

# Sulfate removal from mine leachate: Development of full-scale bioreactor system (SULFREM)

## Project leader

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## Partners

LKAB, Swedish University of Agricultural Sciences, Boliden Mineral AB, GruvAB Viscaria (Copperstone Resources)

## Project duration

1 April 2022 – 31 December 2025

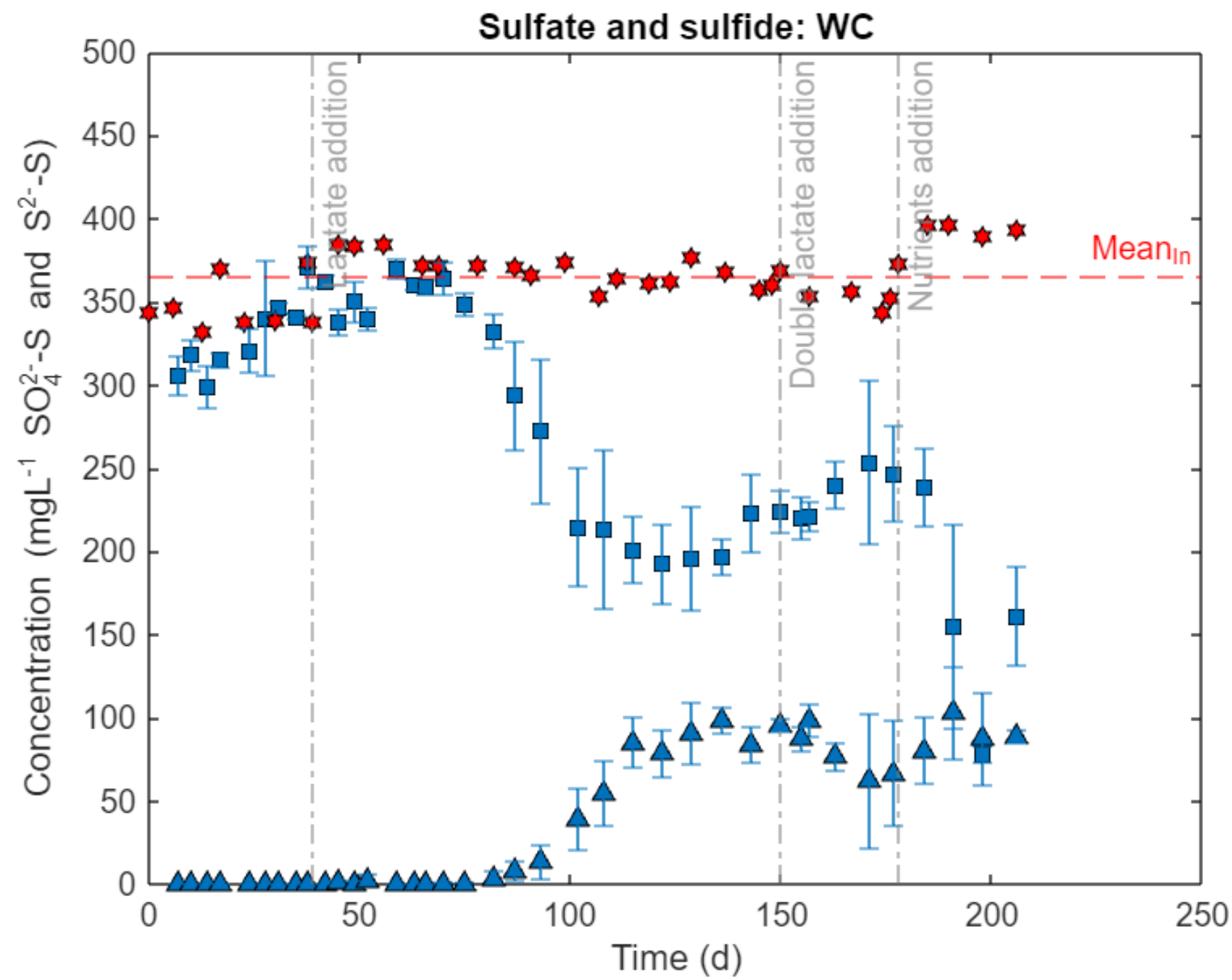


# Goals of the project

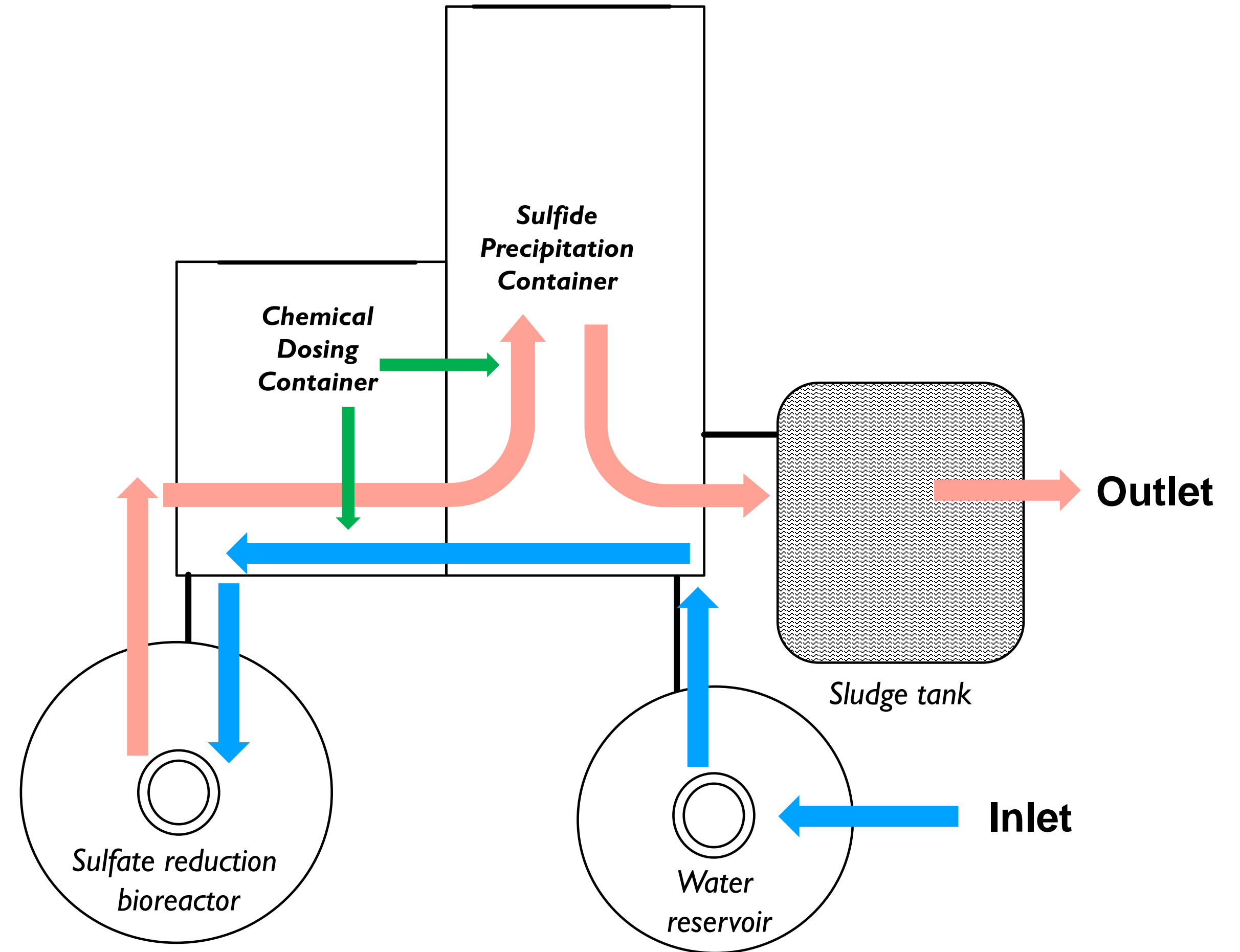
- ✓ 1. Achieve a >90% reduction in sulfate concentrations in laboratory experiments by refining bioreactor design criteria obtained in previous studies,
- In progress 2. Design, construct and operate one bioreactor that achieves >90% sulfate removal
- ✓ 3. Avoid inadvertent emissions of other compounds in achieving goal 2,
- ✓ 4. Investigate the feasibility of recovering metals from the bioreactor media,
- In progress 5. Disseminate project results to regulators, end-users, and the public.



# Results



Laboratory experiments of sulfate reduction in woodchip media completed. High level of sulfate reduction to hydrogen sulfide achieved with addition of lactate as carbon source.



Full-scale bioreactor for sulfate removal installed and operated at LKAB's Kiruna mine. Period of operations June 2024 – December 2025.

# Upcoming activities

- Operation of field-scale bioreactor during winter until end of project
- Characterization of microbial community in bioreactor
- Experiments for alternative sulfur precipitation methods, with potential application at field site.
- End-user and regulator dissemination activity



# Mining innovation for a sustainable future