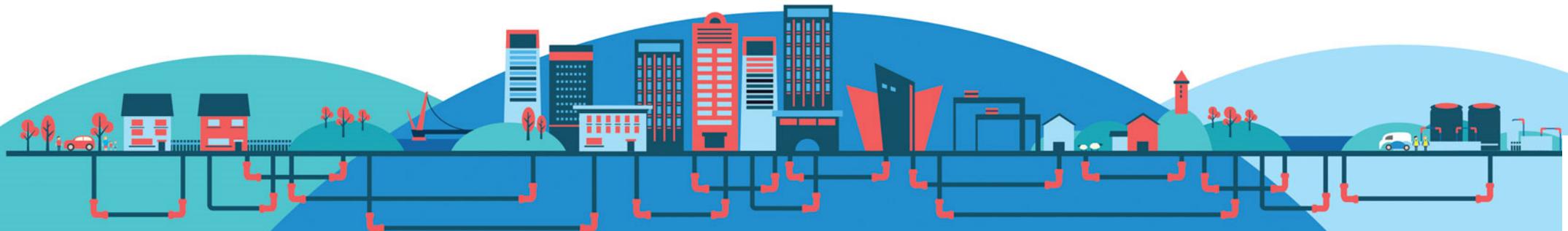


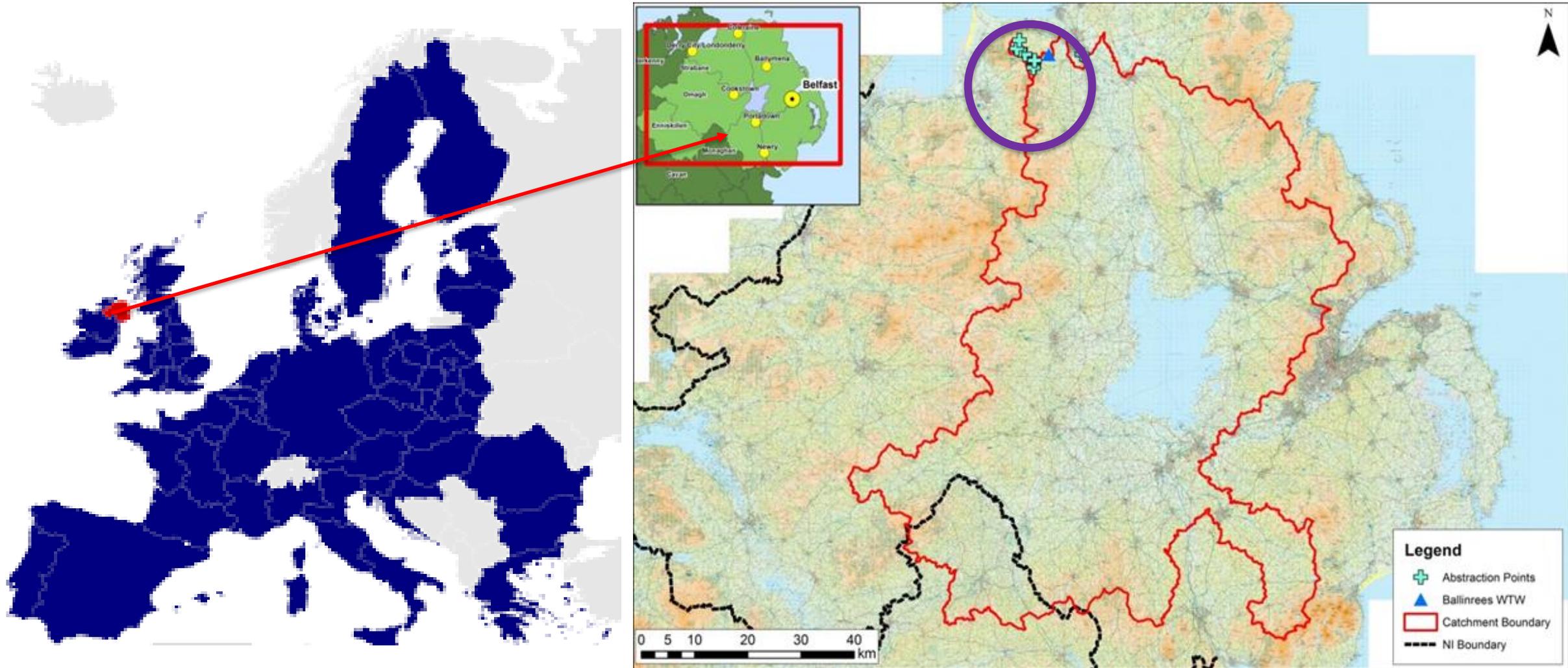


# Ballinrees Catchment – Using Chemcatchers to Target Raw Water Improvement Measures

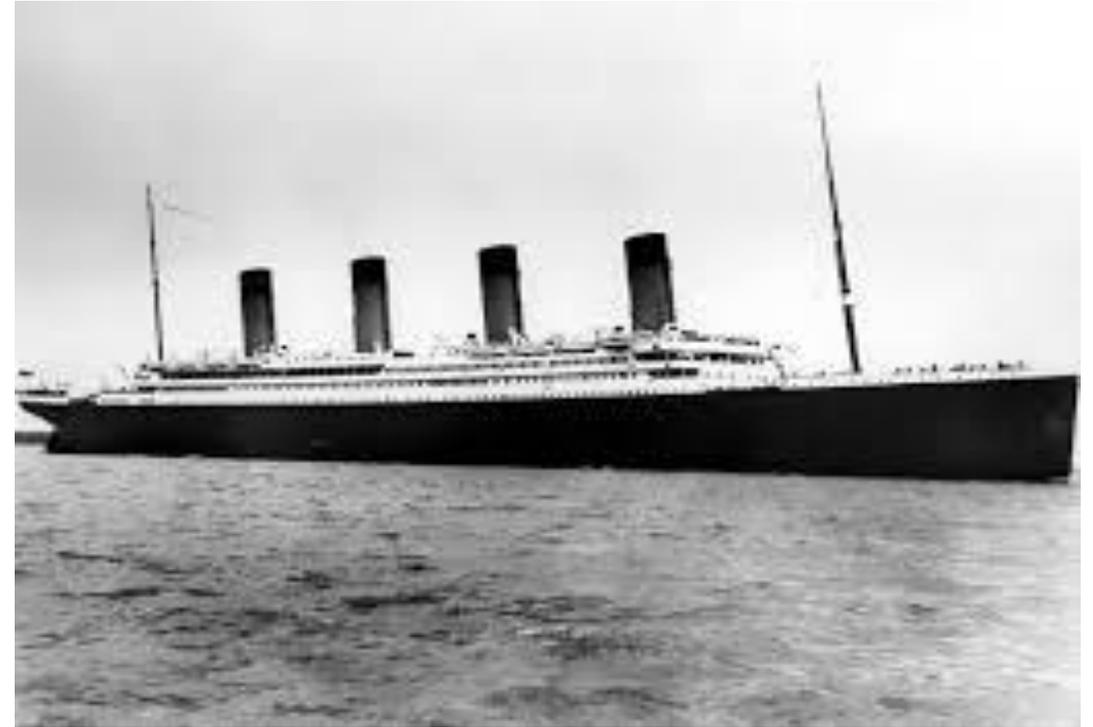


**IPSW**  
BOSTON 2019

# Where is Northern Ireland?



# What is Northern Ireland famous for?



# Northern Ireland Water



Assets include:

- 26,980kms of In Operation Water Mains
- 1,401 In Operation Waste Water Pumping Stations
- 1,077 In Operation Waste Water Treatment Works
- 23 In Operation Major Water Treatment Works

Drinking Water supply:

- 559 million litres



# Sustainable Catchment Management Program (SCaMP) Team

## Rebecca Allen

- Working NI Water for 16 years in various roles.
- Catchment Liaison Officer since April 2019, implementing catchment management projects



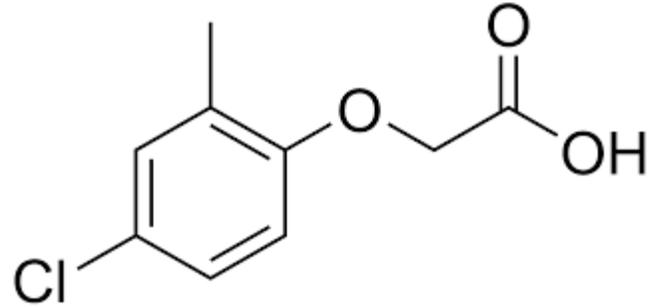
## Dominic McCann

- Working as Farm Liaison Officer since 2014
- Key in forging a strong relationship with the agricultural community in Northern Ireland and promoting water protection



# Why did NI Water use Chemcatchers?

- To investigate **source** of grassland **MCPA**
- Issues with exceedances of MCPA in drinking water
- Difficulties in removing MCPA - Granular activated carbon filters at treatment stage remove the chemical but are compromised with VOCs and humic acids so require capital investment for regeneration or replacement, especially after a significant MCPA 'event'



# NI Water – issues with MCPA

- Water Inspectorate issued 3 enforcement notices to NI Water in 2017 – issues with MCPA since 2016

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
17/04/17 - 10/08/17	Ballinrees WTW (168,204 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment. A Consideration of Provisional Enforcement Order (CPEO) has been issued by the Inspectorate.	Causeway Coast & Glens Borough; and Derry City & Strabane District
06/06/17 - 07/09/17	Derg WTW (38,989 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment to effectively remove levels of MCPA in the raw water supply to the treatment works. MCPA use in the catchment area, to control weeds and rushes, caused elevated levels of MCPA in the raw water supply. A Consideration of Provisional Enforcement Order (CPEO) has been issued by the Inspectorate.	Derry City & Strabane District; and Fermanagh & Omagh District

# What is MCPA?

- Specifically designed to kill weeds without harming crops and is a common active ingredient, widely available in both agricultural and domestic herbicide products.
- Used widely in Northern Ireland to control the growth of weeds like the Common Soft Rush



# MCPA Pollution

- MCPA does not bind to soil particles and is prone to leaching, directly into watercourses or via land drains.
- Field half-life of 14 days to one month depending on the type of crop being treated and the amount of MCPA being used.



