

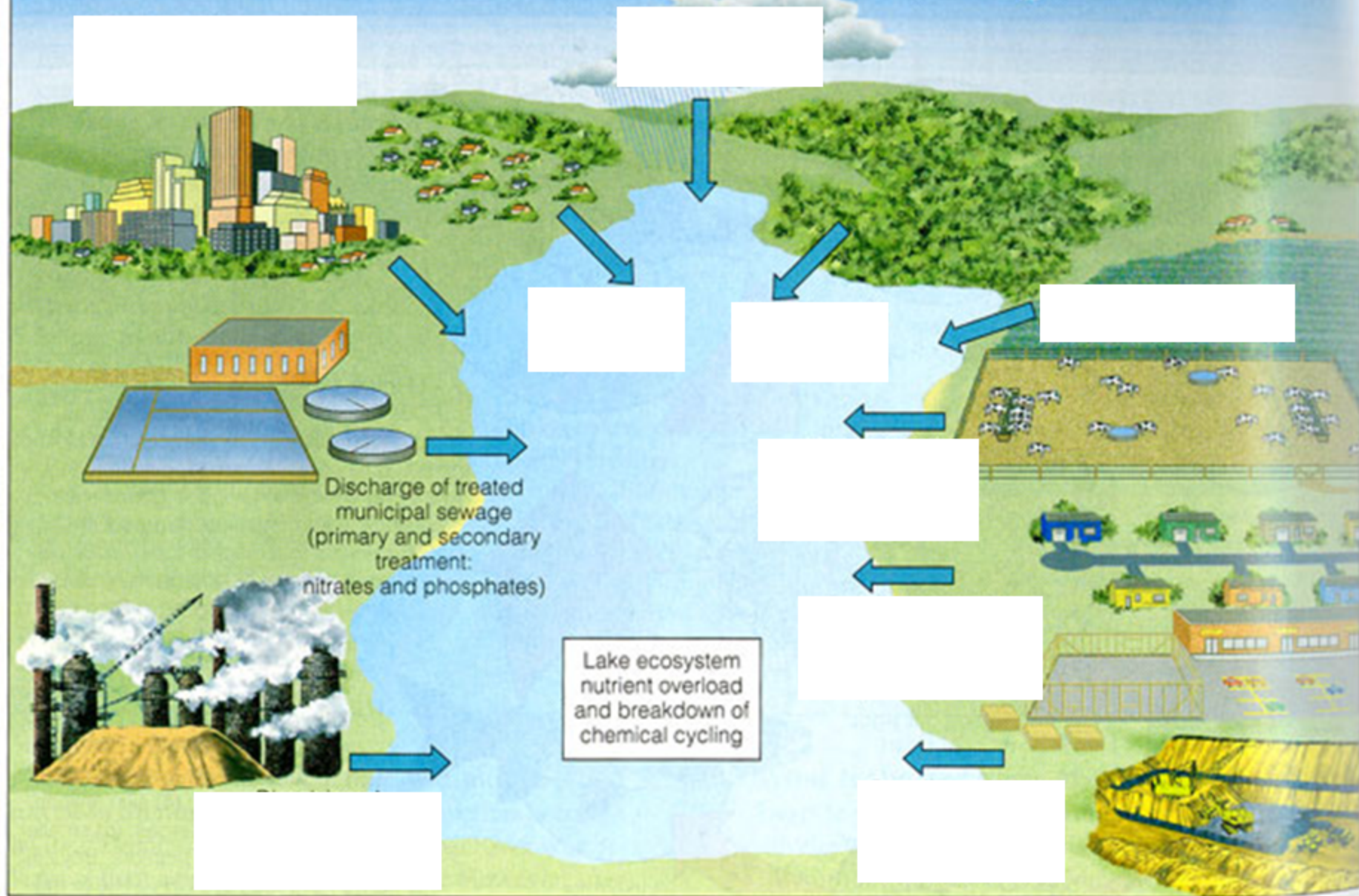
5.4 Eutrophication

Course Companion p. 286 & 287

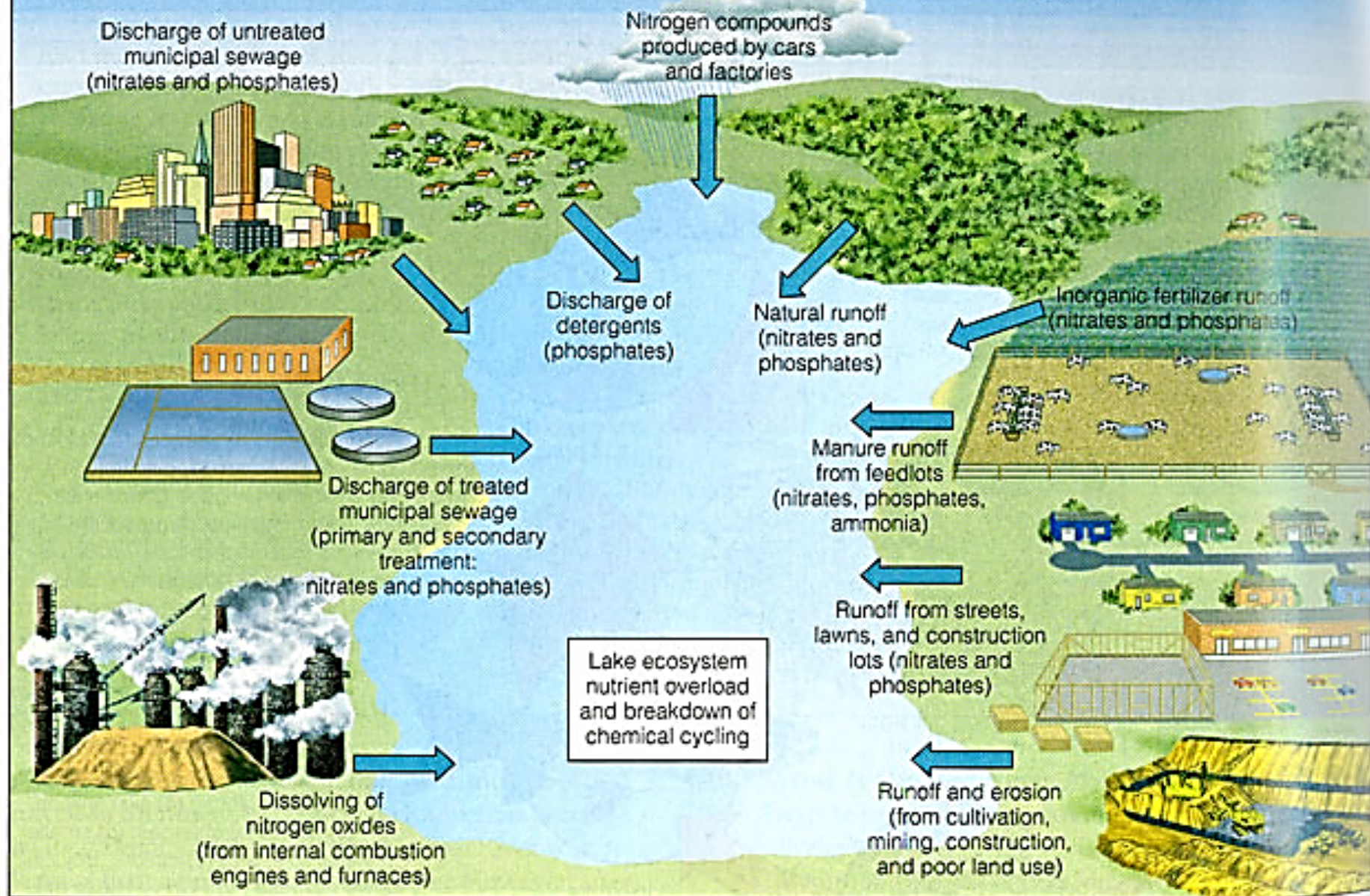
What is 5.4 Eutrophication?

- ‘eutrophe’ = ‘well fed’ as a direct translation which links to ‘trophic’ level – feeding
- Thus excess nutrients in water contribute over ‘feeding’ and growth of algae and aquatic plant populations.
- In freshwater : phosphate is the main nutrient limiting the rate of plant growth
- in coastal waters, nitrogen as is considered the limiting nutrient.

