



Eden Catchment – Water Quality Update

Spring 2023

Introduction

This is the first of hopefully many bi-annual updates on Water Quality for the Eden Catchment, with an Autumn edition planned for September/October. These updates are designed to keep you informed of the latest water quality data and provide you with updates from the SES Water Catchment Team.

Diffuse pollution from agricultural pesticides and fertilisers in raw water is an ongoing challenge for water companies. Drinking water in England is heavily regulated and needs to meet strict standards to demonstrate it is 'wholesome' for our customers. The SES Water Catchment Team are working in your catchment to help prevent contamination at source rather than relying on 'end of pipe' solutions, such as additional energy intensive treatment processes. Catchment management offers a more sustainable and cost-effective way of tackling water quality issues and can have many wider benefits for the farmers, the environment and local communities too. More information on catchment management at SES Water can be found on our newly updated [SES catchment management webpage](#).

An overview of the catchment is presented below, along with short- and long-term summary data for our key water quality priorities and an update from the SES Catchment Team. If you are interested in finding out more about other water quality data, have any questions/suggestions/feedback, or know of someone who would like to be added to our mailing list please contact catchment@seswater.co.uk.

Catchment overview

Surface water Safeguard Zone	Bough Beech Reservoir and Lower Eden Drinking Water Protected Area (DrWPA)
Key water quality concerns	Phosphate/algae, pesticides
Current SES Water projects	Water Industry National Environment Programme (WINEP) – DrWPA no deterioration scheme for phosphate, carbetamide, metaldehyde, mecoprop and propyzamide
Contact	catchment@seswater.co.uk