# MCPA Limits/1

- In the European Union (EU), most individual pesticides including MCPA have a legal limit in drinking water of **0.1 micrograms/litre**.



- If more than one pesticide is found in drinking water, the total (sum) of all pesticides together, has a legal limit of **0.5 micrograms/litre**.

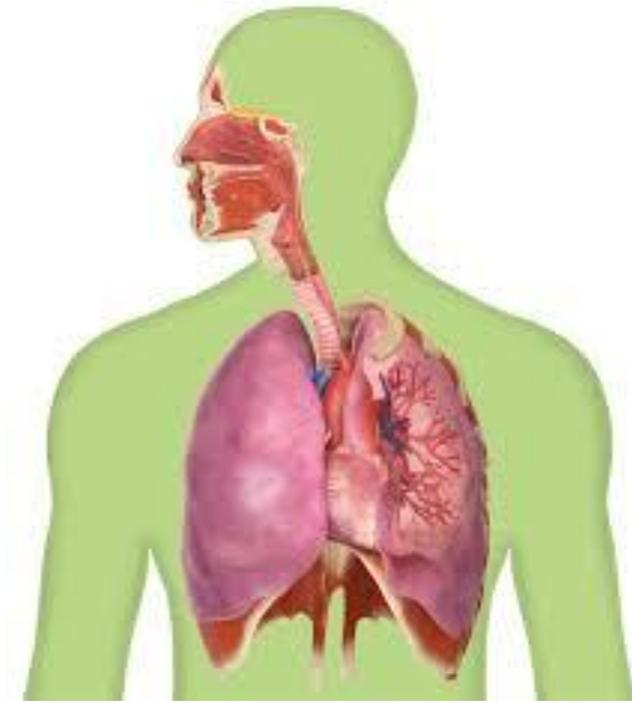
# MCPA Limits/2

A single drop of pesticide in a water body such as a typical stream (1m wide, 0.30m deep), for example, can be enough to breach the legal limit for pesticides in drinking water of 0.1 micrograms /litre along 30 kilometres of its length.' (Pesticide Registration & Control Division, Dept. of Agriculture, Ireland)



# MCPA Health Effects

- The quickest way for MCPA to enter the system is through the nose. The herbicide is readily absorbed in the lungs and skin and can cause chronic damage.
- MCPA is not known to elicit any acute effects unless consciously ingested.
- MCPA exposure has a transgenerational effect. Mothers exposed to the substance have a higher chance of delivering a low birth weight baby.

