



Drinking Water Audit Report

County:	Co. Monaghan	Date of Audit:	6 th May 2014
Plant(s) visited:	Togan Water Treatment Plant (Monaghan WSS) Scheme Code 2400PUB1024	Date of issue of Audit Report:	27 th May 2014
		File Reference:	DW2014/212
		Auditors:	Ms Ruth Barrington
Audit Criteria:	<ul style="list-style-type: none"> • The European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014). • 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>. 		

MAIN FINDINGS

- i. The audit was in response to a spill of aluminium sulphate which had occurred on the site and which entered surface water off-site. Irish Water should undertake a survey of drains and pipelines on site and based on this should carry out works to ensure that any leaks, spills or washings from chemical storage/use areas are contained on-site.
- ii. Irish Water should carry out an investigation of the impact of the spill on the receiving water and communicate with Inland Fisheries Ireland to carry out suitable remediation.

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 in response to a complaint received by the EPA of a discharge to a stream adjacent to the Threemilehouse drinking water treatment plant, and subsequent communications with Monaghan County Council which confirmed the location and nature of the discharge.

Where the text refers to the Water Service Authority this refers to Irish Water in accordance with Section 7 of the Water Services (No. 2) Act 2013.

The Monaghan WSS is supplied by two drinking water plants, one of which is located at Togan, Threemilehouse, Co. Monaghan. The plant has a surface water abstraction from Lough Breagh, and is located close to a stream which is a tributary of the Connery Upper River. The supply serves a population of over 10,000 people in and around Monaghan town.

Photographs taken by Ms Barrington during the audit are attached to this report and are referred to in the text where relevant.

The opening meeting commenced at 2.00 p.m. at Togan 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 audits observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Irish Water: (* indicates that person was also present for the closing meeting)

Mr Peter Gallagher – Regional Office Cavan (Irish Water)*

Mr Matthew Lambe - Technician (Water Services, Monaghan County Council)*

Mr Pascal Rooney - Senior Executive Technician (Water Services, Monaghan County Council)*

Representing Monaghan County Council

Ms Bernie O’Flaherty - Executive Chemist (Environment Section, Monaghan County Council)*

Representing the Environmental Protection Agency:

Ms Ruth Barrington – Inspector*

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.

1.	<p>Source Protection</p> <p>a. The raw water abstraction at Lough Breagh was not visited as part of the audit. However, the catchment protection measures were discussed during the audit and Monaghan County Council confirmed that the land users in the vicinity of the lake have not been formally advised of the location of the abstraction point and their responsibilities under relevant legislation.</p>
2.	<p>Sequence of Events and Incident Response</p> <p>a. On Monday 28th April 2014 a bulk delivery of 18 tonnes of aluminium sulphate was received at the plant into the bunded aluminium sulphate tank.</p> <p>b. On the afternoon of Monday 28th April, Monaghan County Council received a call from IFI that there had been a discharge into the stream, visible due to foaming at the water surface and staining of the stream bed.</p> <p>c. Also on Monday 28th April, the caretaker and staff from Water Services, Monaghan County Council, were investigating the possibility of a leak from the bulk tank in a concreted area between the tank and the plant buildings.</p> <p>d. The EPA was informed via a telephone call from a member of the public on 30th April 2014 of yellow foam in the stream 40-50m downstream from the drinking water treatment plant. This complaint was brought to the attention of Irish Water and Monaghan County Council on the same day.</p> <p>e. On 1st May 2014, following a conversation between Ms Barrington and Ms Bernie O’Flaherty of Monaghan County Council’s Environment Section, Ms Barrington advised Irish Water of the requirement to notify the incident. A notification was received on 8th May 2014, two days after the audit.</p> <p>f. On the 1st May 2014, Monaghan County Council Water Services and Environment Section staff together with Irish Water staff were on-site investigating the incident. The amount of aluminium sulphate lost from the bulk tank was estimated by Water Services to be 1-1.5 m³ of 8% solution aluminium sulphate.</p> <p>g. Inland Fisheries Ireland (IFI) staff and Mr Gerry Crawley (EPA Regional Laboratory Monaghan) were also present on 1st May 2014 to investigate the incident. Samples were taken from the stream by both IFI and EPA.</p> <p>h. At the time that Mr Crawley, EPA, was on-site on 1st May 2014, the drain to the stream had been capped at either end. Foam and staining of the stream bed was still visible as shown in</p>

