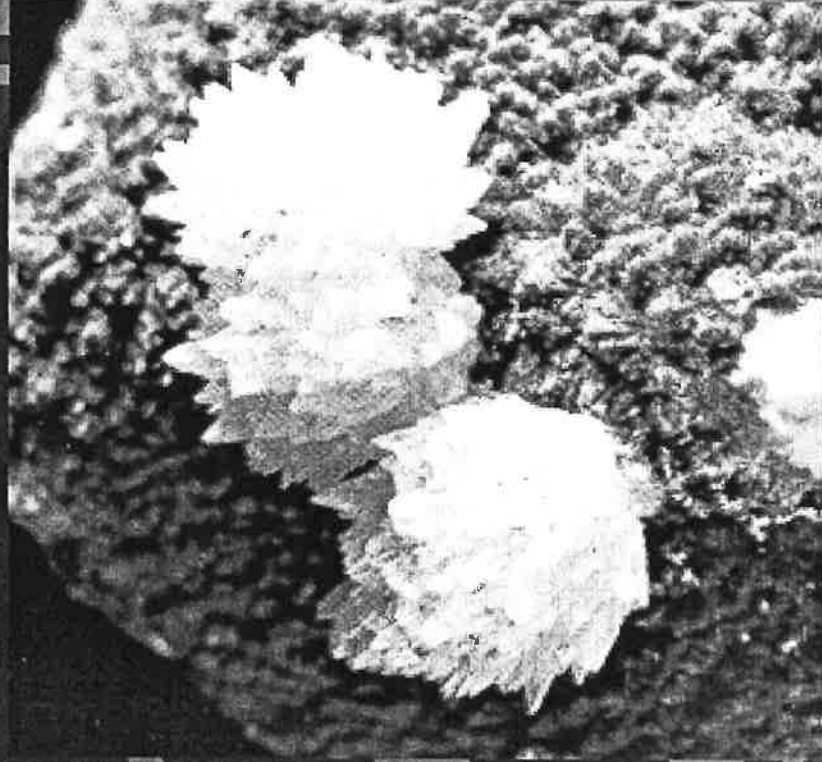


at the Pamper Heath Water Quality Studies

An Introduction to the Water
Quality Trials and an Update on
the Progress Made

Electron Micrographs of calcium Carbonate Formation: Calcite



Your Water Quality Problems

- Water quality problems in Burghfield and Tadley have occurred over a number of years, despite efforts by Thames Water to eliminate them.
- Iron removal filters were installed at source in 1992, followed by mains relining from 1994 to 1996.
- Although these projects made some improvement, particularly to the chemical properties of the water, further problems were revealed in the form of 'sandy' particulate matter arriving at taps.
- These particles were masked by the more immediate difficulties such as iron, and only became apparent once these difficulties were eliminated.

The Cause of the Problems:

- Investigation found the particulate matter to be mainly calcium carbonate or chalk, coloured with 1-5% iron.
- This matter is deposited on the walls of the mains in a thin, loosely attached layer.
- Small changes in distribution, such as flow rate and pressure or chemical characteristics such as pH, are enough to destabilise this layer, allowing it to break up and cause the appearance of particulate matter at the tap.
- These variations in distribution are exacerbated by water towers and service reservoirs. Beenham which has the same source as Burghfield and Tadley, has no water towers and consequently few aesthetic problems.

The Present Status of the Trials

- The SeaQuest Trials have been running in Pelican Road since mid-January, with samplers testing the water supply weekly to ensure that dosing of SeaQuest is correct.
- The CO₂ Trials were started 5 weeks ago in Knollys Road and Erskine Close.