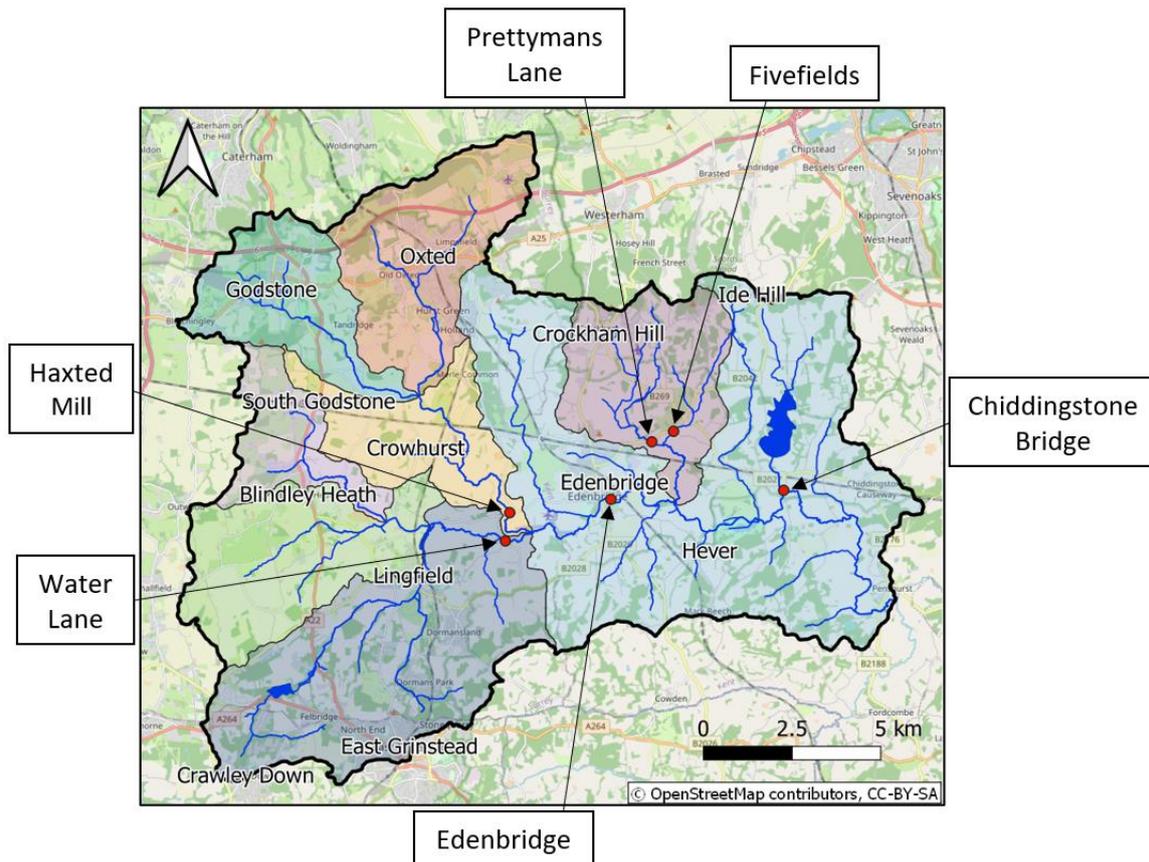


Fig 1 – The Eden Catchment and subcatchments. SES Water’s river sampling points are labelled.

Water is abstracted from the River Eden at Chiddingstone Bridge and pumped up to our Bough Beech Reservoir, in line with our abstraction licence, between September and April each year. The reservoir feeds our Bough Beech Water Treatment Works, providing drinking water for approximately 120,000 customers across the local area. Regular samples are collected from Chiddingstone Bridge along with other locations further upstream of this abstraction point (Fig 1). Samples are collected regularly from all these samples point throughout the year and analysed by the SES Water laboratory. It should be noted that these are ‘grab’ samples reflecting only a particular snapshot in time.

Water Quality Data

1. Pesticides

In England there are strict Drinking Water Standards (DWS) to which our water must comply. For pesticides the treated drinking water must not contain more than 0.1 micrograms per litre ($\mu\text{g/l}$) of any individual pesticides (this is the equivalent of approximately 1 second in 320 years!). We have treatment in place to help reduce concentrations of pesticides in our raw water however if concentrations are too high the treatment process can be overwhelmed, which is why we’re sharing this information to help raise awareness of the issue.

At SES Water we monitor for over 30 different individual pesticide; in this newsletter we have focused on key pesticides that are included in our WINEP programme and that have presented the water company with a challenge either currently, or in the past. All results are recorded in micrograms per litre ($\mu\text{g/l}$).

1.1. Carbetamide

Often applied to control grasses and some broad-leaved weeds in oilseed rape, trade names include: Crawler, Carbetamex, Legurame

Elevated concentrations of carbetamide have historically been detected in the river most years, with peak concentrations usually observed in February/March (Fig 2). Carbetamide was withdrawn from use in November 2022 and as such we do not anticipate seeing any significant detections going forwards. Samples collected from within the catchment echo this, with all samples collected over the 2022/23 winter season at the limit of detection for carbetamide (Fig 3).

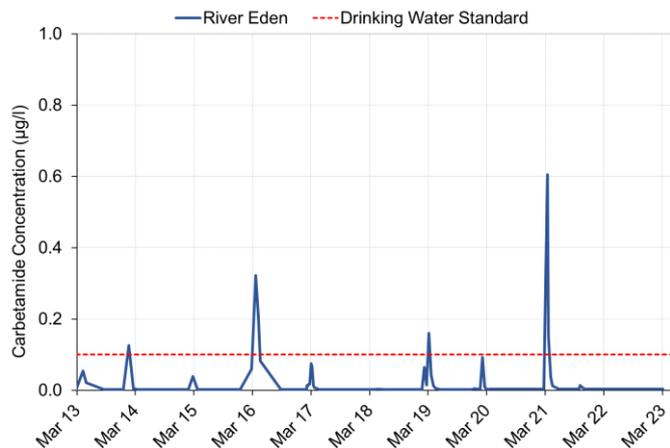


Fig 2 - Long term carbetamide concentrations in the River Eden at Chiddingstone Bridge.

