



Drinking Water Monitoring Programme Audit Report

County:	Cavan	Date of Audit:	16 th November 2016
Location visited:	Cavan County Council Offices	Date of issue of Audit Report:	6 th January 2017
		Auditors:	Ms. Derval Devaney (EPA) Dr. John Gray (Consultant)
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</i>. • The <i>EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Private Water Supplies (ISBN: 978-1-84095-349-7)</i>. 		

MAIN FINDINGS

- The list of private supplies reported by Cavan County Council to the EPA through EDEN was found not to be accurate with some supplies no longer in existence. The populations and volumes in the monitoring programme differed to that reported to the EPA for other supplies. Cavan County Council should review the list of supplies reported to the EPA and ensure that it is accurate and up to date prior to submission of the 2016 monitoring results.
- Cavan County Council should ensure all small private supplies of commercial and public activity with less than 50 persons or 10 m³/d are risk assessed to determine what check and audit parameters to monitor.
- Cavan County Council should ensure all private supplies that fall under the remit of the Drinking Water Regulations (e.g. schools, dairy farms, small private supplies) are included in the Compliance Sampling Programme and that sampling undertaken represents the water supply zone. Also, the distribution of sample days, times and locations within a monitoring programme should be as wide as possible and include sampling from domestic, commercial and public premises alike.
- Cavan County Council should develop a written procedure for Sampling Methodology and notification of sample results that exceed the parametric values outlined in the Drinking Water Regulations (S.I. no 122 of 2014).

1. INTRODUCTION

Under the *European Union (Drinking Water) Regulations 2014* the Environmental Protection Agency has a supervisory role in relation to the establishment and implementation of monitoring programmes both by Irish Water and Local Authorities. This audit was carried out to assess the performance of Cavan County Council in carrying out effective monitoring of private drinking water supplies to ensure the provision of clean and wholesome drinking water.

An audit of the 2015 monitoring programmes implemented in County Cavan was carried out at the Cavan County Council Offices on 16th November 2016. Using a questionnaire as a guide¹, Cavan County Council staff were

¹ The questionnaire was based on those used by the Drinking Water Inspectorate, London, and modified for the purpose.

interviewed to ascertain the principles and methodology for establishing monitoring programmes, sample point selection, sample classification, integrity of data reporting and notification procedures.

The audit observations and recommendations are listed in Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Cavan County Council: (*indicates that person was also present for the closing meeting)

Mr Colm O'Callaghan – Acting Senior Executive Engineer, Cavan County Council*

Representing the Environmental Protection Agency:

