Site Visit Report

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 to assess the performance of Irish Water in providing clean and wholesome water to the visited public supply.

The audit process is a sample on a given date of the facility's operation. Where a finding against a particular issue has been reported this should not be construed to mean that this issue is fully addressed.

Water Supply Zone

Name of Installation	Ballingeary
Organisation	Irish Water
Scheme Code	0500PUB2302
County	Cork
Site Visit Reference No.	SV20448

Report Detail

Issue Date	14/08/2020
Prepared By	Criona Doyle

Site Visit Detail

Date Of Inspection	17/07/2020	**Announced**	Yes
Time In	11:00	**Time Out**	11:45
EPA Inspector(s)	Criona Doyle		
Additional Visitors			

Company Personnel	Irish Water: Deirdre O'Loughlin*** Oliver Harney*** Tommy Roche* Cork County Council: Jerry Creedon*** Ciaran Kelly* Ciaran Connolly* Donal Kellagher** *Attended pre site meeting on 15/07/20. ** Attended audit on 17/07/20. ***Attended both pre site meeting and audit.

Summary of Key Findings

1. The audit confirmed the treatment plant upgrades have been completed at the Ballingeary Water Treatment Plant to reduce the potential for the formation of trihalomethanes in the supply.

2. Irish Water has completed a programme of verification monitoring to demonstrate that the actions undertaken have been adequate. 3 no. consecutive compliant samples for trihalomethanes have been provided from the network.

3. The completion of the works and the submission of verification data has allowed the Ballingeary Public Water Supply (PWS) to be removed from the EPA's Remedial Action List in the Quarter 2 2020 review.

Introduction

The Ballingeary Public Water Supply (PWS) was added to the EPA's Remedial Action List in Quarter 2 2018 due to persistent trihalomethanes failures in the supply. The source of the supply is the Bunsheelin River and the population served by the supply is 239.

Upgrade works have been completed at the water treatment plant which reduce the potential for the formation of trihalomethanes. A Granular Activated Carbon (GAC) filtration stage has been added to the pre-existing infrastructure (2 no. slow sand filters and chlorination disinfection system) which has been retained.

Supply Zones Areas Inspected

The purpose of the audit was to verify if the Ballingeary Public Water Supply can be removed from the EPA's Remedial Action List following the treatment plant upgrades to address the formation of trihalomethanes in the supply. The treatment plant process was audited to determine progress with the remedial works.

1. Filtration

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

Comment

A ‘plug and play’ granular activated carbon (GAC) filtration system has been installed to address the elevated trihalomethanes in the supply. The system consists of GAC filters with Aquasorb 5,000 media, booster pumps and UVT monitors. The two GAC filters operate in series. Backwashing of the filters or run to waste is not required.

New filters are ordered for delivery when the UVT of the treated water drops below 90% UVT to allow time for delivery to site. The filters are replaced when the UVT drops below 85% UVT. Monitoring of the UVT takes place pre and post GAC filtration. Automatic shutdown of the pumps occurs if the UVT drops below 85% UVT which prevents water being pumped to the reservoir. The GAC filters meet the EPA guidance on filtration.

The two slow sand filters on site have remained in operation. Continuous turbidity monitors are provided on each individual slow sand filter but there is no turbidity monitor on the combined final filtered water. No alarms are in place for elevated turbidity on either of the individual slow sand filters or on the final combined filtered water. This is not in accordance with EPA guidance on filtration.

		Answer
1.2	Was there visual indication that the filters were operating appropriately?	Yes

Comment

On the day of the audit the turbidity in filter no. 1 turbidity was 0.110 NTU and 0.189 NTU in filter no. 2. The UVT post GAC filtration was 98% UVT.

2. Disinfection

		Answer
2.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes

Comment

Continuous monitoring of the residual chlorine level takes place before and after the reservoir and the trends can be viewed on site. The low chlorine alarm is activated at 0.4 mg/l and the high chlorine alarm at 2.0 mg/l.

		Answer
2.2	Are duty and standby chlorine pumps/ UV units in operation?	Yes

Comment

Duty and standby chlorine dosing pumps are provided with automatic switch over between the pumps on a 24 hour frequency.

		Answer
2.3	Is the chlorine dosed appropriately?	Yes

Comment

Chlorine dosing takes place at the water treatment plant (i) on the rising main prior to the reservoir and (ii) on the distribution main after the reservoir. Duty and standby dosing pumps are provided at both dosing locations. The chlorine dosing on the rising main to the reservoir is flow proportional. The chlorine dosing post reservoir is flow proportion and linked to residual at the reservoir outlet.

At the audit surface water ingress was observed in the chamber where chlorine dosing takes place on the outlet from the reservoir. The cover on the hatch was not adequately sealed therefore a pathway exists for surface water runoff or any spills on site to gain access to the chamber and into the treated water supply.

		Answer
2.4	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	Yes

Comment

The residual chlorine level is monitored on the outlet from the reservoir. A copy of the contact time calculation was provided which indicated an effective contact time of 155.08mg.min/l.

3. Treatment Process Chemicals

		Answer
3.1	Are chemicals appropriately produced/ approved and suitable for use in drinking water treatment?	Yes

Comment

10% sodium hypochlorite is used for disinfection. Both the expiry date and PCS number were displayed on the 10 L drums of sodium hypochlorite. A build up of liquid was observed in the bund on both of the chlorine day tanks.

4. Supply on the Remedial Action List

		Answer
4.1	Do the audit findings support progress made with the Remedial Action List upgrades?	Yes

Comment

The audit confirmed the installation of the activated carbon filtration stage has been completed on site.

		Answer
4.2	Is further information needed to assess completion of the Remedial Action List upgrade?	No

Comment

Verification data has been provided to demonstrate the actions undertaken have been adequate to achieve compliance with the trihalomethanes parametric value.

5. Site Specific Issues

		Answer
5.1	Has EDEN been updated to include the improvements to the treatment process ?	No

Comment

EDEN has not been updated to include the additional granular activated carbon filtration treatment stage provided at the Ballingeary water treatment plant.

Recommendations

Subject	Ballingeary RAL Removal Audit	**Due Date**	14/09/2020
Action Text	***Recommendation(s)*** 1. Irish Water should install a continuous turbidity monitor on the final treated water at the water treatment plant. The turbidity monitors (Filter No.1, Filter No. 2 and Final Water) should be linked to a recording device and generate an alarm in the event of a deviation from the acceptable operating range of the filters. 2. Irish Water should update the data on the EPA's EDEN portal in terms of the treatment provided following the plant upgrades at Ballingeary water treatment plant. 3. Irish Water should ensure that the bund on the chlorine day tank is cleaned out and any build-up of liquid in the bund is removed. 4. Irish Water should ensure that the inspection cover on the access hatch to the chlorine dosing pumps, on the pipeline out of the reservoir, is sealed to prevent direct access of any surface water, leaks or spills into the water supply. **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 on or before 14/09/20 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 time frame 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 Action Reference Number DW2017/89 in any future correspondence in relation to this Report.		