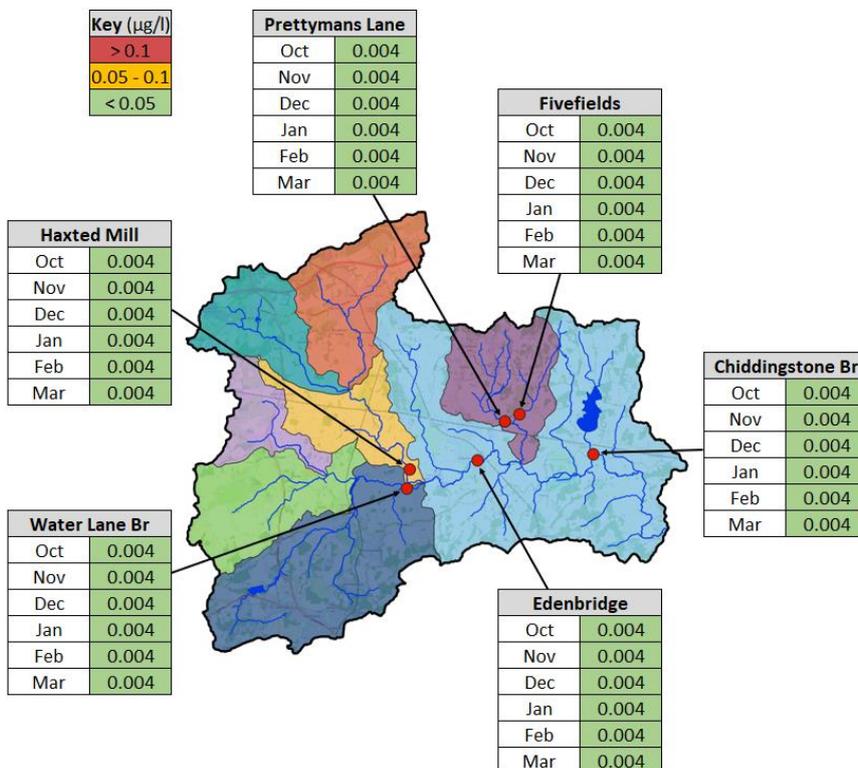


Fig 3 – Maximum carbetamide concentrations detected in the wider Eden catchment over the past six months.

1.2. Mecoprop/Mecoprop-P

Commonly used to control broad-leaved weeds in lawns and cereals, trade names include: Compitox Plus, Optica, Prompt, Foundation, Relay

Fortunately for SES Water the highest concentrations of mecoprop in the river are often observed over summer months (Fig 4), when we are not abstracting from the river into Bough Beech reservoir, however we do sometimes catch the tail end of these peaks as seen in samples collected from the catchment in October (Fig 5). Concentrations of mecoprop in the river have generally been 'manageable' for SES over the past few years. Significant peaks have been observed in the river, in particular in summer 2017, where there was a suspected accidental point source pollution event. Fortunately these peaks have not coincided with abstraction, and the impact on reservoir water quality has been minimal.

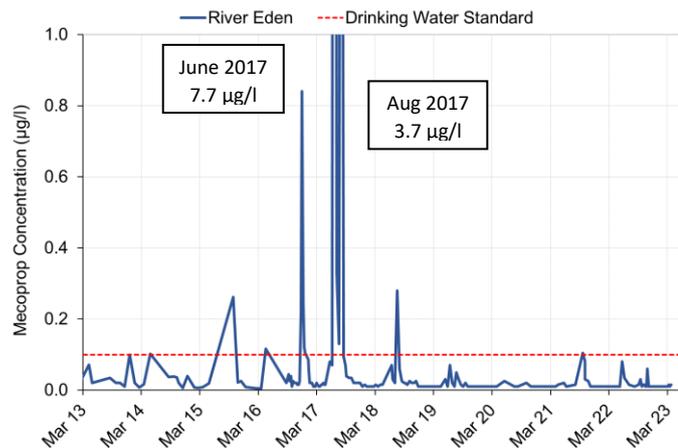


Fig 4 - Long term mecoprop concentrations in the River Eden at Chiddingstone Bridge.

