

## Environmental Minute 8.5

### Environmental Remediation Considerations

In our series of [Eight Keys to Successful Environmental Remediation](#), we focused on why so many remediation efforts disappoint. That is, there is an insufficient understanding of the site conditions and a poorly developed conceptual site model (CSM).

In this follow-up Environmental Minute, or ½ Minute, we provide some thoughts in regard to the remediation process... not specific technologies, but general considerations, regardless of the technology of choice.



With “your arms around the issue” and a robust CSM, you are ready to consider your remediation options. Remediation options can vary widely from no further action, to Monitored Natural Attenuation (MNA), to a myriad of active remedial methods (e.g., dig and haul, pump and treat, in-situ reactions, etc.). Here are some of the many considerations that you will need to keep in mind to narrow down your remediation options and focus on your considerations.



#### Remediation Technology Considerations

- How reliable is the remediation method considering **your site conditions**, including type of chemicals, concentrations of chemicals, soil type(s), depth of groundwater, depth of (soil or groundwater) contamination, etc.?
- What are the potential “negatives” associated with remediation, such as (1) generation of breakdown products, (2) potential emissions, or (3) generation and disposal of wastes?
- Is the technology appropriate for the goal of your remediation (e.g., will cleanup to residential criteria require a more aggressive approach)?
- What is the anticipated area or volume to be remediated?
- Are in situ or ex situ methods acceptable or advantageous?

#### Limiting Factors Considerations

- Physical space available for remediation and volume of anticipated waste generation.
- Size of remediation equipment and material-handling constraints.
- Local climate and/or time of year.
- Location of utilities; energy demands and sewer.
- Time frame required to reach closure.
- Site preparation issues.



### Local/Regional Considerations

- What is your proximity to residential neighborhoods, schools, or other sensitive populations?
- Are there any local regulations or ordinances that you need to factor into your decision-making process?
- Are there local groups that “object” to certain technologies?
- Are there public-perception/public-relation considerations?
- Is site security a significant concern and a potential additional cost?

### Contractual Considerations

- Is timing an issue? Do you need to have the remediation completed within a specific timeframe due to transaction, third-party agreement, or regulatory deadlines?
- Is it clear who is paying for the remediation?
- If it's a pay-for-performance contract, are you comfortable with the terms? Have you had a third party and/or legal counsel review? What happens if the contractor defaults?



Ideally, it is best to evaluate potential remediation methods against criteria using a quantitative-scoring system and then selecting the most feasible methods for further evaluation.

Dragun's remediation experience covers a wide range of technologies. We're constantly evaluating new and emerging technologies and have worked with a number of excellent contractors in successfully implementing remediation.

With that said, and because it's really that important, we'll say it again: **Make sure you understand your site conditions before you consider your remediation options.** Without a robust and defensible CSM that paints a thorough picture of your site, remediation considerations are premature.

### Next Step or Starting Point

If you are not comfortable that your CSM is reflective of your site conditions, consider our [Peer-Review](#) program as an option. Since 1988, we have peer reviewed a wide variety of projects across North America involving common, as well as uncommon, “contaminants.” We have also peer reviewed projects for our clients with overseas locations, including Brazil and France.

Our goal in our peer reviews is to help you objectively understand your site conditions and what reasonable next steps you might consider. The majority of our peer reviews have resulted in substantial benefits for our clients, including **saving tens-of-thousands and, in some cases, millions of dollars, litigation avoidance, and/or reduction in remediation efforts.**

If you have questions relating peer review or remediation of impacted soil or groundwater, contact Matthew Schroeder, M.S., P.E. ([mschroeder@dragun.com](mailto:mschroeder@dragun.com)) at 248-932-0228.



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