

P&T Evaluation & Optimization

Saco Defense, Inc.
Saco, Maine
Historical machine manufacturing
TCE plume
Evaluation start – 2019
EPA/MEDEP RCRA

Remediate TCE plume
Prevent off-site migration

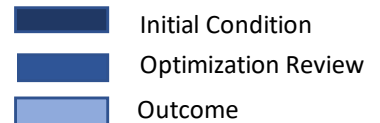


Groundwater MPS will not be met at property boundary in 100 years.

The barrier well system is adequate to contain the bulk of the plume, but the SWMU #13 source zone depletion rate is extremely slow.

Hypothesis: SWMU #13 source zone bioremediation or additional pumping may shorten the time needed to reach MPS.

Use modeling to see whether either remedy will work better: ERD or SWMU #13 source zone pumping well



Lines of evidence used to support optimization:

1. The presence of TCE daughter products indicate some natural attenuation is occurring.
2. DNAPL still exists in SWMU #13 source zone after 27 years of groundwater extraction.

Transition technology decision codified in decision document:
RCRA CA550 Final Remedy Construction Complete, Modification SDI Management Company, Saco
Maine EPA ID# MED001096791 .

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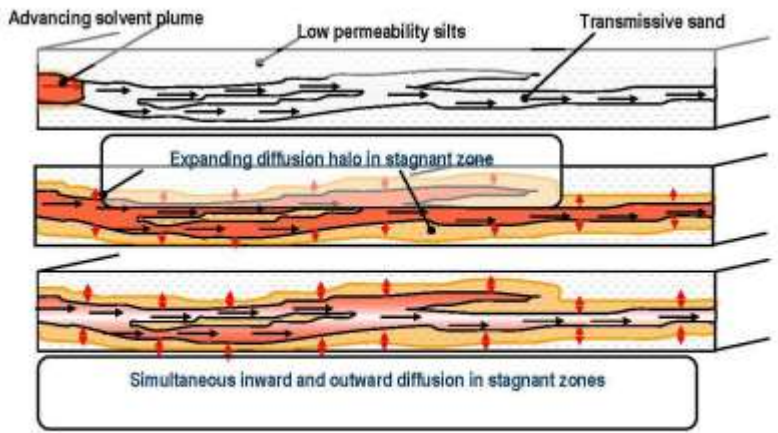
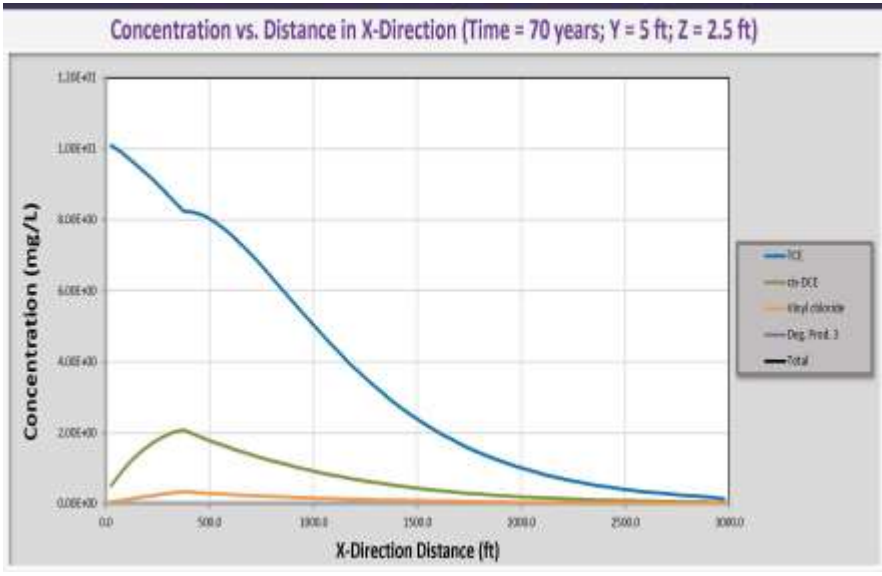


Figure 1: Conceptual Model of matrix diffusion effects as part of plume response. (Source: T. Sale, T. Illangasekare, AFCEE, 2007)

Modeling using REMChlor-MD was used to evaluate both remedial options. The sheer mass of the TCE bound up in the low permeability zones, limited capture widths in the source zone, and back diffusion were included in the models. It was determined that adding ERD or a pumping well in the SWMU #13 source zone would not lead to significant risk reduction, significant time to completion reduction or significant cost reductions. Either remedy would only increase costs over the life of the remediation.



- Assumes 4 years of active bioremediation (2021-2025)
- MPS achieved **2,720 feet** or more downgradient of SWMU 13 (i.e., 30 ft reduction in plume length compared to no remediation)
- 2018 REMChlor model predicted MPS achieved **360 feet** or more downgradient of SWMU 13

Ramboll

- Initial Conditions
- Optimization Review
- Outcome

After presentations by the Environmental Consultant to the MEDEP, it was determined that continued use of the barrier well system, natural attenuation, and two environmental covenants are sufficiently protective of human health and the environment.

P&T Optimization Conclusion:
 Optimization review recommended P&T continuation
 Time Span: >30 years
 OM&M cost savings: None – costs would increase
 Remedy effectiveness and/or risk reduction improvement: None
 Sustainability/resiliency benefits: None