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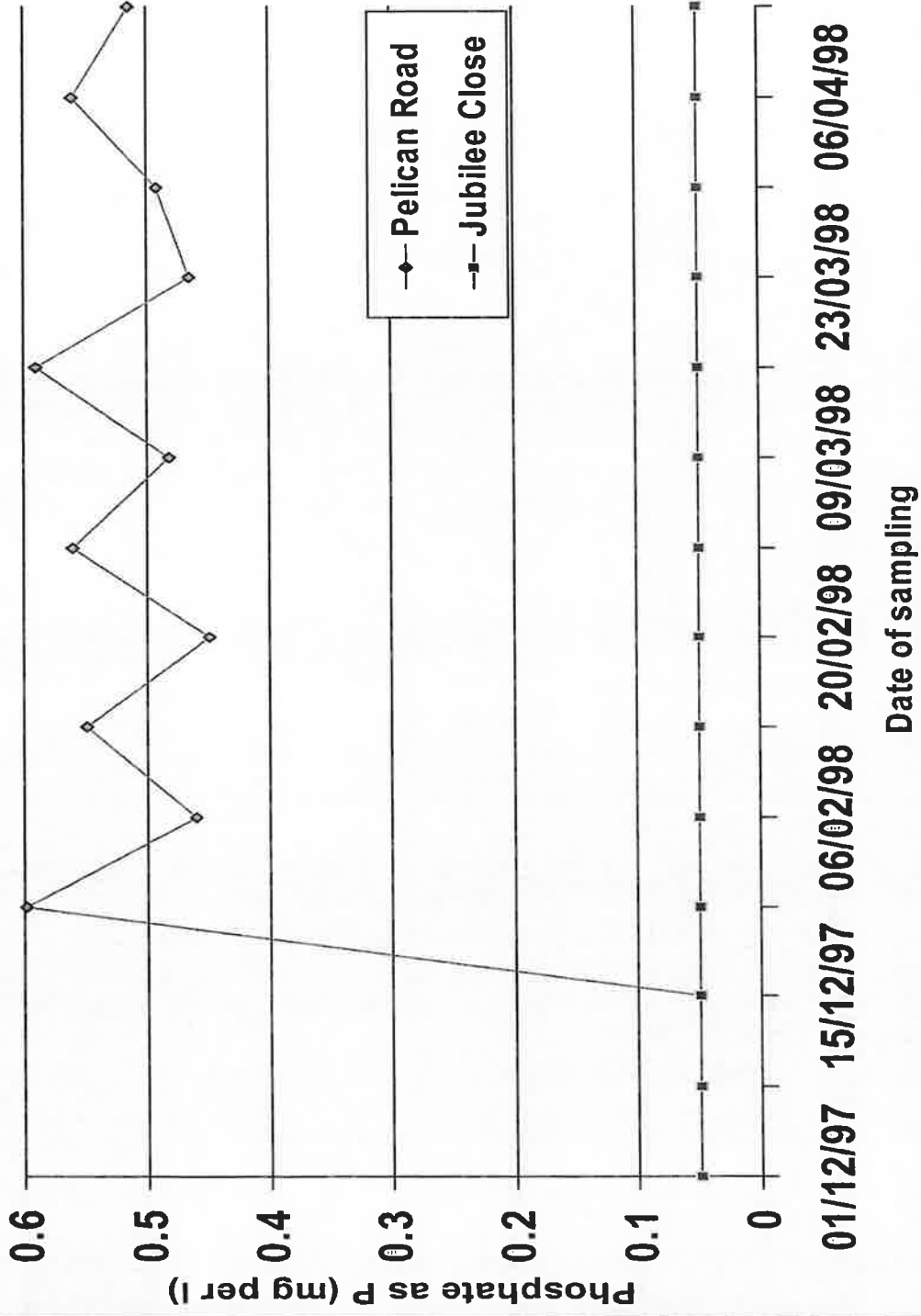
at The Pelican Road Trial: Dosing with SeaQuest

How are Thames ensuring that Water Quality Regulations are Adhered to?

- SeaQuest is a relatively new compound, so to ensure that it is working as it should, we are sampling for 12 different parameters at 12 locations each week, a total of 144 tests.
- Sampling is carried out both at customer taps and at fire hydrants, so that we know exactly the quality of the water at any location at any time.

- Phosphate is the main component of the SeaQuest and this is tested weekly at three sites on Pelican Road.
- The regulatory limit for phosphate (as P) is 2.2 mg per litre. Constant monitoring of Pelican Road shows that phosphate (as P) never exceeds 0.6 mg per litre.
- The graph illustrates this.

Phosphate levels in Pelican Road and Jubilee Close



How do We Know the SeaQuest is Working?

- Numerous factors allow us to assess how the SeaQuest is succeeding in dissolving the brown calcium carbonate deposits within the pipes. These deposits are present both loose in the water and as a layer on the pipe walls.
- The following indicators help inform us how the SeaQuest is working:

1. Calcium Concentration within the Water

- The brown deposits found within the water are composed predominantly of calcium, and the SeaQuest works by sequestering this calcium into solution.