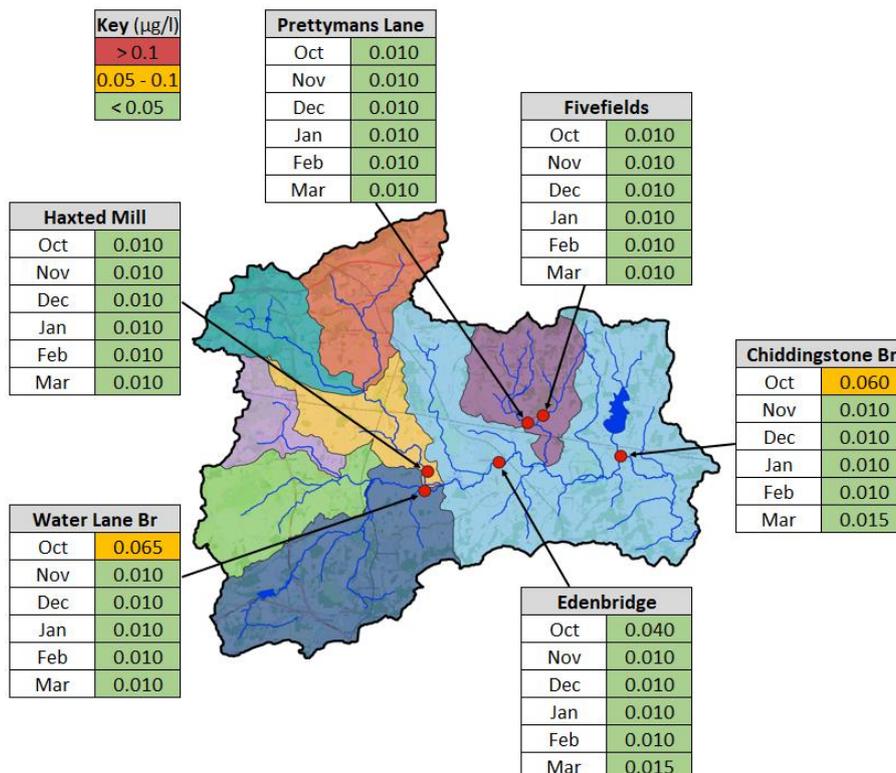


Fig 5 – Maximum mecoprop concentrations detected in the wider Eden catchment over the past six months.

1.4. Metaldehyde

Used for control of slugs and snails.

Metaldehyde has historically been very problematic for water companies across the UK as it is extremely difficult to remove even with advanced treatment technologies. Concentrations in the catchment have been steadily reducing over the past 10 years (Fig 6) in advance of the withdrawal of the product in March 2022. SES Water was involved over this period, raising awareness of the risks metaldehyde posed and also subsidising a number of farmers to switch to ferric phosphate, a ‘water quality friendly’ alternative. Concentrations in the river have remained reliably below the DWS for the past 3 years. Trace amounts have been detected in catchment samples over the past 6 months (Fig 7), however we don’t anticipate any elevated concentrations going forwards.

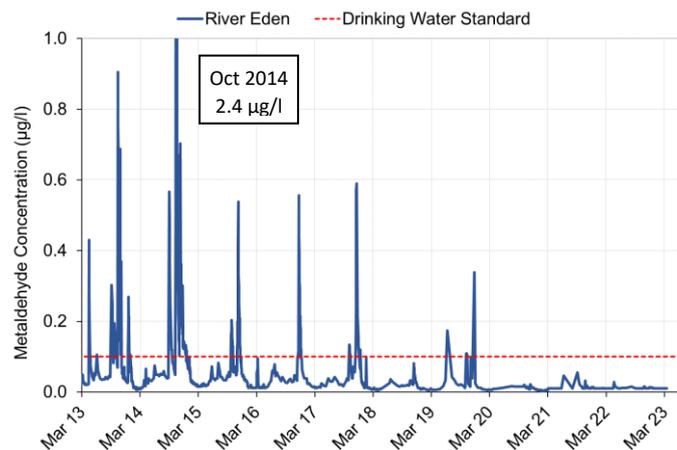


Fig 6 - Long term metaldehyde concentrations in the River Eden at Chiddingstone Bridge.