	<p>the fifth, seventh and eighth of the photographs taken by Mr Crawley on 1st May 2014. Results of water samples taken by Mr Crawley from the stream are also attached with this report. These show elevated levels of aluminium particularly in the area of the stream where foaming was evident, approximately 300m downstream of the plant.</p> <ul style="list-style-type: none"> i. At the time of Mr Crawley's visit to the plant, the area of surface water drain which had carried the discharge had been isolated and capped (refer to the third, fourth, sixth and ninth of Mr Crawley's photographs). j. At the time of the audit, white staining was still evident on the stream bed immediately downstream of the plant (refer to photograph Ref. No. 035.jpg). k. According to Ms Ailish Keane, IFI, when contacted by Ms Barrington on 13th May 2014, the IFI survey on 1st May 2014 discovered a fish kill involving several different species (e.g. sticklebacks, eels, and pike) downstream of the discharge. Ms Keane said that IFI had written to Irish Water advising them of the fish kill. l. Irish Water indicated that a biological survey of the stream would be undertaken, to assess the damage to the aquatic fauna and inform relevant remediation.
3.	<p>Chemical storage and bunds</p> <ul style="list-style-type: none"> a. Previous to the audit, Monaghan County Council had located and excavated the source of the leak, which occurred at an underground pipe joint on the line between the aluminium bulk storage tank and the day tanks which are located inside the plant buildings. The relevant pipe joint location is shown Mr Crawley's eleventh photograph and in photograph Ref. No. 027.jpg taken by Ms Barrington. b. The leak occurred within the site boundary and the tanks and relevant pipelines are located at least 200m away from the stream. The setting of the bulk tank is shown in photograph Ref. No. 039.jpg. However, adjacent to the bulk tank and pipelines and under the concrete hard standing area was a length of old ducting which led across the yard towards the site drains (refer to photograph Ref. No. 027.jpg). This ducting acted as a conduit for the leak, which then entered the surface water drain and hence the stream off-site.
4.	<p>Hygiene and Housekeeping</p> <ul style="list-style-type: none"> a. During the follow up investigation, Monaghan County Council and Irish Water had also become aware that drains in the chemicals make-up room led to surface water (refer to photograph Ref. No. 0.29.jpg). When this room was being cleaned, washings which could contain aluminium sulphate or polyelectrolyte from spillages around the day tanks would enter surface waters. b. During the audit, works were going on to divert these drains so that all washings would be contained in the washwater tank rather than entering surface water (refer to photograph Ref. No. 030.jpg).
5.	<p>Management and Control</p> <ul style="list-style-type: none"> a. There was no procedure or preventative maintenance schedule for assessing the condition and integrity of tanks and pipelines on-site. b. A drains survey was submitted to the EPA by Irish Water on 16th May 2014 following the audit. The report highlighted a number of risk ranked issues in the site drainage relating to damage to particular areas of pipework. The pipelines examined covered surface water drains only.
6.	<p>Monitoring and Sampling Programme for treated water</p> <ul style="list-style-type: none"> a. Monitoring of final treated water for 2014 had showed compliant aluminium levels. The spill did not appear to have any impact on the quality of drinking water supplied to consumers.

3. AUDITOR'S COMMENTS

The incident points to the importance of having a good knowledge of site drainage, layout and historical configuration. The location of the bunded tank did not appear to cause an issue, as it was situated away from watercourses close to the centre of the plant. However due to the location of historically placed ducting adjacent to underground pipework, it was possible for a below ground leak from the aluminium sulphate line to reach the surface water drain.

4. RECOMMENDATIONS

Source Protection

1. The Water Services Authority (WSA) should implement the requirements of the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)* to ensure, unless an alternative setback distance has been set as per Article 17 that:
 - i. Organic fertiliser or soiled water is not applied to land within 200 m of the abstraction point; and
 - ii. Farmyard manure held in a field prior to landspreading is not placed within 250 m of the abstraction point.
2. The WSA should inform each of the land users within relevant setback distances (as per Point 1 above, and for pesticide use), of the location of the drinking water abstraction and of the land user's responsibilities in that regard.

Incident Response/ Chemical Storage

3. The WSA should ensure that notifications are made in a timely manner in accordance with the European Union (Drinking Water) Regulations of 2014 and the EPA publication "*Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies*".
4. The WSA should develop and implement a procedure for use on site in relation to the reconfigured drainage system in the chemicals make-up and bund areas, to ensure that any chemical spillages directed to the washwater tank are dealt with appropriately.
5. The WSA should also develop and implement a procedure for preventative maintenance covering the inspection and testing of chemical storage areas and bunds. The WSA should have regard to the EPA document "*IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities*", available on the EPA website.
6. The WSA should report to the EPA on the incident follow up, including planned works to be taken on foot of the drainage survey report, development of procedures, biological survey of the stream and planned remediation.

FOLLOW-UP ACTIONS REQUIRED BY IRISH WATER

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. This report has been reviewed and approved by Mr Darragh Page, Drinking Water Team Leader.