Ms. Derval Devaney – Inspector, EPA*

Dr. John Gray – Consultant, John Gray Consultancy*

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>Compliance Monitoring Programme</p> <ol style="list-style-type: none"> The 2015 compliance monitoring programme for private water supplies was prepared by Cavan County Council. The compliance monitoring programme for 2015 included: a list of all private water supplies in the county, population data for each supply, the required number and frequency of all check and audit samples. Sample locations, collection dates and suitable alternative sample locations were not pre-determined in the 2015 monitoring programme. The private supplier was not consulted when drafting the monitoring programme therefore the auditors were unable to determine if there were samples which were not representative of the water supply zone. Many private supplies had populations of 49 and volume of 9 m³/d in the drinking water returns for 2015. It was explained that this was because the Council were aware that these private supplies had a population less than 50. These supplies were in general not being monitored or risk assessed, as recommended by the EPA's Handbook for private water supplies, to determine what parameters to monitor for. Dairy farms were not included on the Compliance Monitoring Programme despite there being a number of dairy farms in Co. Cavan. The HSE sample food premises and public houses and Cavan County Council sample schools and pre-schools. There is no formal programme for sampling the schools however Cavan County Council state that they are included in the weekly sampling programme. Selection of alternative premises is not formalised and is based on the sampler's local knowledge and awareness of the supply networks. It was stated that there was an SOP for sampling but that it was not presented on the day of the audit nor was it clear if it was fit for purpose and required to be updated. The compliance sampling is carried out by Cavan County Council and during 2015 analysis of audit samples was carried out by the EPA (Monaghan lab) and check samples by Cavan County Council's lab. For 2016, all compliance samples are analysed by ELS laboratories. The laboratory is accredited to the International Standard ISO 17025 "General requirements for the competence of testing and calibration laboratories". The laboratory's accreditation has been checked by Cavan Co. Co. through ELS's website. A critical review of the temporal and spatial distribution of sampling, to ensure sampling represents the supply as accurately as possible, has not been carried out for County Cavan. Reliance is placed on the predetermined sampling plan and sampler's choice of sampling location.
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	<ul style="list-style-type: none"> k. Some private supplies on the list reported to the EPA through EDEN no longer existed or had merged with other supplies and some supplies on the compliance monitoring programme had populations and volumes that differed to that submitted to the EPA on the 2015 Drinking Water Returns. l. Compliance monitoring data is forwarded to the private supplier though is not available to the public e.g. on Cavan County Council's website. m. Upon review of the 2015 compliance sampling data returns submitted to EPA it is evident that most samples taken at PWSs are taken on Monday, with fewer samples taken on Tuesday, Wednesday or Thursday with none on Friday and the weekend. n. Consideration of the data for total coliforms shows that the first sample date for Cavan Co. Co. was 7 January 2015 and the last 21 December 2015. If these circumstances are repeated year on year then it is apparent that no compliance samples are taken for 17 days for Cavan Co. Co.
2.	<p>Operational Monitoring Programme</p> <ul style="list-style-type: none"> a. Operational samples of the raw water sources, reservoirs, distribution systems and consumer's properties are generally only taken by the GWS. No operational monitoring programme for 2015 was prepared by Cavan Co. Co. for private supplies.
3.	<p>Monitoring Programmes for Specific Parameters</p> <ul style="list-style-type: none"> a. Cavan County Council does not have a specific sampling programme for tankers.
4.	<p>Sampling Procedures</p> <ul style="list-style-type: none"> a. Cavan County Council believed a sampling methodology exists in the form of Standard Operating Procedure and that it was issued by Cavan County Council to the single sampler and the "deputy" sampler; however this document was not provided or examined during the audit. b. A weekly sample list is provided to the sampler and is updated as required by the Acting Senior Engineer. The type of sample required is colour coded based on whether an audit or check compliance sample is required. c. Alternative addresses are selected by the sampler in the event that sampling from the originally selected property is not feasible, particularly in more rural areas; however this alternative sample location is not set out on the worksheet. There is no formal procedure in place to select an alternative address although it was stated that the sampler is aware of the need to take a representative sample from a given area. d. It was stated that for 2016 sample bottle labels with adhesive backing is sent by ELS to Cavan County Council for compliance samples and these labels are fixed securely to the container and appropriate information recorded. The location is not pre-printed on the label and the sampler documents this information when the sample is taken. e. Sample ID numbers are generated in the laboratory by ELS. Samples are accompanied by a chain-of-custody form. f. Free and total chlorine concentrations were required to be taken with each sample collected for bacteriological analysis. g. In the event that the sampler is unavailable, a substitute sampler (the assistant chemist) would take samples although training is not always given. Cavan Co. Co. uses a sampling procedure established by HSE although it does not check or audit the procedure in practice or that the sampler is adhering to this procedure during the course of routine sampling.
5.	<p>Data Handling</p> <ul style="list-style-type: none"> a. Monitoring data for 2015 is recorded on the Cavan County Council LIMS system, with the HSE and ELS maintaining their own records. b. Entries in LIMS are checked by a designated person in Cavan County Council (Quality Control) against that reported by ELS labs and require checking of at least ten per cent of entries before authorisation of data is granted. c. Cavan County Council is required to upload the results by the 10th working day of the following month and these are cross-checked by IW. Cavan County Council also upload all monitoring results to its Sharepoint System so that the Water Services have access to this

	<p>information.</p> <ul style="list-style-type: none"> d. Any changes made to data on the LIMS were automatically recorded and an audit trail of entries can be produced at any time. No information was available regarding data handling procedures within the HSE or ELS. e. Sample results were uploaded to the EPA via EDEN during 2016. f. Cavan County Council provides all sample results to the relevant private water supplies, by hardcopy, as soon as they become available however monitoring results for private supplies are not made available on Cavan Co. Co.'s website.
6.	<p>Exceedances of Parametric Values</p> <ul style="list-style-type: none"> a. There is a documented joint protocol issued by Cavan County Council, to be followed by HSE and Cavan County Council, "for dealing with unsatisfactory drinking water results". The protocol is dated 2006 and is not a controlled document. b. The protocol specifies that whichever organisation (HSE or Cavan County Council) has taken the sample in which the exceedance occurs will notify the other. Remedial actions as appropriate to the severity of the incident will be initiated and communications maintained until the situation has been resolved. c. There is no SOP for notification of exceedances. d. Exceedances of indicator parameters are considered on a case by case basis. Circumstances which constitute trivial exceedances are not defined. e. There is no procedure to guide the identification of reasons for exceedances and any remedial actions required. f. Although no written procedure was observed to be in place, it was stated that ELS notify all parametric exceedances to Cavan County Council via email.