Sources of Cultural Eutrophication



Sources of Cultural Eutrophication



GEUINE BVB IMPORTED DUTC



Professional Product
Professional RESULT
HydroGranBVB
Expanded Clay
50 Litres
FULL SIZE BAG



Fertilisers

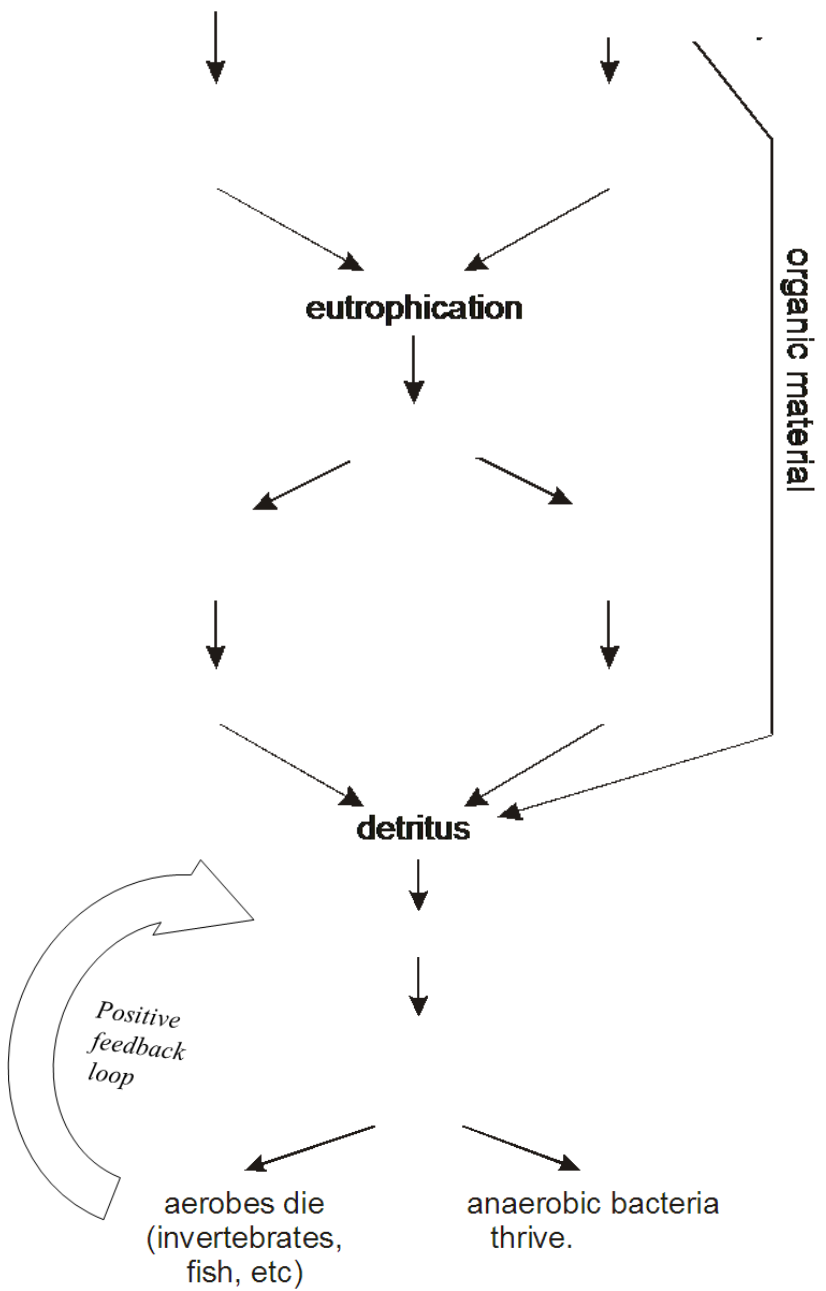