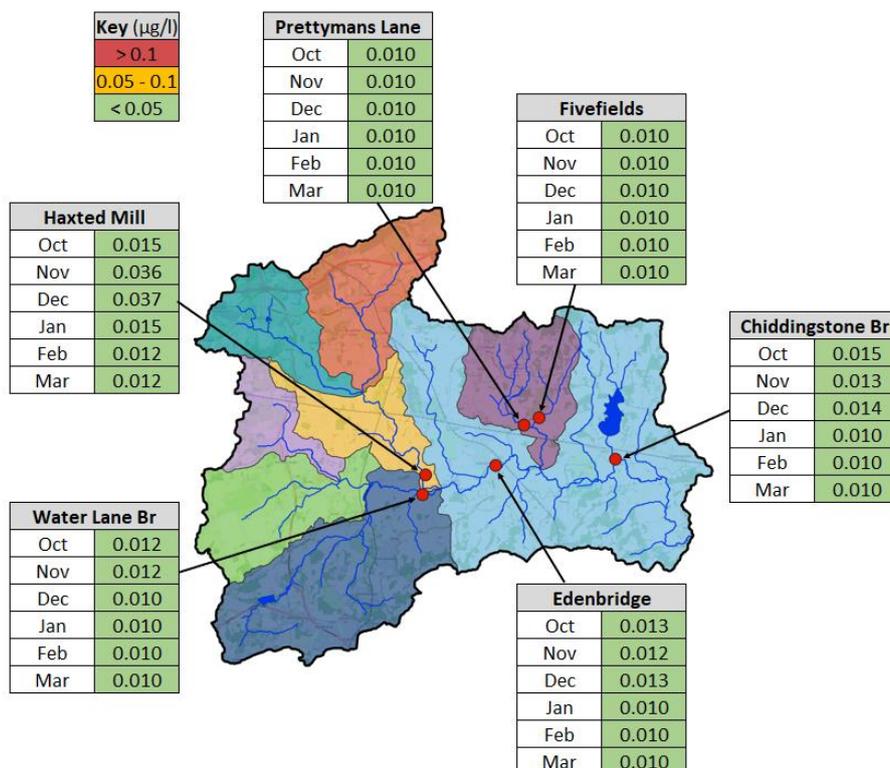


Fig 7 – Maximum metaldehyde concentrations detected in the wider Eden catchment over the past six months.

1.5. Propyzamide

An important herbicide for the control of grasses in oilseed rape, trade names include: Kerb flo 500, Astrokerb

Propyzamide is a key focus for SES Water, partly following the withdrawal of carbetamide in 2022, but also because we appreciate it is a very valuable active in local farmers' arsenal. Unlike some pesticides, treatment can be relatively effective however it is essential that it is used responsibly and good practice is followed to protect this product and help ensure it remains available for use.

Spikes in propyzamide concentration, above the DWS, are observed most winters in the river Eden (Fig 8) and the concentration in Bough Beech reservoir will often persist above the DWS for much of the year. High concentrations were observed in the catchment over this winter in particular at the Haxted Mill and Water Lane Bridge sample points in January (Fig 9).

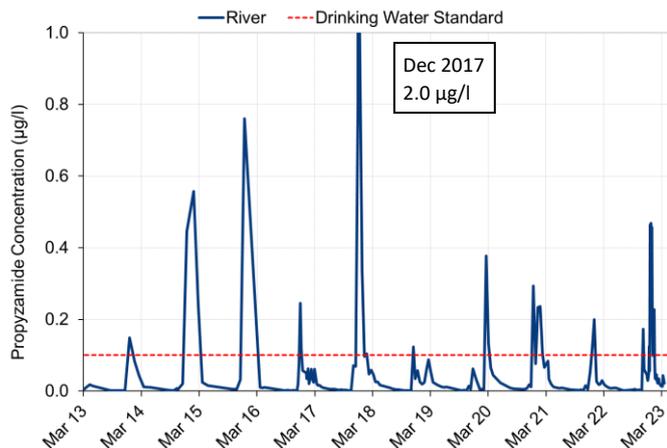


Fig 8 - Long term propyzamide concentrations in the River Eden at Chiddingstone Bridge.