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 Irish Water.

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

Report prepared by:  Date:

27th May 2014

Ruth Barrington

Inspector

Appendix 1: Photographs taken by Mr Crawley (EPA) on 1st May 2014







Appendix 2: Results of analysis of samples from the stream taken by Mr Crawley on 1st May 2014

Test Report

Report of: Suspect Pollution
Report to: Office of Environmental Enforcement
Report date: 12/05/14

Location sampled: See Sampling Point(s) Below

Date collected: 01/05/2014 Date received: 01/05/2014

Comments:

Parameter		Units	Limits	Final	Final	Final	Final
W09	pH	pH		7.6	7.4	7.4	8.0
**	Boron	µg/l		18	16	14	12
**	Sodium	mg/l		17	17	14	10
**	Magnesium	mg/l		4.9	4.6	4.2	5.5
**	Aluminium	µg/l		830	16000	750	1500
**	Potassium	mg/l		15	14	6	5.3
**	Calcium	mg/l		27	27	25	35
**	Chromium	µg/l		1.2	1.5	<1.0	2.2
**	Iron	µg/l		550	1700	350	1300
**	Manganese	µg/l		90	220	220	250
**	Nickel	µg/l		2	2.9	1.6	2.8
**	Cobalt	µg/l		<1.0	<1.0	<1.0	<1.0
**	Copper	µg/l		5.4	9.1	2.2	4.5
**	Zinc	µg/l		4.8	9.9	3.1	8.4
**	Arsenic	µg/l		<1.0	1.1	<1.0	<1.0
**	Selenium	µg/l		<1.0	<1.0	<1.0	<1.0
**	Molybdenum	µg/l		<1.0	<1.0	<1.0	<1.0
**	Cadmium	µg/l		0.03	0.06	0.02	0.3

			Laboratory Ref:	1410997	1410998	1410999	1411000
			Type of sample:	Misc	Misc	Misc	Misc
			Sampling point:	No. 1 Outflow from Culvert D/s Plant	No. 2 300m D/s Plant	No. 3 1.2 km D/s Plant	No. 4 1 km NW Threemilehouse on L2180
			Sampled by:	G Crawley	G Crawley	G Crawley	G Crawley
			Time Sampled:	15:50	16:10	16:35	16:50
			Start/End - Dates of Analysis:	02-05-14/07-05-14	02-05-14/07-05-14	02-05-14/07-05-14	02-05-14/07-05-14
			Status of results:	Final	Final	Final	Final
Parameter	Units	Limits					
** Barium	µg/l		66	73	65	74	
** Lead	µg/l		<1.0	<1.0	<1.0	<1.0	
** Beryllium	µg/l		<1.0	<1.0	<1.0	<1.0	
** Vanadium	µg/l		<1.0	1	<1.0	<1.0	
** Antimony	µg/l		<1.0	<1.0	<1.0	<1.0	
** Thallium	µg/l		<1.0	<1.0	<1.0	<1.0	
** Strontium	µg/l		75	77	68	110	
** Uranium	µg/l		<1.0	<1.0	<1.0	<1.0	

- 1) Results highlighted and in bold exceed specified limits.
- 2) Uncertainty of measurement values have been assigned for each parameter and those for accredited tests are provided in a separate document.
- 3) All metals analysed in EPA Richview Laboratory.
All Total Nitrogens analysed in EPA Kilkenny Laboratory.
PAH's, Bromates, Phenols, Pesticides, Atrazine, Simazine and Surfactants are sub-contracted to either Alcontrol Laboratories or TMS Environment Ltd.
- 4) nm "Not measured"
- 5) nd "None detected"
- 6) nt "No time" - Time not recorded
- 7) nr "Not reported"

- 8) tntc "Too numerous to count"
- 9) fqc Indicates that the testing did not meet the quality control criteria as required by INAB and therefore the result cannot be reported.
- 10) F "Field measured parameters"
- 11) *** indicates parameters/results produced from non-accredited analytical methods.
- 12) Test Reports relate only to the samples tested and as described on report form.
- 13) Test Reports shall not be reproduced, except in full, without the consent of the EPA.
- 14) The laboratory is accredited by the INAB only for the parameters listed in the scope of Accreditation.
- 15) Coliform Bacteria = Total Coliforms; E.Coli = Faecal Coliforms.
- 16) ATC = Acceptable To Consumers

Signed: _____

Ray Smith

Ray Smith
Regional Manager,
EPA
Monaghan

Date: _____

12/May/2014

Appendix 3: Photographs taken by Ms Barrington (EPA) on 6th May 2014



027.jpg



029.jpg



030.jpg



031.jpg



035.jpg



038.jpg



039.jpg