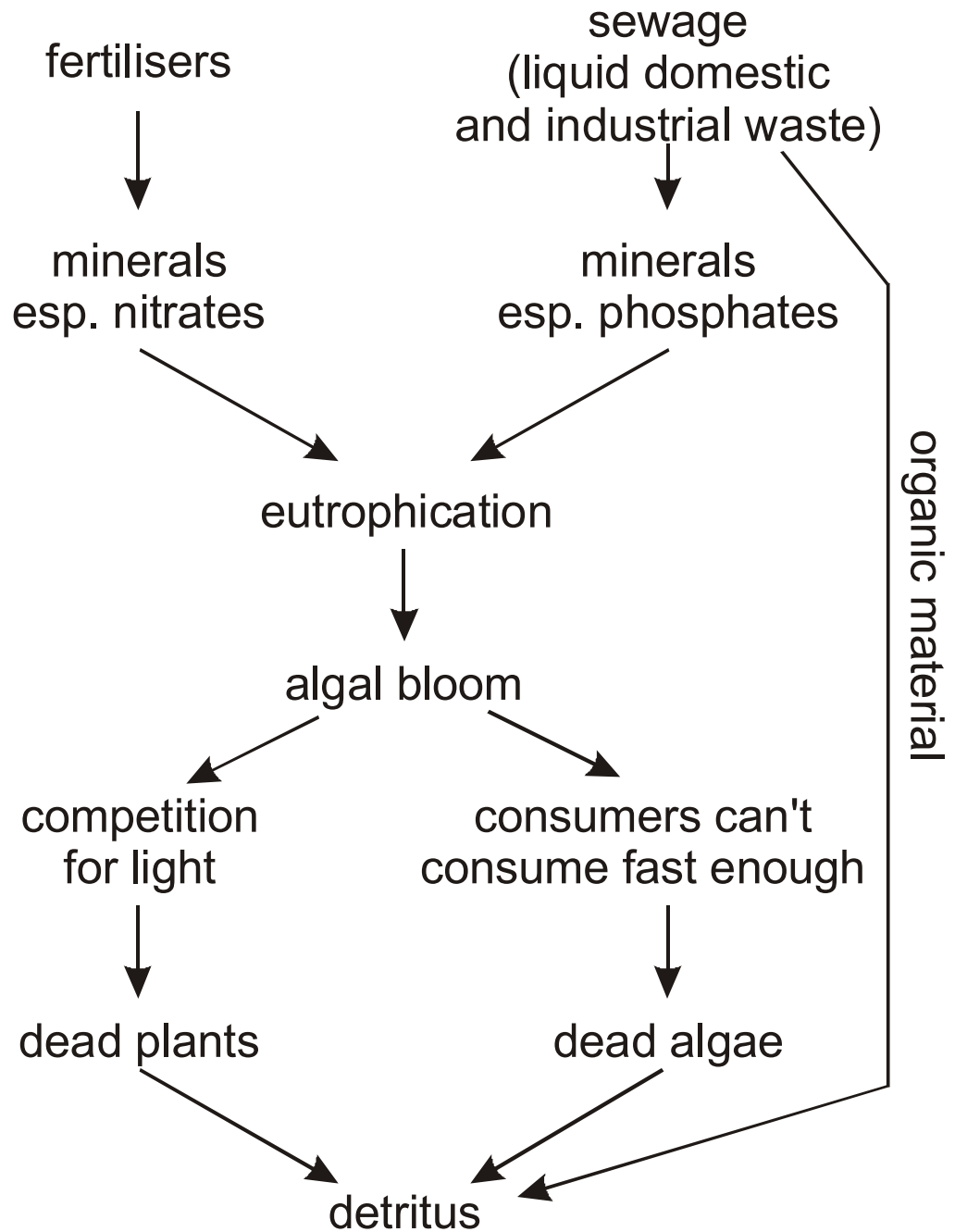
Sewage



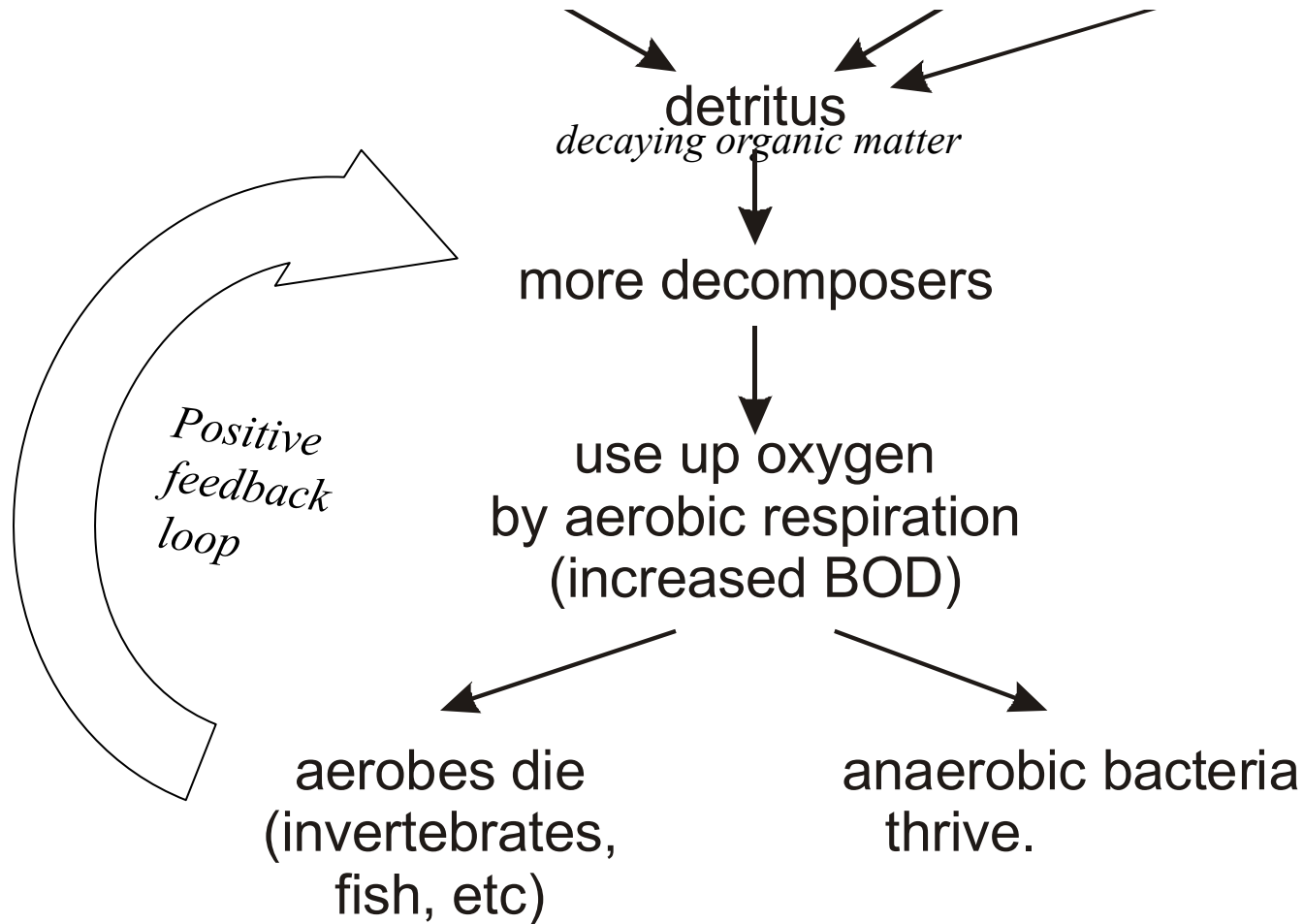
The process of Eutrophication



The process of Eutrophication



The process of Eutrophication cont.



Everything you ever wanted to
know about eutrophication...
and more!

- <http://www.open.edu/openlearn/science-maths-technology/science/environmental-science/eutrophication/content-section-1.1>

Biochemical Oxygen Demand (BOD).

This measures the rate of oxygen consumption by a sample of water, and therefore gives a good indication of eutrophication.