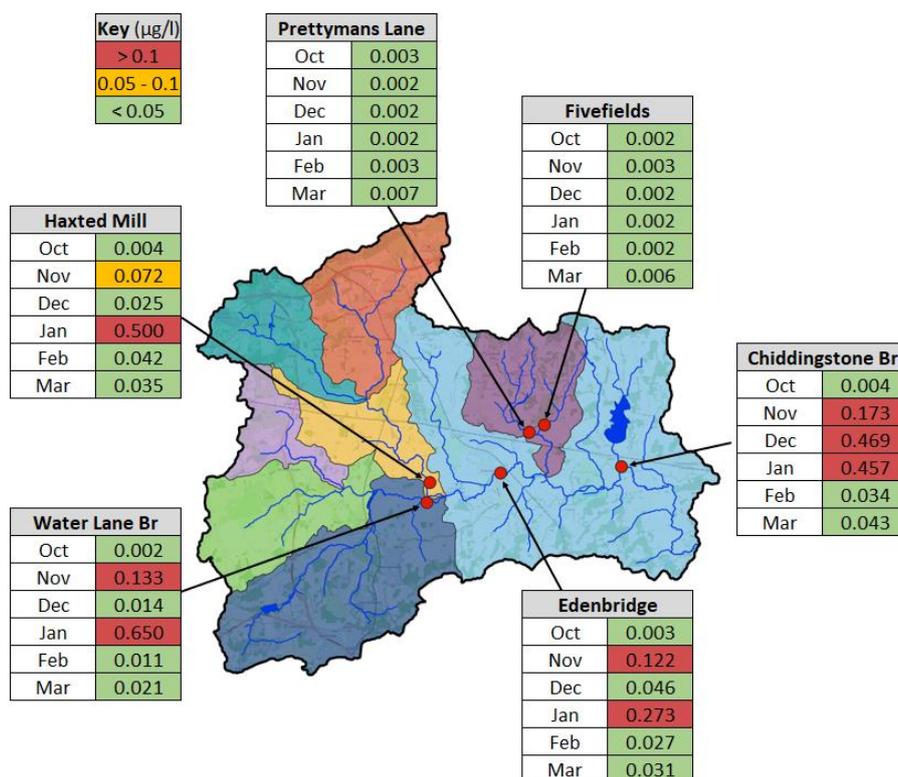


Fig 9 – Maximum propyzamide concentrations detected in the wider Eden catchment over the past six months.

1.7. Flufenacet

Used for the control of grasses and broad-leaved weeds in various crops including winter wheat and winter barley, trade names include: Liberator, Shooter, Firebird

Flufenacet is not included under our current WINEP project, but has been identified as an emerging risk in the catchment, with concentrations in the river over the past 10 years now often exceeding the DWS (Fig 10). As such there are plans to include it in a future WINEP scheme running until at least 2030. Peak concentrations are often observed in October/November which coincides with when we are abstracting from the Eden to recover storage in Bough Beech reservoir following depletion over the summer. This is also observed in samples we collected from across the catchment this winter with the highest concentrations observed at the Haxted Mill sample point in November.

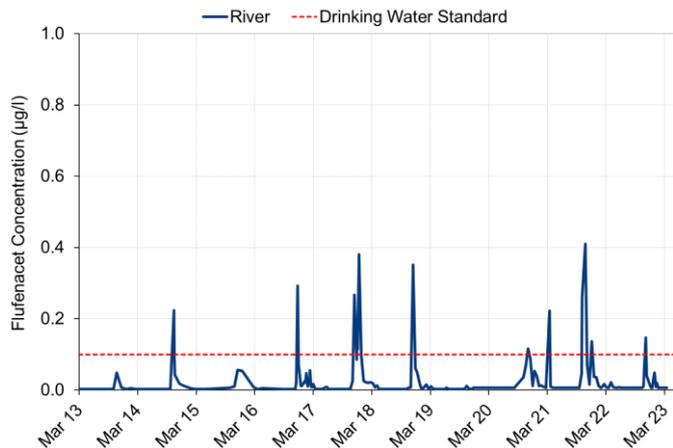


Fig 10 - Long term flufenacet concentrations in the River Eden at Chiddingstone Bridge.

