

**Name: Joseph Egeland**

**Title:** Towards designing a bioreactor for the BioLogix™ Product: Identification of microbial communities and their optimal growth conditions for *in situ* and *ex situ* hydrocarbon bioremediation

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Delta Remediation uses a proprietary blend of microorganisms to provide a safe cost-effective alternative to eliminate hydrocarbon contaminants from soil and water. The main product - Biologix™ - has demonstrated versatile capacities to degrade different toxic hydrocarbons in the field. However, consistently reproducing Biologix™ in the field has challenges, in particular when it comes to different contaminated sites and various toxic hydrocarbons. The main objectives of our collaborative project is to 1) Determine the composition and viability of the Biologix™ consortium and 2) determine optimal growth conditions to effectively and efficiently degrade various hydrocarbons in the field. The outcomes of this proposed research project will significantly reduce shipping costs and simplify logistics for the company's clients' remediation needs. Critically, the findings from this project will assist with the design process of appropriate field-bioreactors to reproduce the bacteria to be used for *in situ* hydrocarbon biodegradation. We propose using bacterial growth plate counts for microscopic and macroscopic observations, identification of the species present in Biologix™ via 16s amplicon sequencing, which will further our understanding of the genes, proteins and enzymes involved in the degradation of hydrocarbons and ultimately increase our knowledge on the bioremediation process and how we can improve it.