A high BOD means lots of organic material and aerobic microbes, i.e. eutrophication

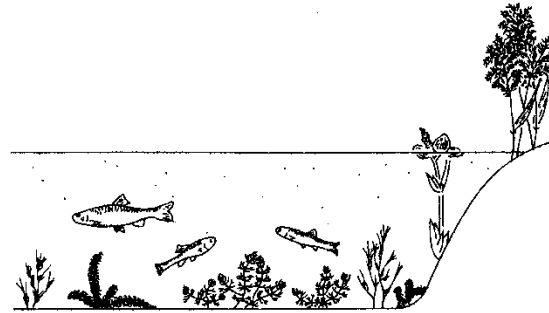


<http://www.youtube.com/watch?v=jBgDeG0kzCQ>

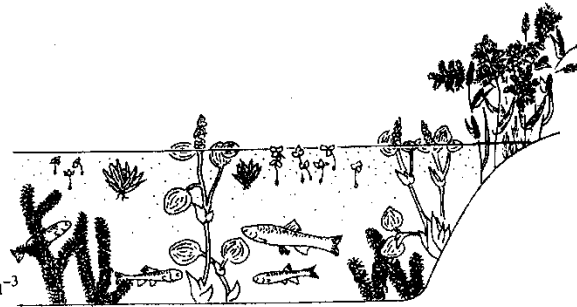
<http://www.youtube.com/watch?v=j1X7vq8ADCA>

23 The Norfolk Broads (large areas of fresh water) have become heavily contaminated with phosphate over the last 100 years. The drawings show the effect this has had on the community of plants and animals which live there.

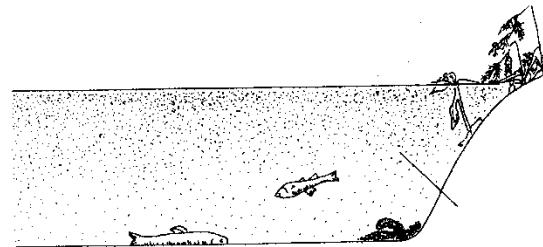
Nineteenth century.
Phosphate concentration $20\mu\text{gdm}^{-3}$
Sedimentation rate 1mm per year



Mid twentieth century.
Phosphate concentration 100mgdm^{-3}
Sedimentation rate 2mm per year

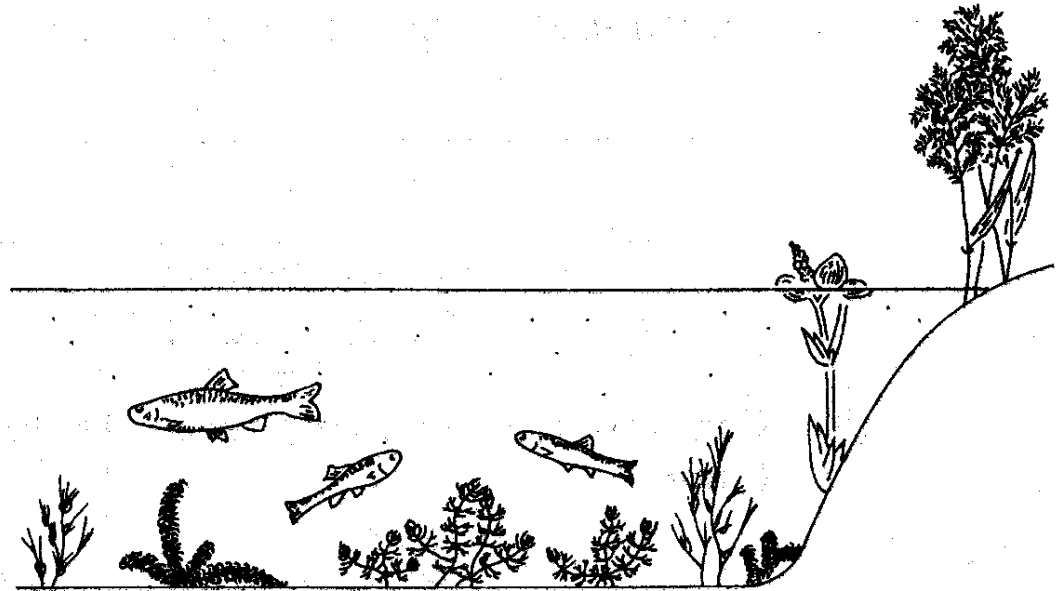


Late twentieth century.
Phosphate concentration 1000mgdm^{-3}
Sedimentation rate 10mm per year