Therefore, an increase in the calcium concentration of the water indicates that the deposits are being successfully sequestered. It is still too early to determine success using this method, but we are constantly monitoring the water supply and updating results.

2. Using A Pipe Cut-out

- Because the deposit forms a layer around the inside of the pipes, we can use these to try and assess the success of the SeaQuest.
- We already have sections of pipe cut from the main from before we started dosing with SeaQuest, so we can cut sections from the treated main and compare the two.
- The pipe cut-outs have shown that the deposits on the pipe walls are softening, and that their composition is changing, although visible signs are very subtle.

3. Your Opinions: The Questionnaire

- In late March, all of the residents in Pelican Road were sent a questionnaire so that they could give their opinions on how SeaQuest is working, and whether they have noticed any improvement, or reduction, in water quality.
- The following slides give an indication of their response:

From the 42 households on Pelican Road returning their questionnaires, the following figures were taken:

- Out of 31 households noticing brown deposits in their water supply, 25 have noticed a significant decrease since the addition of SeaQuest began.

- Out of 24 households noticing a change in their kettle deposits, 20 have seen a decrease in scaling, and a reduction in the frequency of having to descale.

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- 17 of the households returning their questionnaires now clean out appliances, filters and softeners less often than before the trial started.

- 8 of the households have found that the water feels softer than before the trial started, and 8 have found that their pressure has increased.

How Long is the Trial Going To Take?

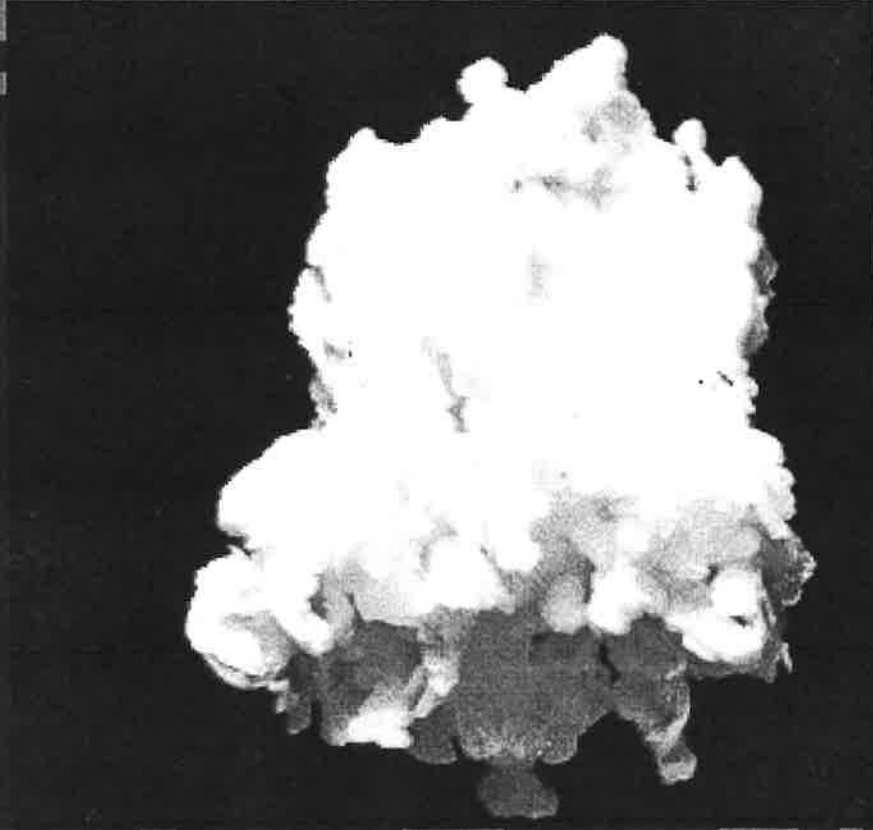
The aim of the trials is to slowly remove the deposits from the insides of the pipework, without exacerbating the problems already suffered by customers.

This process unfortunately is not immediate, and it is calculated that it may take up to 12 months to remove all the deposit from the pipes at the present rate.

What Lies Ahead for the Pilot Trial? Pelican Road

- The Pelican Road trial will proceed for the foreseeable future, albeit with SeaQuest at a higher concentration. This may allow us to accelerate the rate of progress.
- We will continue to closely monitor Pelican Road, using both chemical tests, questionnaires and pipe cut-outs to allow assessment of our progress.

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