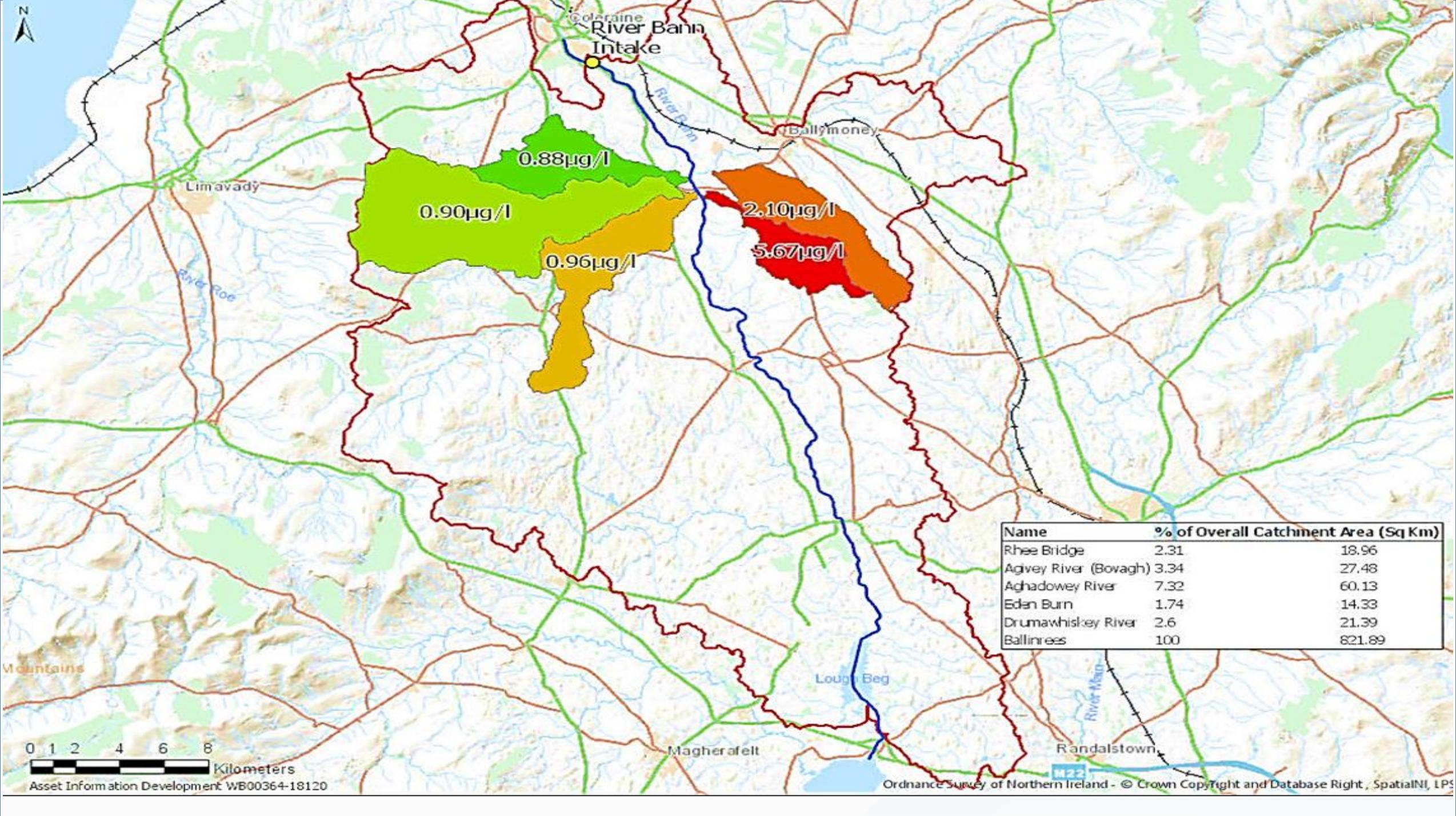


# Training prior to deployments – Feb 2018



# On deployment – July 2018

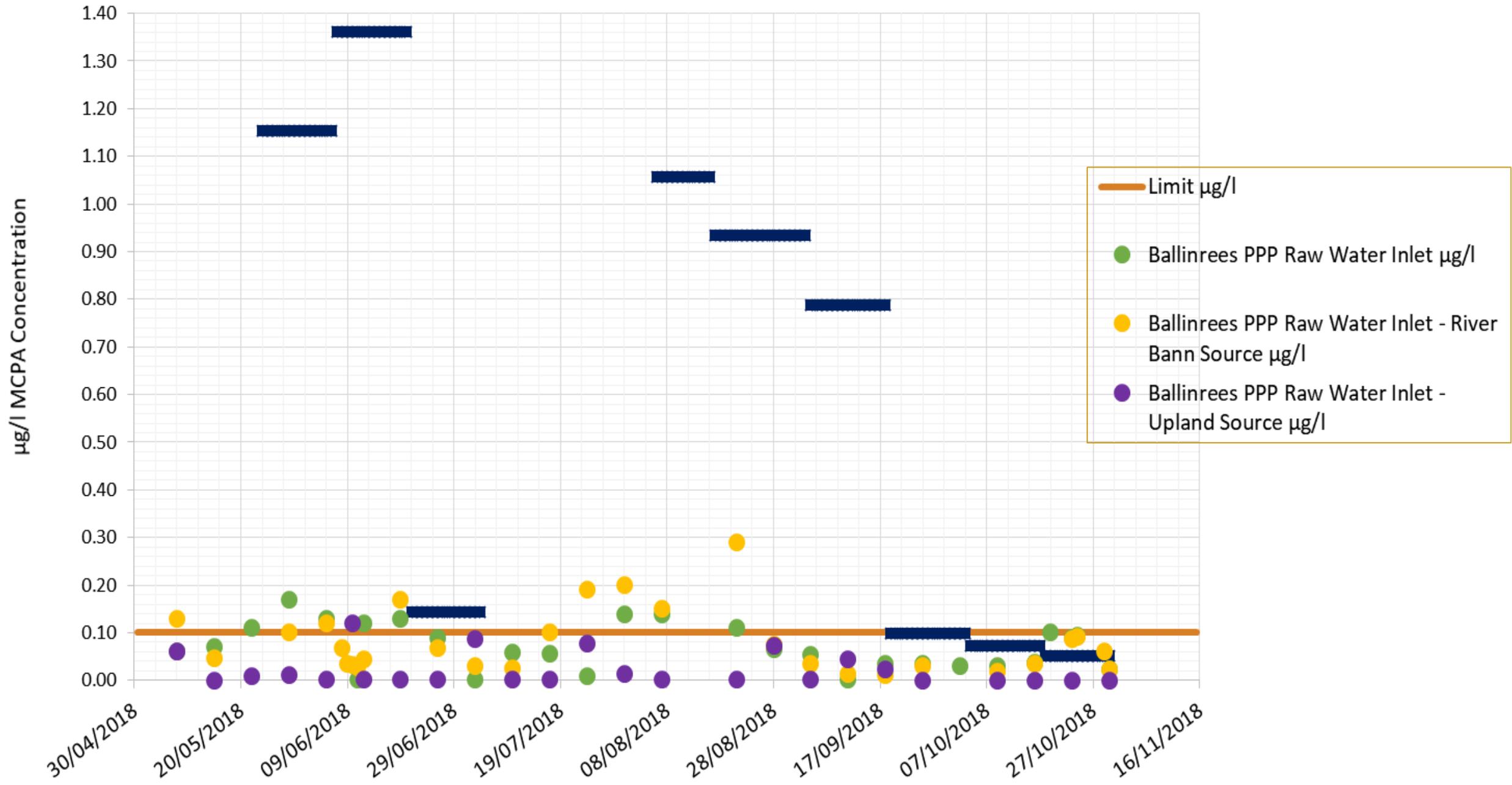




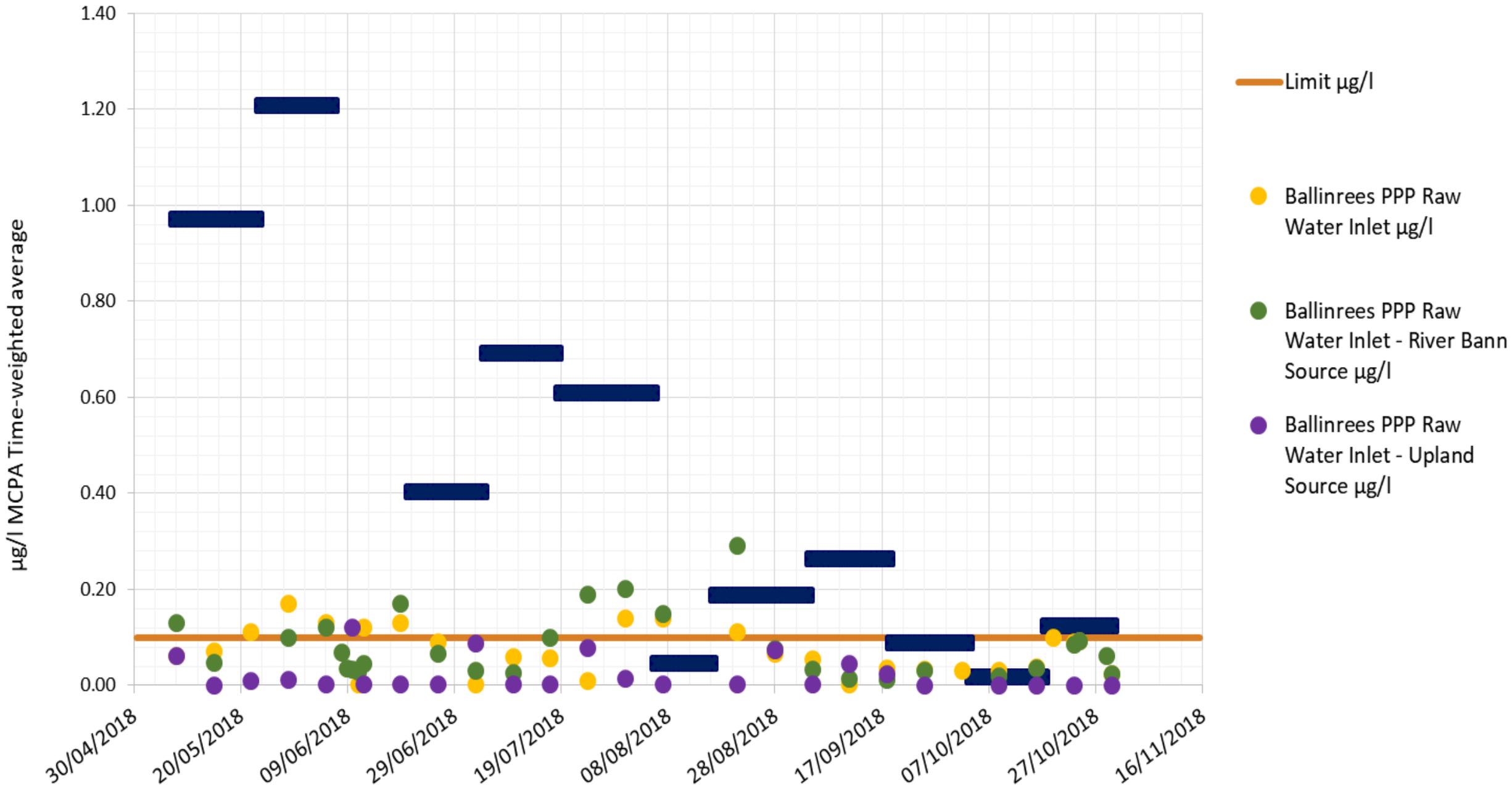
# Calibration Data

Metals		Receiving phase	Diffusion membrane	R <sub>s</sub> (L day <sup>-1</sup> )	Calibration conditions		
					Field vs. lab	Temp. (°C)	Velocity (m s <sup>-1</sup> )
Metals	Zn	Empore™ chelating disk	CA	0.118	Lab.	18	0.4 and 0.7
	Hg	Iminodiacetic chelating disk	PES	2.088	Lab.		
Organotin compounds	TBT	C18 Empore™ disk	CA	2.544	Lab.		
	DBT			3.384	Lab.		
	MBT			0.264	Lab.		
	TPhT			1.416	Lab.		
	2,4-D	Empore™ SDB-RPS disk	PES	0.02	Field	5 - 20	0.05 – 0.8
	2,6-dichlorbenzamide	Empore™ SDB-RPS disk	PES	0.06	Field	5 - 20	0.05 – 0.8
	4-acetamidoantipyrin	Empore™ SDB-RPS disk	PES	0.06	Field	5 - 20	0.05 – 0.8

