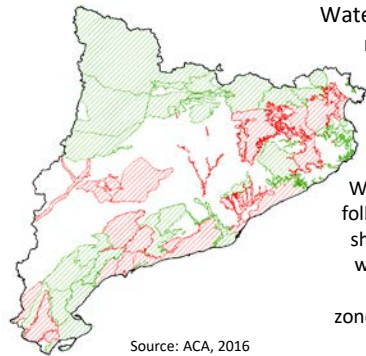


PROBLEM TARGETED

The main problem associated with groundwater pollution in Catalonia is the presence of **nitrates** from excessive application of chemical and/or organic fertilizers (i.e. manure).



Water bodies affected by nitrate pollution

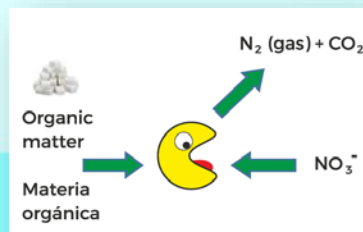
Water bodies which do not follow quality standards are shown in red. Good quality water bodies are shown in green. White represents zones without defined water bodies.

Source: ACA, 2016

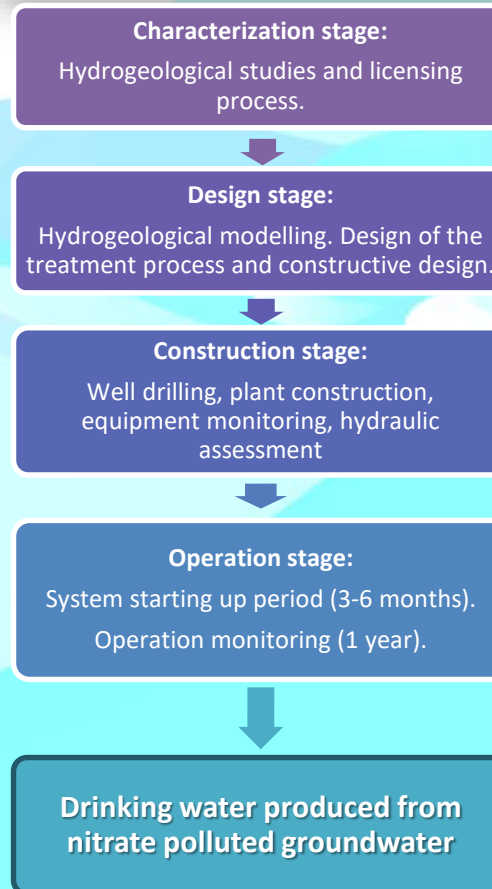
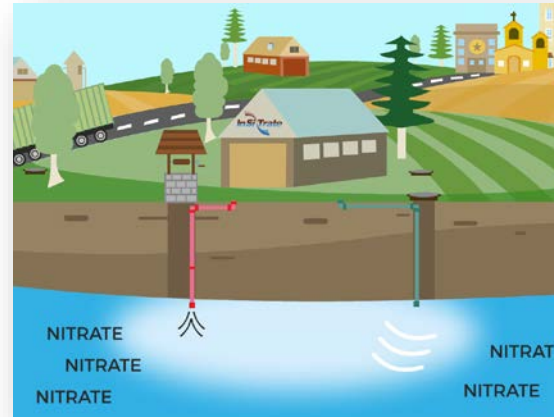
15% of Catalan municipalities have problems supplying **drinking water**.

TECHNOLOGY

Bioremediation of nitrates is a technology based on the acceleration of nitrate biological removal process (denitrification) produced by indigenous microorganisms, which takes place naturally in groundwater thanks to the addition of organic matter. Microorganisms use organic matter to remove nitrate and produce harmless substances such as nitrogen and carbon dioxide.



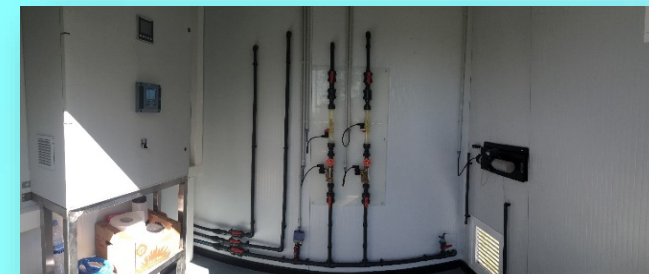
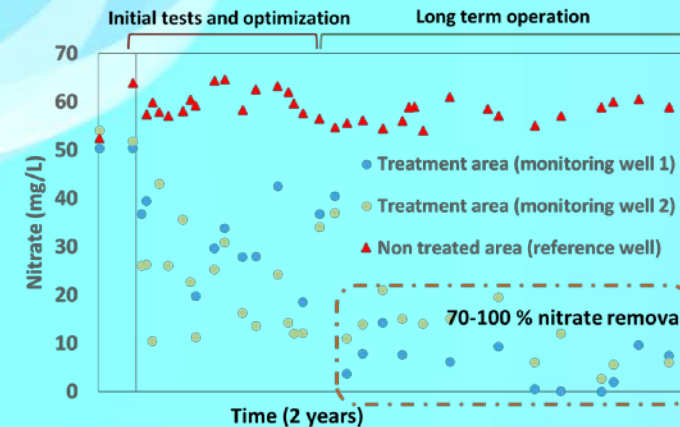
IMPLEMENTATION PROCES



EQUIPMENT



The treatment system consists of a series of wells for organic matter injection and a well (or more than one) for extraction of treated water. It is automatically operated with real-time control of the main parameters.



InSiTrate Technology



Eco-friendly:

- ✓ Waste generation free.
- ✓ Low consumption of organic matter.
- ✓ It does not generate nitrite nor ammonium.

Low cost

- ✓ Low energy consumption and low treatment cost.
- ✓ Competitive costs in comparison to conventional technologies.



Highly efficient



- ✓ Reductions greater than 80% in nitrate concentrations are achieved

Easy to operate and very versatile

- ✓ The technology operates automatically and it does not require personnel.
- ✓ The rate of nitrate reduction is the same even with high water extraction flow.



Do not hesitate to ask for more information

This Technology was developed in Catalonia by the InSiTrate consortium, composed by Fundació CTM Centre Tecnològic, Amphos 21 and Catalana de Perforacions.

The three entities have complementary capabilities to respond to environmental, constructive and technological requirements.



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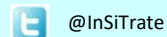


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Stakeholders:



In-situ biological technology for drinking water production from nitrate polluted groundwater



InSiTrate Technology guideline

