

How to Save the Environment from Environmentalism



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Environmental remediation is often necessary to clean up contaminated sites and protect the environment and human health.

At first glance, it might seem wise to spare little expense to eliminate contamination. However, through extensive remediation experience, Trace Associates Inc. (Trace) has observed that such activities can also introduce a variety of potential drawbacks. **Finding the balance is critical.** Environmental receptors must be protected from moderate to high-risk contamination, certainly, but remediating soil and groundwater that pose low risk in the name of environmentalism can, in some cases, be irresponsible and unethical.

Overzealous remediation may be a waste of limited time and budget, since those resources could be shifted to the long list of other sites with contaminant plumes that do pose higher risk to human health and/or environmental receptors. This practical way of thinking underpins the need to calculate and consider sustainability metrics when assessing remedial options. In recognition of

this need, Trace developed a simple tool to quantify sustainability metrics quickly and economically on even the smallest projects. In this way, we have integrated sustainability considerations into our risk assessment and remediation services.



Photo above: Two swift foxes (*Vulpes velox*) (listed as "Threatened" in the Species at Risk Act), sunning and denning on the edge of a wellsite where Trace was assessing remedial options to address sodium chloride-affected soils. Twenty years earlier, this wellsite produced natural gas along with moderately salty formation water, some of which leaked onto the site. The site was decommissioned, and the salty soil was subsequently reclaimed. Fast-forward to today, and upon sighting the swift foxes while at the site, remediation was paused to consider whether it was truly needed.

PHOTO CREDIT: Amanda Farnsworth, AAT, EPt, Environmental Scientist with Trace

Guideline specialists at Trace are aware that potential contaminants may pose a risk to vegetation and groundwater users, and at the same time, we understand that the risk level is dependent on site-specific conditions, including soil and groundwater characteristics. As indicated in the photograph on the previous page, detailed evaluation and modeling of the contaminant within the assessed site characteristics demonstrated that the contaminant posed low risk, and no remediation was required. By halting unnecessary remediation, disruption to the swift foxes and their habitat was avoided.

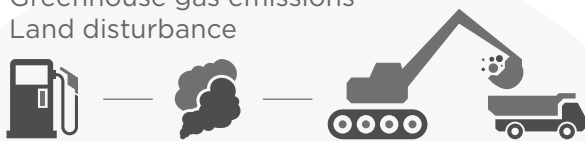
Simple, yet quantified, sustainability metrics.

Sustainability, as defined by the Brundtland Commission in 1987, means meeting our own needs without compromising the ability of future generations to meet their needs. Sustainability also acknowledges that long-term social equity and economic development are dependent on the environment. Access to tangible and efficient sustainability metrics is pivotal to informing, affirming, and demonstrating holistic remedial options assessment.

When viewing sustainability through a remediation lens, examples of metrics can include:

ENVIRONMENTAL

- Fuel use
- Greenhouse gas emissions
- Land disturbance



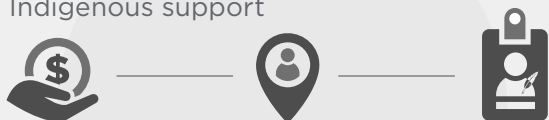
SOCIAL

- Driving safety
- Local employment
- Traditional knowledge



ECONOMIC

- Remediation cost savings
- Local support
- Indigenous support



To calculate sustainability metrics, Trace collects site-specific information and applies sustainability best practices. A comparison is made between excavation and landfilling, and remediation activities associated with the application of site-specific guidelines. Although it is not a full lifecycle assessment, which can take substantial time and funds, this simple yet quantified approach provides important data and considerations during remedial options assessment.

Avoiding unnecessary and potentially harmful remediation is key to improving the sustainability of site cleanup. At Trace, our experienced risk assessment experts avoid unnecessary remediation by applying site-specific rather than generic environmental quality guidelines. In this way, remediation can be conducted without being overly restrictive, while at the same time maintaining equivalent protection to receptors. Sustainability metrics can then be calculated to provide valuable context, communicate practical data, and provide quantified information that adds due diligence to the assessment and recommended remedial option.

Trace works through numerous impacted sites by applying sophisticated and robust site-specific guidelines combined with sustainability metrics. In many scenarios, the result is regulatory closure with minimal or even no remediation, and reduced impacts to environmental, social, and economic factors.

Opportunity: highly refined, site-specific environmental guidelines.

When liability managers receive new portfolios of potentially contaminated sites, they may group them by estimated liability to efficiently triage work and prioritize the allocation of available budget. Initial coarse estimates of liability become more refined during the environmental site assessment (ESA) process. Generic provincial or federal guidelines are typically used during initial ESA work to screen for potential environmental concerns. Low-risk sites that meet screening guidelines can move quickly to reclamation/closure. However, sites that do not meet screening guidelines can be evaluated for the potential benefits of site-specific guidelines. Site-specific guidelines

must be applied appropriately to eliminate or at least reduce the need to remediate and can allow a site to proceed directly to reclamation.

Methods for selecting site-specific guidelines can be simple or complex depending on the contaminant type(s), extents, concentrations, and site-specific characteristics such as proximity to receptors, soil and groundwater characteristics, and available site-specific methods for the situation. **Selecting the appropriate guideline tools and applying them to their fullest effect requires experience, training, teamwork, and perseverance.** Effective site-specific guideline work often yields tremendous benefits by drastically reducing environmental financial liability and by reducing or even eliminating the need to remediate to attain site closure, all the while prioritizing protection of human health and the environment.



Photo above: Drone image of the final remediation extents for a former produced water pit. The final excavation soil volume of 2,000 m³ represents approximately 5% of the total chloride extents. Remediation was on hold for several years because initial projections of site-specific guidelines did not substantially reduce liability. A second opinion yielded highly refined site-specific guidelines, saving over \$4.5 million in remediation expenses and keeping 36,000 m³ of low-risk soil from being hauled to the landfill.

PHOTO CREDIT: Jared Neville, B.Sc., A.I.T.

Viewpoints on “right-sizing” site-specific guidelines.

- Site-specific guidelines are great, but they must be used to their most appropriate potential. Insufficient application of site-specific guidelines is common, resulting in sustainability challenges.

- On the other hand, overly sophisticated site-specific guideline efforts such as numerical modelling can also be a concern, as they may yield little value for the cost.
- Discerning which guideline tools to deploy for the situation and how to use them to their maximum effect can mean the difference between stagnation and site closure.



One should not try to use a warhead to kill a fly . . . or a flyswatter to kill Godzilla.

Key takeaways.

1. Extensive remediation comes with its own unintended consequences, ranging from destruction of habitat undergoing recovery to worksite and road safety concerns.
2. Remediation can be reduced or eliminated using the sophisticated application of site-specific guidelines.
3. There is a substantial difference between appropriate site-specific guidelines and insufficient or excessive methods. An experienced and collaborative team unlocks the appropriate potential offered by site-specific guidelines at contaminated sites.
4. By applying site-specific guidelines and considering sustainability metrics, old challenging sites with a high liability price tag that were languishing can often be remediated affordably.
5. The reduced financial liability that results from remediating high-risk sites allows for the reallocation of limited resources to other sites that pose medium to high risk, resulting in a larger net benefit to the environment and human health.
6. By reducing unnecessary remediation and reallocating resources so that other medium-risk to high-risk sites can be addressed, the net effect is improved environmental, social, and economic sustainability of industry.



Trace has saved clients >\$50,000,000 on salt-affected sites.

Interested in learning more about the environment and environmentalism? Please contact:

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