# Eden Burn



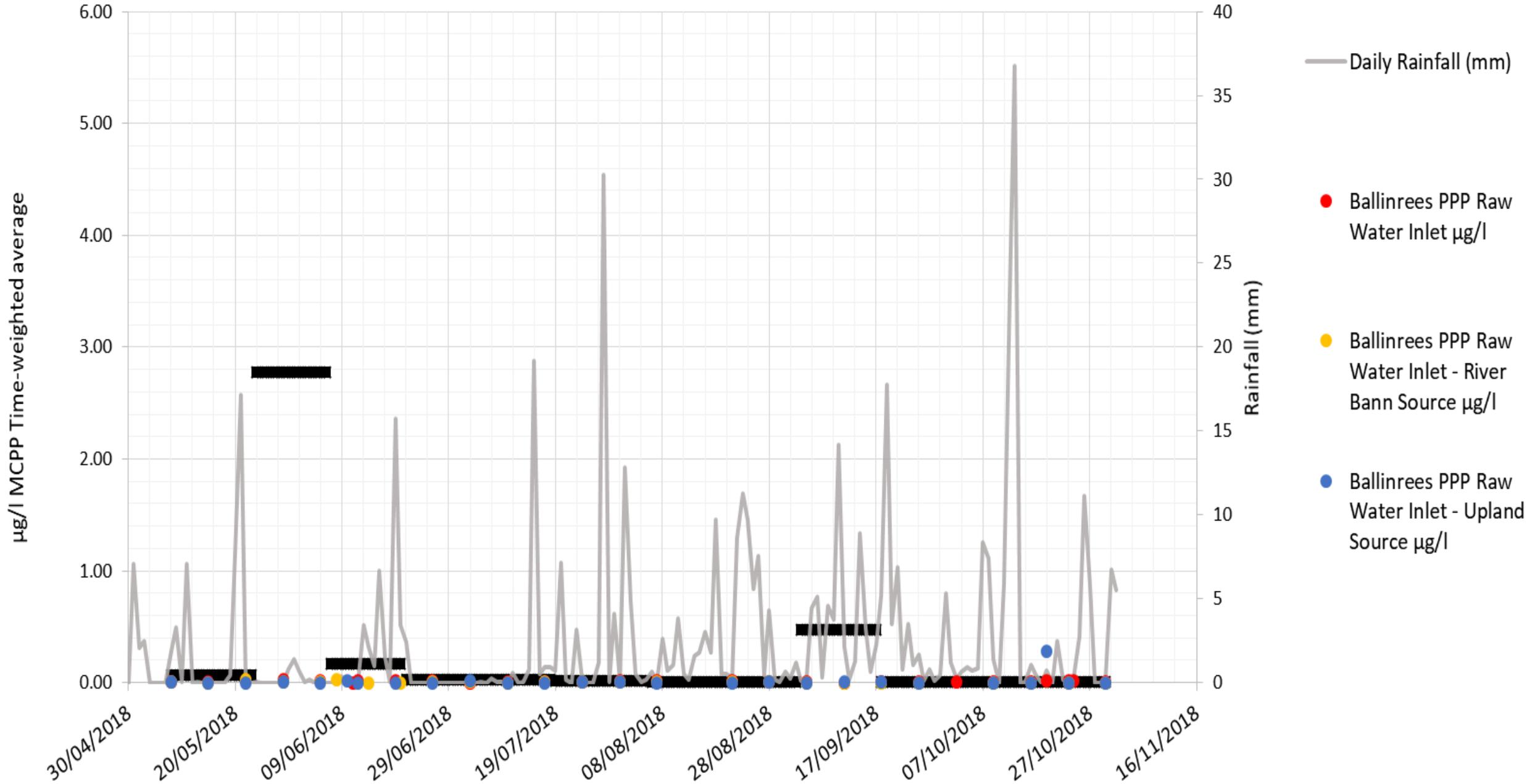
# Drumawhiskey River





Crash near Rhee  
Bridge – May 2018

# Rhee Bridge MCPP



# Cost of Chemcatchers versus Spot Sampling

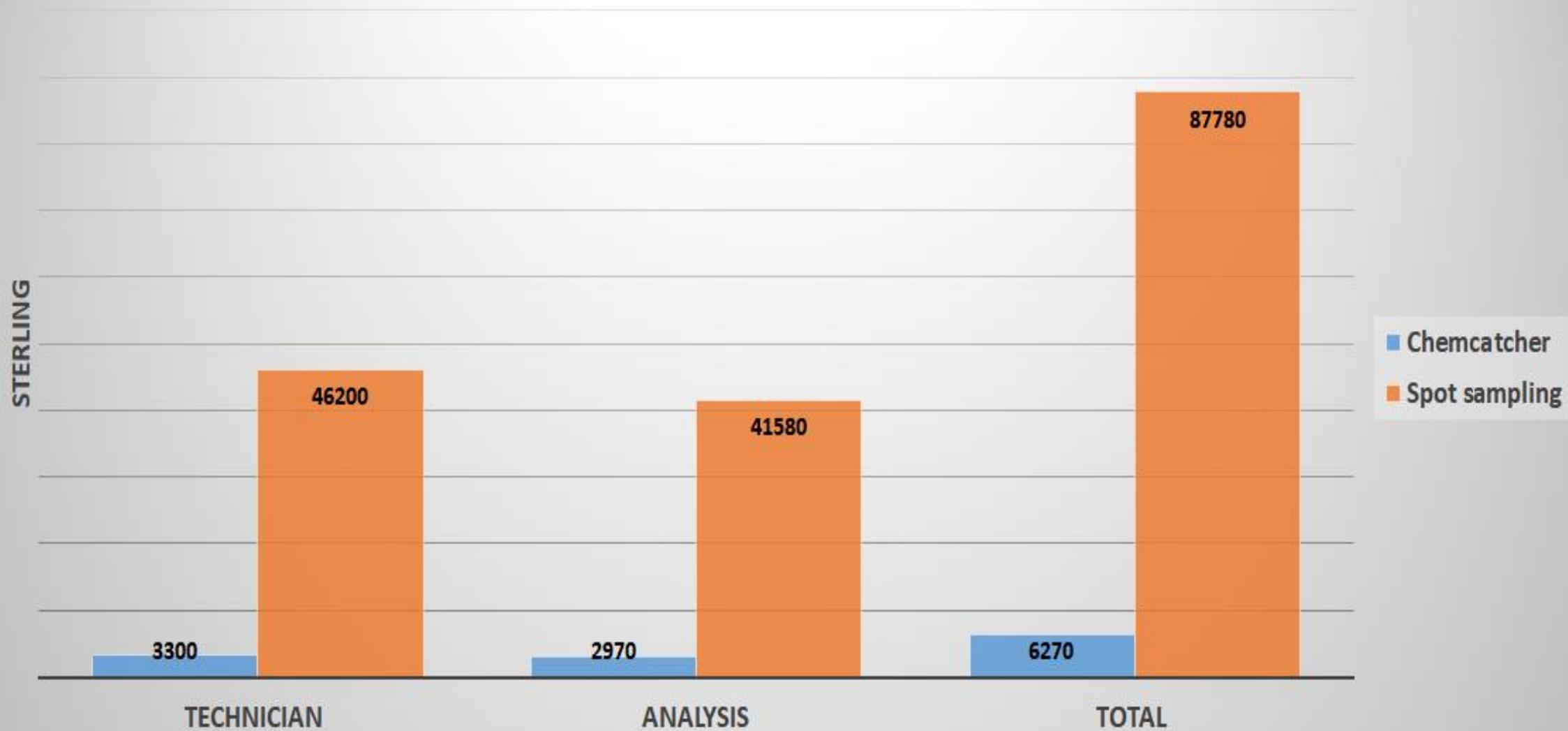
Estimate of costs  
over a 22 week  
sampling period

Based on 6  
sampling sites in 1  
catchment area

Spot sampling –  
154 samples (7  
samples per week  
x 22 weeks)