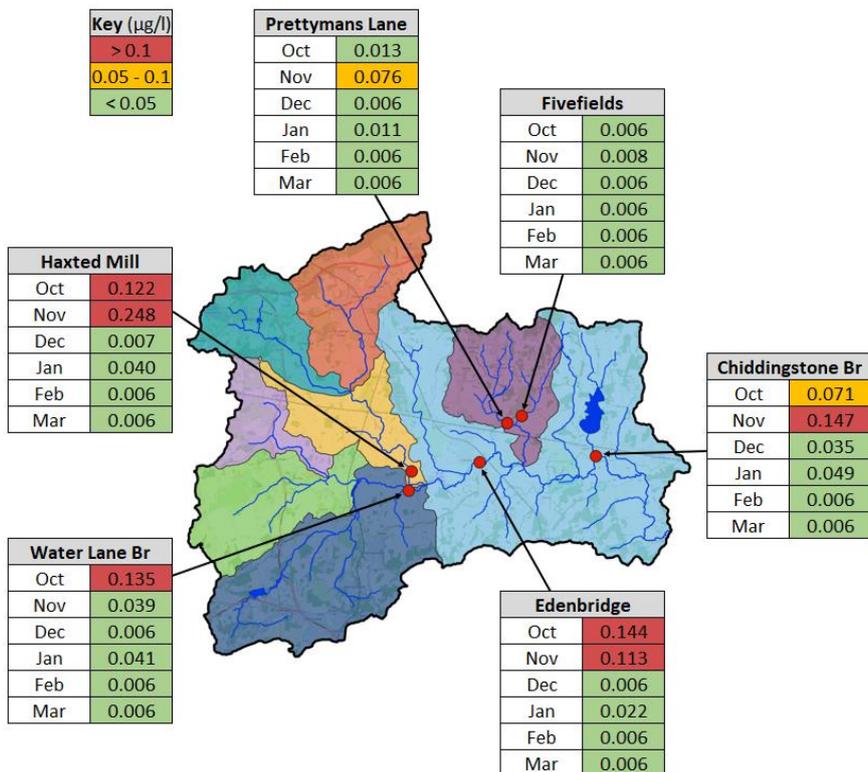


Fig 11 – Maximum flufenacet concentrations detected in the wider catchment over the past six months.

2. Phosphate

There is no specific DWS for phosphate in drinking water, however the presence of phosphate in the river (and Bough Beech reservoir) can promote algal and cyanobacterial growth which can have a detrimental impact on the environment and can also pose a great challenge in the treatment of drinking water. There are Water framework directive (WFD) targets in place for all water bodies across England and Wales to reach good ecological and surface water chemical status and to progressively reduce pollution.

Improvements have been made in terms of phosphate in the river compared with 10 years ago, thanks to upgrades at upstream wastewater treatment works (WwTW), however the Lower Eden remains classified as 'poor' status based on phosphate concentrations (Fig 12). Investigations by SES Water suggest that WwTW are the primary source of phosphate in the Eden, this is particularly evident over summer months when there is less flow in the river to dilute discharges. Work is ongoing to engage with local WwTW. However agricultural sources and unsewered properties also contribute to phosphate in the river. Over the past 6 months the highest results in the catchment were detected downstream of WwTWs at Haxted Mill, Edenbridge and Water Lane Bridge (Fig 13). Lower concentrations were observed at Prettymans Lane and Fivefields however it should be noted, despite having no upstream WwTWs, samples collected at these points still fail to meet 'good' status.

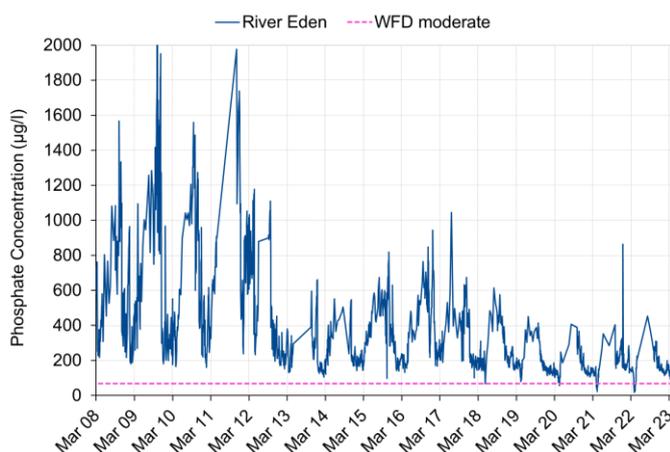


Fig 12 - Long term phosphate concentrations in the River Eden at Chiddingstone Bridge.

