

**SELF-SUSTAINING TREATMENT FOR ACTIVE REMEDIATION (STAR):  
PILOT STUDIES FOR THE TREATMENT OF HYDROCARBON-IMPACTED SOILS**

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Self-Sustaining Treatment for Active Remediation (STAR) – based upon in situ smoldering combustion – is an innovative remediation approach for hydrocarbon-impacted soils. It has significant potential due to a number of key properties of the process: (1) STAR requires only a short duration energy input to initiate the reaction; (2) STAR is then self-sustaining, (i.e., propagates without additional energy input), (3) STAR tracks through subsurface zones occupied by hydrocarbons, (4) STAR is self-terminating (i.e., the reaction naturally ceases when no hydrocarbons remains, and (5) STAR avoids injecting costly fluids or the recovery of hydrocarbons or groundwater for subsequent above-ground treatment.

This presentation provides an overview of the first in situ and first ex situ STAR pilot studies. The in situ pilot study was designed to test STAR at a large scale, under saturated conditions (i.e., no dewatering of the pilot test area), and supporting propagation of the reaction laterally across the site; conditions that cannot be adequately replicated in the laboratory. The ex situ pilot study was designed to test the minimum threshold of contamination for the effective application of STAR to excavated hydrocarbon-impacted soils. This presentation complements a companion presentation on the scientific principals and proof-of-concept research underpinning the STAR technology.

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