Vast numbers
of phytoplankton

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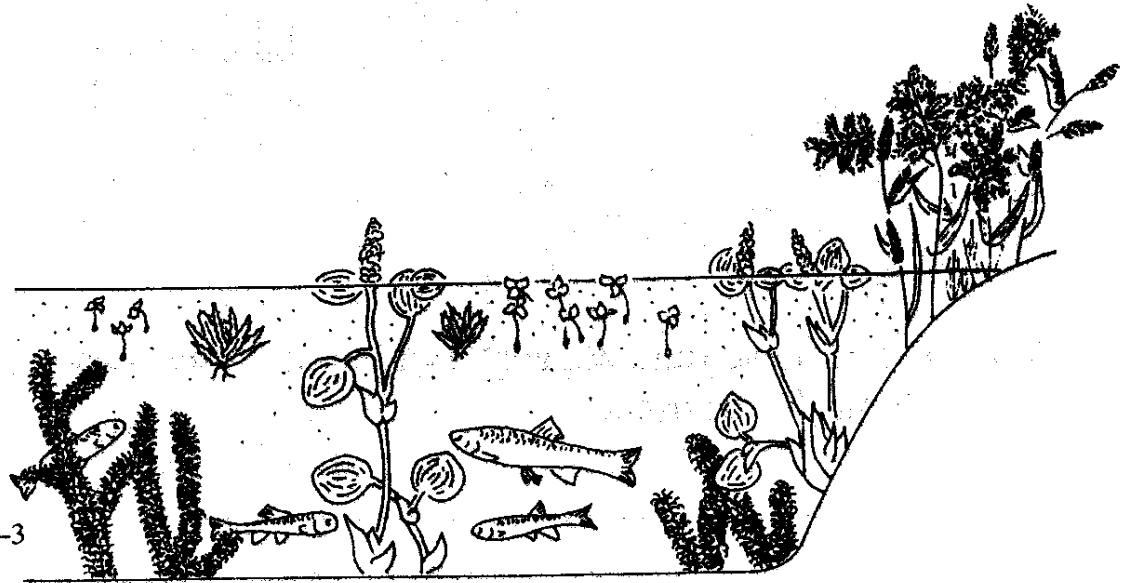


Nineteenth century.

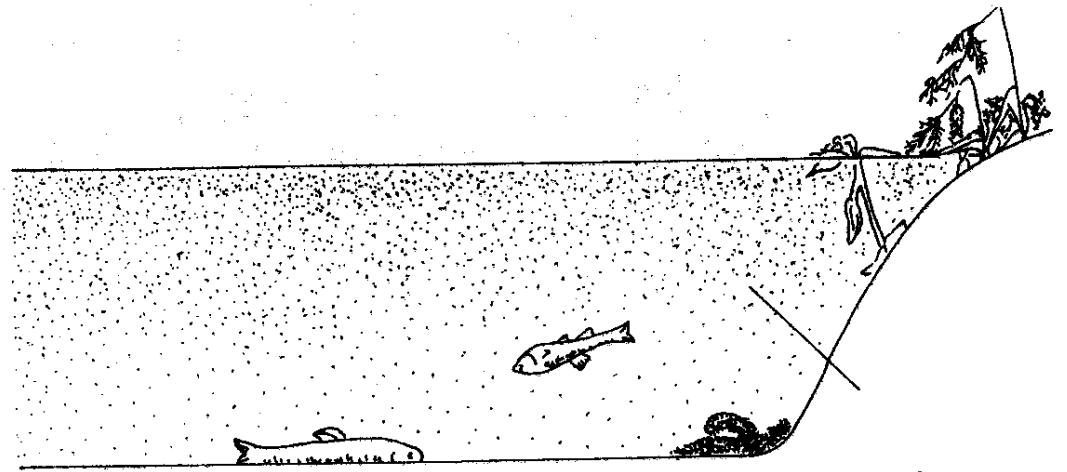
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Vast numbers
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