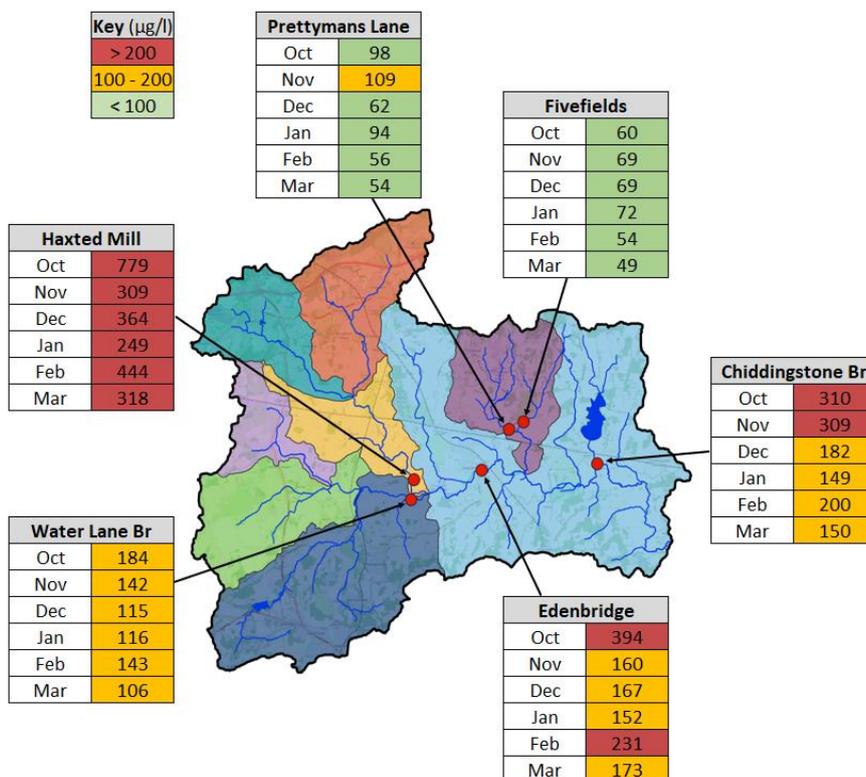


Fig 13 – Maximum phosphate concentrations detected in the wider Eden catchment over the past six months.

SES Water Catchment Team Updates

The Catchment Team are continuing to work with the South East Rivers Trust (SERT) and Catchment Sensitive Farming (CSF) in the catchment along with other stakeholders to deliver our current WINEP programme, focused on preventing deterioration of water quality with respect to phosphate, carbetamide, metaldehyde, mecoprop and propyzamide.

Off the back of our Bough Beech event in January, and work conducted on our behalf by SERT, we are busy shaping our next steps in the project. One key area we would like to focus on is bringing agronomists into the discussion. We are beginning to build a database of agronomists working with local farmers; if you are willing to share your agronomists details please do get in touch. We are also exploring the feasibility of helping to support various on-farm deliverables that could help protect water quality. If you have suggestions where we could work together to help protect water quality we would love to hear from you.

We have been working with our regulators, Ofwat and the Environment Agency, to develop a scheme (focused specifically on flufenacet) that will enable us to continue our work in the catchment until 2035. There are also plans for an investigation to look holistically at the Eden catchment as a whole and understand what can be done to improve stability of river flows, water quality and biodiversity while helping prevent flooding and ensuring water resource resilience over the next 25 years.

The Catchment Team have also recently engaged with the Voluntary Initiative to ensure their [Water Protection Advice Sheets \(WPAS\)](#), detailing best practice for responsible use for various pesticides, are up-to-date. There are plans to develop a WPAS for flufenacet too.

We have also been involved in initial discussions regarding establishing a farmer cluster across the Eden Catchment. Please contact Caroline Arnold from Boreplace (Caroline.Arnold@boreplace.org) if you are interested in finding out more.

Thank you for your interest in helping protect water quality in the Eden catchment. If you have any questions, feedback or ideas on how we might be able to work together to protect water quality, we'd love to hear from you.

catchment@seswater.co.uk

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