no automatic backwash triggers for the individual filters. Filter backwashing is triggered manually at the plant and each filter is routinely backwashed every third day, or more frequently as required.

2. There are no alarms and shutdowns associated with the the turbidity monitors for the individual filters and the final water.

3. The following alarm and shutdown setpoints are in place at the water treatment plant for residual chlorine:

- low chlorine alarm: 0.2 mg/L;
- low chlorine shutdown: 0.2 mg/L;
- high chlorine alarm: 2.2 mg/L, and
- high chlorine shutdown: 2.2 mg/L

Whilst a chlorine residual in excess of 0.1mg/l is being maintained in the network, the low chlorine alarm setpoints are well below the target final water chlorine residual concentration leaving the WTP. In addition, the time delays associated with the alarms and shutdowns are not in line with the timeframe of 5 minutes recommended in the *EPA Water Treatment Manual: Disinfection*.

		Answer
1.5	Were treatment processes designed to protect the protozoal barriers operational during the audit?	No

Comment

1. There are no alarms and shutdowns associated with turbidity in place for the individual filters or final water at the water treatment plant.

2. There are no automatic backwashing facilities in place at the water treatment plant. Filter backwashing is triggered manually at the plant and each filter is routinely backwashed every third day, or more frequently as required.

		Answer
1.6	Are alarms and shutdowns on each filter, on the combined filtered water and final water in accordance with the EPA Filtration Manual?	No

Comment

1. There are no alarms and shutdowns associated with turbidity in place for the individual filters or final water at the water treatment plant.

2. *Cryptosporidium* sampling is currently undertaken 5 times per year in the supply and there have been no detections to date.

		Answer
1.7	Are relevant alarms dialled out to allow a timely response by operational staff?	No

Comment

1. There are no alarms and shutdowns associated with turbidity in place for the individual filters or final water at the water treatment plant.

2. Site Specific Issues

		Answer
2.1	Are final water pH results compliant with parametric values?	No

Comment

1. The final water pH probe displayed a value of 5.22 when checked on the day of the audit.

2. Review of the February and March 2024 monitoring records showed that the final water pH was outside of the parametric value range (6.5 - 9.5) on a number occasions between 15/02/2024 and 21/02/2024, and on a number of occasions between 04/03/2024 and 06/03/2024.

Recommendations

Subject	Tibbotstown Audit Recommendations 06/03/2024	Due Date	19/04/2024
Action Text	**Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendation(s) without delay.** 1. i) Implement turbidity alarms and shutdowns to ensure that the plant operates in accordance with the turbidity log performance criteria as outlined in the *EPA Water Treatment Manual: Filtration* to demonstrate that there is an effective protozoal barrier at the plant, and ii) Inform the HSE that the protozoal barrier cannot be verified due to the absence of the required turbidity alarms and shutdowns on the rapid gravity filters and the final water. 2. Install a continuous chlorine residual monitor with appropriate alarms and inhibits to verify contact time is achieved in the pipeline that is currently operational. 3. i) Assess the feasibility of increasing the filter media depth in the filters to meet the recommended minimum of 1m operating depth; ii) install filter media depth gauges on the 3 no. individual filters at the water treatment plant; iii) install automatic backwashing of the 3 no. individual filters based on turbidity, headloss, and time; and iv) ensure that a filter logbook is maintained containing the following information: a) records of completed backwashes, b) records of alarms triggered and shutdown events, c) records of all maintenance and inspections carried out on the filters, and d) details of the media replacement. 4. Continue to monitor for *Cryptosporidium* as per the Uisce Éireann Rationale for Determining the Frequency of *Cryptosporidium* in Public Water Supplies until the required alarms and inhibits have been put in place at the water treatment plant. 5. i) Ensure that coagulant residual monitoring is undertaken daily as per the *EPA Water Treatment Manual: Filtration*, and ii) notify the EPA of any exceedances of the aluminium parametric value. 6. Ensure the low chorine alarm and shutdown setpoints and associated time delays are set at an appropriate level to ensure that the target residual chlorine concentration in the final water leaving the plant is met. 7. i) Undertake pH monitoring of the final water and in the network and submit results to the EPA; ii) confirm that the pH monitor at the water treatment plant is working correctly and that the readings correspond to laboratory samples; iii) install pH alarms at the water treatment plant and ensure that exceedances of the pH parametric value range are alerted to operational staff, and iv) provide details of any remedial actions required to restore compliance with the pH parametric value range. 8. Submit a programme of works, including timelines, for the restoration of the second supply line from the plant 9. Update EDEN with the correct volume supplied and population served for the plant. **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 19/04/2024 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.		