3. AUDITORS COMMENTS

A review of all 2015 data submitted to the EPA by Cavan County Council determined that all sample results were accurately reported to the EPA. However, the 2015 monitoring programme drawn up and implemented by Cavan County Council required some improvement. Weaknesses include the lack of liaison with the scheme owner when compiling the compliance monitoring programme and the lack of pre-determined sample locations, collection dates and suitable alternative sample locations to ensure samples are evenly spread and representative of the supply zone. It was also noted that up to date documented procedures for implementing the monitoring programme and reacting to exceedances of the parametric values outlined in the Drinking Water Regulations (S.I. no 122 of 2014) were lacking or not up-to-date.

In addition, many private supplies had populations of 49 and volume of 9 m³/d recorded in the drinking water returns for 2015. These supplies were in general not being monitored or risk assessed to determine what monitoring is required, as recommended under Section 3 Paragraph 2.6 of the EPA's Handbook for Private Water Supplies.

4. RECOMMENDATIONS

Compliance Monitoring Programme

1. Cavan County Council should ensure that all private water supply scheme data is accurate and updated on EDEN. In particular Cavan County Council should review the list of supplies reported to the EPA and ensure that it is accurate and up to date prior to submission of the 2016 monitoring results.
2. Cavan County Council should ensure all private schemes of commercial and public activity with less than 50 persons or 10 m³/d are risk assessed to determine what monitoring is required in accordance with Section 3 Paragraph 2.6 of the EPA's Handbook for Private Water Supplies.
3. Cavan County Council should include in its compliance sampling programme:
 - (a) all private schemes, including commercial and public supplies serving less than 50 persons (e.g. dairy farms, schools, pre-schools, pubs, B&Bs and food premises);
 - (b) a predetermined narrow window of sampling dates to samplers;
 - (c) specific sampling locations;

- (d) predetermined alternative sample locations in the event that a sample location is unsuitable or inaccessible;
 - (e) accurate population and volumes for all private schemes, including the small private supplies serving less than 50 persons or 10 m³/d.
4. Cavan County Council should liaise with the private supplier (e.g. a GWS) when compiling the sampling plan for the upcoming year to ensure that the sample locations are representative of the water supply zone.
 5. Cavan County Council should:
 - (a) establish a formal protocol for the selection of random addresses for sampling at consumer's premises and for the selection of alternative addresses if required;
 - (b) ensure that the spread of sample days, times and locations within a monitoring programme should be as wide as possible, this is to ensure that compliance samples are representative of water quality consumed throughout the year as required by the Drinking Water Regulations.
 - (c) undertake a review of the temporal and spatial distribution of sampling for compliance monitoring. A formal and structured method of assessment should be developed and implemented to ensure that sampling is representing the water supply zone as accurately as possible. Sample locations should be mapped using GIS co-ordinates obtained in sampling to assist in this process.

Monitoring Programmes for Specific Parameters

6. Cavan County Council should ensure that Section 4, Paragraph 4 of the EPA Handbook is adhered to in relation to sampling required for water tankers. Sampling may be required on the water used to fill a tanker, depending on the length of time water is stored in the tanker and the source of the water used for filling.

Sampling Procedures

7. Cavan County Council should:
 - (a) review the SOP for compliance sampling to ensure it is appropriate and up-to-date;
 - (b) provide training the sampler and substitute sampler(s) on the SOP in the event that the regular sampler is unavailable, to ensure compliance sampling is undertaken adequately (e.g. not at an outside tap).
8. Cavan County Council should put in place a protocol/SOP on action to take when it is discovered that a compliance sample was taken at an incorrect property which is not representative of the water supply zone. This protocol should meet the requirements of Section 4, Paragraph 6 of the EPA's Handbook on private supplies which states that where a sample taken from a property is subsequently shown not to be served from the private supply, the Local Authority should take an appropriate representative sample as soon as practical and not include reporting of the unrepresentative sample to the EPA as part of the DW returns but record the result for auditing purposes.

Data Handling

9. Cavan County Council should ensure that compliance monitoring results are readily available to members of the public.

Exceedances of Parametric Values

10. Cavan County Council should put in place a written procedure for the communication and notification of an exceedance with the parametric values outlined in the Drinking Water Regulations (S.I. no 122 of 2014). This procedure should include who to contact in the event of a failure or where there is a potential risk to human health from a private water supply including those that serve populations of less than 50 persons as part of a commercial or public activity. The procedure should include actions to be

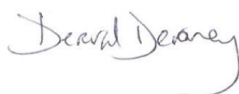
taken to investigate the exceedance and report the exceedance to the HSE, private water supply owners and other relevant parties.

FOLLOW-UP ACTIONS REQUIRED BY CAVAN COUNTY COUNCIL

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

Cavan County Council is recommended to put such measures in place as are necessary to implement the recommendations listed in this report. The actions by Cavan County Council to address the recommendations taken will be verified by the Agency during any future audits.

Report prepared by:



Date:

6th January 2017

Derval Devaney

Inspector