Chemcatcher –  
Deployed at 6 sites  
for 14 days

## Cost of Chemcatcher versus Spot Sampling



# Working with the community



**Free Trial**

northern ireland water  
Delivering what matters

**Rush solution without pollution**

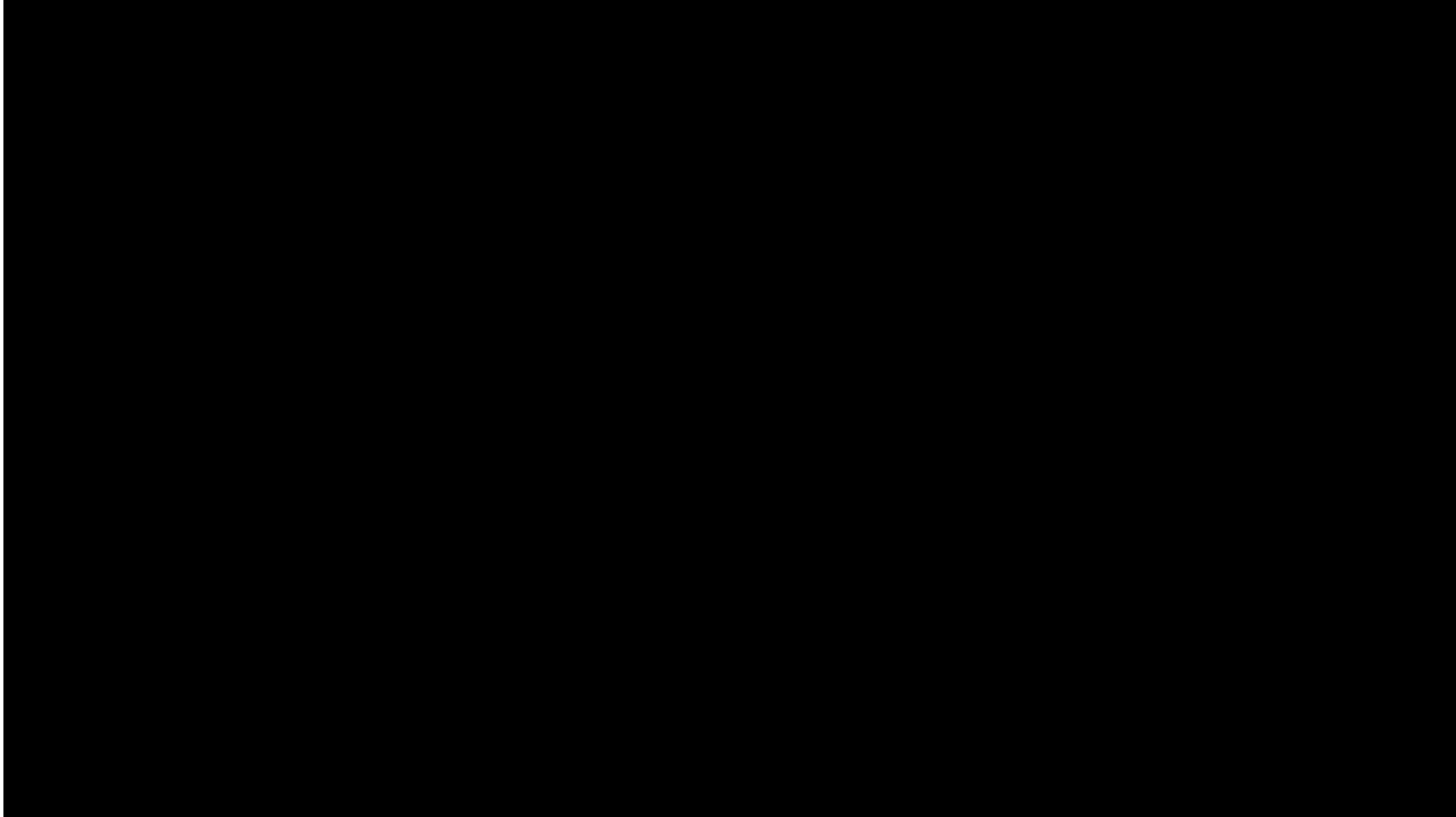
Between April and October 2019 & 2020 we will be offering a free grassland weed control trial in the Cully Barn Catchment Area, Co. Antrim.

Working together with the community to protect our drinking water supplies

Department of Agriculture, Environment and Rural Affairs  
Northern Ireland Environment Agency  
Department of Infrastructure

The Voluntary Initiative  
northern ireland water  
LILSTER FARMERS' UNION  
cafre

# SCAMP NI Water





# Passive Sampling Workshop for Emerging Water Pollutants with Chemcatcher®

- **When:** Thursday 17 October 2019
- **Where:** Jury's Inn, East Midlands Airport
- **Further information:** [sales@chemcatcher.ie](mailto:sales@chemcatcher.ie)  
[www.chemcatcher.ie](http://www.chemcatcher.ie)
- **Eventbrite Registration:**  
<https://www.eventbrite.ie/e/passive-sampling-for-emerging-water-pollutants-with-chemcatcher-uk-event-tickets-68762557661>

