Interstate Technology & Regulatory Council

https://ITRCweb.org

Using Remediation Risk Management to Address Groundwater Cleanup Challenges at Complex Sites (RRM-2)

EXECUTIVE SUMMARY

Remediation programs for groundwater remediation share the ultimate goal of restoring groundwater to beneficial use. Based on past experience, groundwater remediation to final goals and objectives can be achieved successfully at most sites but remains challenging at highly complex sites. This document applies the framework of project risk management for site remediation to identify and manage such challenges. The term "remediation risk management" (RRM) is used to describe this approach of project risk management for site remediation.

The RRM process is a course of action through which project risks related to site remediation can be holistically addressed to better achieve secondary objectives of remediation (e.g., efficiency, timeliness, cost-effectiveness) while supporting the primary objective of remediation, namely protection of human health and the environment. The RRM process is described in more detail in *Project Risk Management for Site Remediation* (ITRC 2011). When applied to the issue of groundwater cleanup at highly complex sites, the RRM process can help project managers identify key technical challenges; evaluate the likelihood and impact of these challenges on the remedial strategy; and mitigate these challenges through better design, evaluation, and operation of groundwater treatment and management systems. This document identifies and evaluates several key technical challenges for groundwater remediation at highly complex sites. As part of the mitigation measures for project risks associated with those technical challenges, the document also describes several long-term management designations and approaches used at complex sites to maintain protectiveness of human health and the environment over long time frames. These long-term management designations and approaches are typically one part of an overall site-specific remedial strategy that complies with existing regulations. Examples include the use of technical impracticability waivers, greater risk waivers, state designations for groundwater management zones, and site management using phased approach. The use of these designations at other highly complex sites is demonstrated through case studies.

This document is intended to inform state regulators, practitioners, and other stakeholders who are evaluating technical cleanup challenges within their own programs. This document does not address policy questions associated with setting remedial goals and objectives, nor does it evaluate the acceptability of different project risk management strategies. Finally, the RRM process does not replace any existing regulations or process under the National Oil and Hazardous Waste Contingency Plan; Comprehensive Environmental Response, Compensation, and Liability Act; Resource Conservation and Recovery Act; or any other regulatory program.